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Master's Thesis

The Impact of Financial Crises, CEO Overconfidence, and Cultural Distance on Acquisition Value Creation

- AN EMPIRICAL STUDY ON EUROPEAN ACQUISITIONS BETWEEN 1999-2018

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Abstract

The last few decades have seen increasing globalisation and new technologies continuously being innovated more rapidly, which drives economic growth. At the same time acquisitions have become a gradually more popular expansion strategy for CEOs. One feature of acquisitions is their tendency to occur in waves. Six waves during the last century are commonly pointed out in the literature and two of those occurred recently, but were abruptly ended due to financial crises. It appears that financial crises occur within shorter time spans. Consequently, this paper contributes by investigating how acquisitions are affected by financial crises while also studying the CEO's acquisition history, and cultural distance.

A thorough analysis of 1,453 acquisitions undertaken by European companies from 1999 to 2018 is conducted by applying the event study methodology. The value creation is measured using the acquirer's shareholders' return on the share price around the announcement. It is estimated using a [-1;1], [-5;5], and [-10,10] event window and by utilising both a market model with local indices and European index as well as the constant mean return model. A battery of seven statistical tests is applied to test the overall announcement return while a cross-sectional regression is conducted to delve deeper into which factors affect the cumulative abnormal return.

The findings in this paper can be summarised as: (i) The acquisitions lead to a statistically significant value creation of approximately 1% around announcement. The result is significant across the three return models and event windows. (ii) We find evidence of a financial crisis having a negative impact on the shareholder return. This negative impact is caused solely by the Dot-com Crisis, which has significantly lower returns than the 2008 Financial Crisis. (iii) Contrary to previous literature, this paper finds that acquiring a financial distressed target results in lower CAR. However, the result is insignificant due to a difference between acquisitions of distressed and very distressed targets. Moreover, it is found that acquiring a distressed target during crisis results in greater CAR, possibly because of larger bargaining power for acquirer. (iv) Weak evidence is presented showing that CEO's higher order deals lead to significantly lower return due to overconfidence caused by the self-attribution bias. The overconfidence is dominated by the CEO's acquisition experience when acquiring during a crisis, thus, resulting in a positive relationship. (v) Domestic acquisitions generate significantly higher returns than cross-country acquisitions. (vi) Cultural distance has no relationship with CAR for the cross-country acquisitions. We find signs of polynomial relationships between cultural distance and CAR depending on the relatedness of the target, however, they cannot be confirmed statistically.

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CHAPTER 1

Introduction

There are two primary mechanisms by which control and ownership of a corporation can change. First, mergers are referring to a process where two or more entities join forces to form a single new entity. In contrast, an acquisition refers to the event where the bidder (hereafter acquirer) purchase the seller (hereafter target) (Berk and DeMarzo, 2016). The global market for mergers and acquisitions (hereafter M&A) constitutes a multi-trillion euro industry, which reached an annual value of EUR 3.1tn in 2018. 94.8% of the takeover activity and value was generated in USA, Europe, and the Asian-Pacific region (Mergermarket, 2019). Interestingly, the global M&A value was EUR 4.2tn, EUR 1.8tn, and EUR 4.1tn in 2007, 2009, and 2014, respectively, implying a convex relationship between total deal value and business cycles (IMAA, 2019a). This is coherent with the findings made by Gaughan (2009, page 45), namely that "*merger waves tend to occur in economic expansion*" since companies look to expand more rapidly than organic growth allows. Moreover, he argue that "*as credit markets undergo upheavals, the M&A business must adjust to the challenging market conditions*", which translates into less M&A activity.

It is evident that M&A is of great importance in a competitive environment, especially with regards to expansion of operations and maintaining a competitive advantage. While several incentives for M&A exist, the most common are related to synergies, management incentives, or changes in macro factors including regulatory and technological changes (Bruner and Perella, 2004).

Over the past decade several theories of acquisition finance have taken shape. It remains an interesting topic to investigate as new discoveries continuously emerge. There is a separation of the ownership and the controlling power of the company in the majority of modern company structures. In the absence of daily control, investors expect management to acknowledge its fiduciary duty, i.e. act in the best interest of the shareholders. Consequently, significant actions, including acquisitions, are expected to benefit the shareholders as such actions should only be undertaken if they create value for the owners.

The shareholders of the target are most likely unwilling to accept an offer below the fair market value and often require a premium to compensate for the expected future profits they forgo. Several studies have documented that target shareholders experience a substantial gain, usually between 20% and 30%, upon a successful takeover of their firm (Goergen and Renneboog, 2004; Mandelker, 1974; Mulherin and Boone, 2000). In fact, Berk and DeMarzo (2016) find evidence in US data that acquirers pay an average acquisition premium of 43%. The premium

indicates that most of the potential value arising from the synergies are being absorbed by target shareholders. This is also evident in the paper by Eckbo and Thorburn (2000) who find no statistically significant abnormal return for Canadian bidders. Based on US data from 1980-96 Walker (2000) documents insignificant abnormal return for acquirers' shareholders, while Cools et al. (2007) find a net loss of 1.2% on European data from 1992-2006. On the contrary, Goergen and Renneboog (2004) found a 0.7% statistically significant positive abnormal return for European bidders upon announcement.

Most of the previous academic literature seems to agree upon the existence of an acquisition premium received by the target shareholders, whereas conflicting evidence is found for the acquirers' shareholders. Thus, it remains relevant to investigate whether the potential synergies are evaluated by the market as being higher than the price paid.

1.1 Motivation and problem statement

The overall research question is the core of this study and forms the leitmotif by driving the literature review, selection of methodology, and gathering of data. Moreover, it serves as a guideline when discussing the results. This paper will focus on acquirers as more mixed conclusions are derived on these in past literature, cf. Section 2.2.1. The purpose is to provide further evidence to the existing academic literature by investigating if the acquirer's shareholders can expect an abnormal return upon an acquisition announcement, whilst taking into account whether it is undertaking during a financial crisis, the number of deals by the CEO, and the cultural distance between the companies. Hence, the following research question will act as the primary driver throughout this paper, followed by a number of hypotheses to be answered:

Does the acquisition announcement create positive abnormal return for the acquirer's shareholders and how do financial crises, the deal order of the CEO, and cultural distance affect this value?

The unique aspect of this study is that unlike factors such as means of payment, industry differences, public versus private target, etc., where extensive literature already exists, less focus has been directed towards the effect of business cycles, CEO acquisition history, and cultural distance on shareholder value creation.

1.1.1 Hypotheses

The following subsection will give a brief introduction to the hypotheses that are to be tested in this paper. Each hypothesis is further elaborated on in the literature review in Section 2.2. To achieve the most comprehensive analysis, the hypotheses have been defined based on the principals set forth by Bell et al. (2018) who state that they must be specific, measurable, and relevant.

As previously mentioned, management is expected to act in the best interest of shareholders and, therefore, only undertake acquisitions if they are value creating. Most of the literature suggests that target shareholders realise a statistically significant cumulative abnormal return (hereafter CAR) upon a takeover announcement. However, a large review of the empirical literature by Bruner and Perella (2004) reveal that no consensus has yet been reached in regards to what return acquirers' shareholders can expect. 42% of the studies find that the acquirer's shareholders realise a statistically significant positive CAR upon acquisition announcement, whereas 32% report a negative CAR, and the remaining studies find insignificant results. Therefore, this study defines the following hypothesis:

Hypothesis 1: There is no statistically significant effect upon the announcement of an acquisition on the cumulative abnormal return for the acquirer's shareholders.

Fama (1970) proposes the Efficient Market Hypothesis, which argues that security prices at any time fully reflect all available information, i.e. there should be no incentive to undertake an acquisition in one specific period relative to another. Contrasting, Beltratti and Paladino (2013) and Gaughan (2009) find that a financial crisis significantly impacts the M&A industry in terms of deal value, number of transactions, and value distribution. Despite financial turmoil it remains lucrative for some companies to engage in acquisitions because financially distressed companies holds an unfavourable bargaining position and, thus, can be purchased at a fire-sale discount (Acharya et al., 2010). Hence, it is interesting to investigate the following hypotheses:

Hypothesis 2: A financial crisis has no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders.

Hypothesis 2a: Acquiring a financially distressed firm has a statistically significant positive effect on the cumulative abnormal return for the acquirer's shareholders.

Richard Roll published a study in 1986 which has since received a lot of attention as he proposed the Hubris Hypothesis. He stipulates that the motives for corporate takeovers are embedded in overconfidence (Roll, 1986). Consequently, executives tend to either underestimate the risk or overestimate the potential synergies related to an acquisition, which at the end will be a cost for the shareholders. Furthermore, CEOs become more acquisitive as self-attribution bias starts to influence the behaviour (Malmendier and Tate, 2005). Jlassi et al. (2014) later find evidence that the degree of overconfidence is less persistent. They document that professional traders exhibited less overconfidence during the recent subprime crisis relative to ex ante. In attempt to analyse this more thoroughly, the following two hypotheses will be investigated:

Hypothesis 3: A CEO's higher order deals have a statistically significant negative effect on the cumulative abnormal return for the acquirer's shareholders.

Hypothesis 3a: The negative effect of a CEO's higher order deals on the cumulative abnormal return for the acquirer's shareholders is significantly lower during a financial crisis.

Following his pioneering study in cultural differences Hofstede (1980) defines a general cultural distance hypothesis stating that difficulties, costs, and risks related to contact across cultures increase with larger cultural differences (Stahl and Voigt, 2004). Based on the four cultural dimensions from Hofstede (1980), Kogut and Singh (1988) create a measure for cultural distance between two nations which has since been widely used in studies of cultural distance, although resulting in inconsistent conclusions on how it affects acquisitions. Contrary to Hofstede (1980) and the cultural distance hypothesis, Morosini et al. (1998) find that acquiring a firm in a more culturally distant country is a mechanism to access diverse routines and repertoires, thus, being positively related to acquisition performance. Given the vast majority of inconclusive results, the following hypotheses are defined:

Hypothesis 4:	Acquiring a foreign firm compared to a domestic firm has no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders.
Hypothesis 4a:	Cultural distance has no statistically significant relationship with the cumulative abnormal return for the acquirer's shareholders.

Academics will not be the only beneficiaries of this study. Shareholders will have an economic interest in achieving the best possible acquisition as it will affect the future value creation of the company. Executives might be able to draw some valuable observations regarding the underlying motives and in that way better align with the fiduciary duty. However, it is important to bear in mind the limitations of this paper and use the findings as part of a holistic evaluation.

1.2 Delimitations and definitions

1.2.1 Delimitations

Due to the nature of this thesis, it is found necessary to make certain delimitations to keep the thesis focused and relevant.

Most considerably, this thesis will focus on the short-term value creation around the announcement date. It is assumed that because of management's fiduciary duties to act in the best interest for shareholders, management pursue acquisitions to maximise shareholders value. Therefore, value creation will be seen from a shareholder perspective and measured in terms of cumulative abnormal return. The cumulative abnormal return is the return of the stock price above a benchmark, cf. Section 4.3. When using this method a key assumption is that markets are efficient to a satisfying degree, implying that limited manipulation of the share price or noise should exist, which is also explained in Section 4.1. As an alternative to the share price, accounting data could be applied. But, due to country and industry differences in accounting standards, it is considered more prone to manipulation, thus, resulting in bias. A natural consequence of using share price is that only listed acquirers are taken into account. As a result, external validity is lower and generalising the findings to other types of acquirers, such as unlisted companies, might be problematic and should be considered carefully.

Secondly, similar to Higson et al. (1998) and Walker (2000), this thesis will focus on acquisitions and leave out mergers, reverse mergers and strategic alliances. The purpose of focusing solely on acquisitions is to create a clearer separation between the parties involved in the transaction and, thereby, the effect on the stock price.

Moreover, the geographical focus will be limited to acquisitions made by European firms only. It is considered interesting to investigate the effect in Europe because Martynova and Renneboog (2011) describe the majority of previous research as being confined to US data, despite M&A activity in Europe reaching a level similar to USA whilst having a very different corporate governance regime. It is deemed appropriate to investigate Europe as a single region because the European countries are subject to, or at least affected by, the same central bank, therefore, enjoying similar monetary policy and likely affected by the financial crisis within the same time period. Due to difficulties it collecting sufficient data on acquisitions made by firms from Turkey and Russia, it has been decided to exclude these two countries from the study. Whether they should actually be considered as European countries in the first place could also be discussed as for example CIA (2019) categorise Russia as Central Asia and Turkey as Middle East. Additionally, neither Russia nor Turkey are particularly connected to the European Central Bank as is otherwise the case for the remaining countries. We hope to increase the reliability of the study by excluding the two countries.

This study also investigates the effect that financial crises have on the abnormal return. As will be elaborated on in Section 2.2.2, no two crises are identical. Thus, what might be the reason for finding some particular result in one crisis could potentially be different in another crisis. Accordingly, extrapolating the findings on financial crises to future crises should be with this limitation in mind.

As a consequence of the majority of the targets in this study being private, cf. Section 3.2, gathering financial information on these have been extremely difficult. In order to define which targets that are financially distressed, obviously financial information is necessary. By using several historical versions of Orbis, financial information on 766 (53%) targets was found. When the financial distress factor is being used in the discussions, it is assumed that these 766 targets reflect the full data set. However, this could potentially result in a bias, thus, hurting the generalisability in case of a difference between the targets that has financial information available and those that do not.

In practice acquisitions completed during the later months of the year are often based on current year's financials and not on last year's financial. Hence, potential biases might exist when applying Altman's Z"-score as the target could potentially have changed a lot since the last financial statement. However, it has not been possible to obtain the current year's financial reports as the target is absorbed by the acquirer. A similar limitation exists for the calculation of the relative size, where the relative size possibly, but unlikely, could have changed a lot.

We will, similar to Goergen and Renneboog (2004) and Fraunhoffer et al. (2018), restrict our sample to large acquisitions with a minimum deal value of EUR 100m. Consequently, this paper

will focus on the value creation that is generated following a substantial acquisition. Having said that, setting this threshold naturally limits the generalisability to large acquisitions.

A more detailed elaboration on the data selection process can be found in Section 3.1.

1.2.2 Definitions

This subsection is meant to give the reader an early overview of the key definitions in this study. The definitions are further elaborated in Section 3.2.

In this thesis an *acquisition* is defined as a transaction where the acquirer gains control over the target through majority ownership of >50%. It should also be noted that acquisitions, transactions, takeovers, and deals will be used interchangeably in the paper.

Another important definition in this paper is the definition of a financial crisis. The terms financial crisis, economic crisis, depression, recession and several others are often used interchangeably in both previous research, newspapers and in daily language, but their exact definition might vary theoretically. As this paper focuses on acquisitions, a *financial crisis* is defined as a crisis that has a substantial effect on companies and the M&A industry. This could be in terms of a crisis on the stock market, a large economic recession, or similar instances. Two time periods are defined as a financial crisis in this study. The first is the years following the burst of the Dot-com bubble. The second is 2008 Financial Crisis. Formally, the two financial crises periods are defined as 11/03/2000 - 11/10/2001 and 15/09/2008 - 15/09/2010, cf. the discussion in Section 3.2.

For determining whether a target company is *financially distressed* or not, Altman's Z-score will be used. Altman's Z-score is commonly used in credit analysis to predict a company's likelihood of bankruptcy (Petersen et al., 2017), and is often used in studies as a measure for financial distress (Ang and Mauck, 2011; Eisdorfer, 2008; Subramanyam and Wild, 1996). Altman (1968) originally created the Z-score for public manufacturing firms. Several adjustments have since been proposed, with the latest being a Z-score for private companies that is non industry specific (Altman et al., 2000). As this thesis includes a majority of private targets from a variety of industries, the adjusted Z-score, Z", is assumed to be the best of the two. In the adjusted formula Altman et al. (2000) defines companies with a Z"-score equal to or below 1.21 as being financially distressed. The same definition will be applied here.

To investigate CEO acquisitiveness each deal is assigned a *deal order* based on the number of acquisitions by the CEO in the preceding five years. This thesis will like Doukas and Petmezas (2007) and Billett and Qian (2008) use the CEOs' propensity to acquire to separate the data set into two groups. More formally, CEOs are defined as *infrequent acquirers* if they have undertaken only one acquisition and *frequent acquirers* if they have undertaken at least 2 acquisitions within any rolling five year period. For the frequent acquirers, those acquisitions that are order number two or higher within a rolling five year period are defined as *higher order deals*. We do not use the first years to create a historic on the deals, thus, there could in theory be some first order deals in the beginning of the data set that are in fact higher order deals. This could lead to a downwards bias of the higher order deals, but it is assumed that the bias is negligible.

Acquirer's country and target's country are both defined in terms of where their headquarter is located. A *cross-country* acquisition is defined as an acquisition of a target from another country than the acquirer's own country whereas a *domestic* acquisition is an acquisition within the same country.

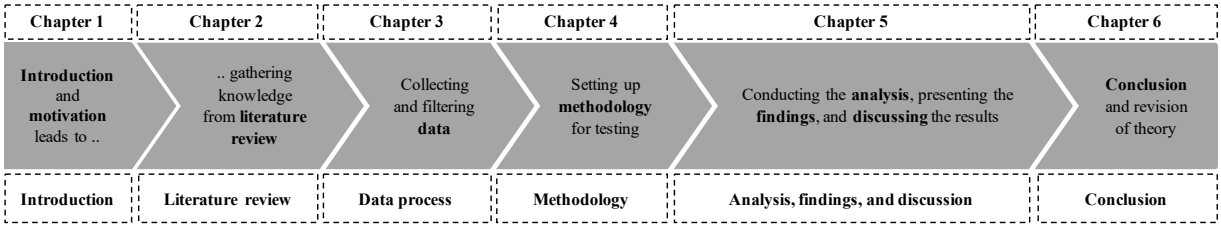
Cultural distance is defined as the distance in terms of Hofstede's (1980) four cultural dimensions between the acquirer's home country and the target's home country. This definition assumes that the culture of a company is defined by where it currently has its headquarter. Given the size of the acquisitions in this study, the majority of the acquirers are multinational enterprises. Hence, it could be discussed whether the location of the acquirer also reflects the culture of the company. On the contrary, it can be argued that national culture is deeply rooted in our values and, therefore, still important, irrespective of the size of the company (Weber et al., 1996). For that reason, this definition of *cultural distance* is deemed appropriate.

1.3 Thesis structure

This paper will follow the structure proposed by Hofstee (2006), which is also applied in the majority of the studies reviewed in Chapter 2. Consequently, six chapters will constitute this paper with each chapter adding on top of the prior. The structure is shown in Figure 1.1.

Chapter 1, now ending, contained a brief introduction to the purpose of the paper and a specification of the research area, including possible delimitations and definitions. Chapter 2 follows next and will go more in depth with general M&A theories and present relevant past literature. Based on the literature review the hypotheses will be formulated more formally. Chapter 3 walks through the process of collecting the data and presents it with some descriptive statistics. Next, Chapter 4 goes through the event study methodology and the statistical tests that are to be conducted when testing the hypotheses. The penultimate chapter, Chapter 5, will present the findings from applying the methodology on the data. These findings are then compared to the findings in the previous literature. Finally, the chapter discusses the findings that have been uncovered and tries to explain them using M&A theory. Moreover, it will include a critical assessment of the results. Ultimately, Chapter 6 will present the final conclusions and propose suggestions for further research.

Figure 1.1: Overview of thesis structure



Source: Own contribution

CHAPTER 2

Theory and literature

The following chapter contains a theoretical discussion of the different potential motives and incentives that can drive takeovers. Uncovering these motives will provide an idea of what shareholders can expect in terms of value creation. The second part of the chapter provides a comprehensive review of empirical evidence, which will later serve as a benchmark against later findings of this paper.

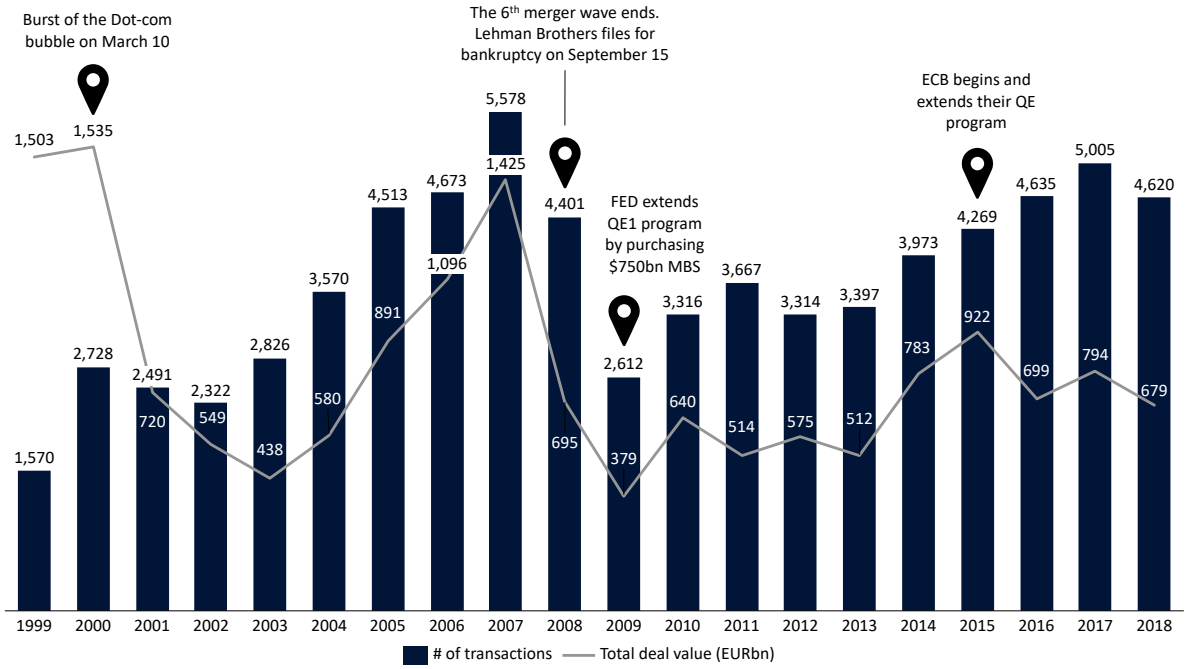
2.1 Theory overview

It is documented in a substantial number of scientific research papers that M&A activity historically has occurred in waves (Brealey et al., 2012; Bruner and Perella, 2004; Clayman et al., 2012; Moeller et al., 2005; Sudarsanam, 2003). Since the early 1900s there have been six distinctive M&A waves, each originating from different sources. The first wave, in the early 1900s, was driven by market consolidation. Not long after the first wave occurred the second wave, which was characterised by vertical integration. The third wave happened in the early 1970s and was based on conglomerate motives. The last three waves all took place during the period 1990-2008. First the "leveraged finance" wave, then the "internet bubble" wave, and finally the "industry consolidation" wave. The consolidation was facilitated by increased globalisation, more liberal regulations, and substantial unparalleled funds for both strategic buyers and financial sponsors (Bruner and Perella, 2004; Cools et al., 2007).

The described pattern can also be deduced from the European M&A market shown in Figure 2.1. It is evident that the European M&A activity is pro-cyclical with the total deal value ranging from EUR 1,535bn in 2000 to EUR 379bn in 2009. Moreover, the number of transactions and the total deal value increased by 97% and 225% from 2003 to 2007, respectively, before decreasing 53% and 73% in the two subsequent years. This confirms the findings made by Berk and DeMarzo (2016) and Gaughan (2009), namely that the M&A activity is greater during high stock market valuations and economic expansion. However, as credit markets tighten and the source of funding becomes scarce, activity declines. Interestingly, the total deal value never seem to fully recover following the burst of the Dot-com bubble whereas the number of transactions reached new heights as early as 2005. It could suggest that the valuations during the Dot-com Crisis were inflated, which is also implied by the change in average deal value from EUR 957m in 1999 to EUR 255m in 2007.

The trip down memory lane leaves one with the questions of what the underlying motives are and why the activity cluster in waves. Much research has been devoted to explain M&A

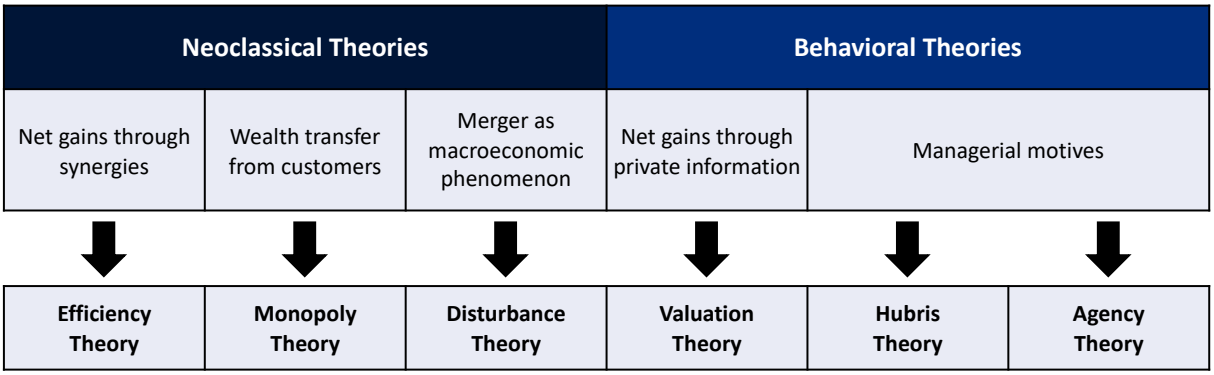
Figure 2.1: M&As overview in Europe from 1999-2018



Source: Own contribution and Mergermarket

motives and several theories have been hypothesised. Both academics and practitioners agree that acquisitions are driven by a complex pattern of motives and most likely rooted in several at once (Ravenscraft and Scherer, 1987; Steiner, 1975; Trautwein, 1990). Many of the theories that are presented in past literature are similar to each other, yet defined in different ways. It is outside the scope of this thesis to list all M&A motives, instead we have consolidated those theories that are considered most relevant in a framework, cf. Figure 2.2. The framework is inspired by the work of Trautwein (1990). The seven theories in the framework can roughly be categorised into two groups: neoclassical and behavioural theories.

Figure 2.2: Theory overview framework



Source: Own contribution and Trautwein (1990)

2.1.1 Neoclassical theory

The most common motive for undertaken acquisition is to achieve synergies either through cost reduction or revenue enhancement. The empirical findings made by Berkovitch and Narayanan

(1993) suggest that synergies are the primary motive in takeovers with positive gains, despite previous research indicating that most of the expected gains from synergies are being absorbed by the target's shareholders through acquisition premiums (Berk and DeMarzo, 2016; Cools et al., 2007). *The Efficiency Theory* builds upon this synergy argument by arguing that acquisitions are being planned and executed to achieve operational, managerial, or financial synergies.

Operational synergies are closely linked to a firm's competitive advantage (Bruner and Perella, 2004). Cost reduction is where most of the operational synergies can be achieved. It includes savings realised through economy of scale or economy of scope. Moreover, costs can be reduced by eliminating redundant and duplicated tasks if the two separate entities are merged together. Other operational synergies include access to markets, customers, new technologies, and expertise that would otherwise have been costlier to build up internally (Homberg et al., 2009).

Managerial synergies arise if the acquirer's management is more effective than the target's incumbent management. Trautwein (1990) describes that synergies can benefit through superior planning and monitoring abilities. Martin and McConnell (1991) find evidence, based on US data from 1958-1984, that the probability of the target's management being replaced following an acquisition is larger if the target has performed worse relative to industry peers prior to the acquisition.

Finally, Trautwein (1990) argues that financial synergies result in a lower cost of capital. First, a potential diversification effect exists when the management is able to minimise the systematic risk of the company by investing in less than perfectly correlated companies. Second, increasing the size of the company might give access to cheaper capital due to a lower probability of bankruptcy. However, the concept of financial synergies have also been highly criticised. Most shareholders already hold a well-diversified portfolio, and if not, they would be better off performing the diversification themselves. Berk and DeMarzo (2016) claim that since equity can be viewed as a call option, the lower standard deviation on asset return following from the diversification only benefits debt-holders.

The Monopoly Theory formulated by Gaughan (1999) is another neoclassical theory. The theory implies that acquisitions are undertaken with the purpose of achieving market power by reducing competition and, subsequently, increase profits. Despite often being seen as a motive for horizontal acquisitions, the monopoly theory also applies for conglomerate acquisitions. This type of acquisition enables the acquirer to cross-subsidise products, simultaneously limit competition in more than one market, and deter potential entrants from its markets (Trautwein, 1990).

The final neoclassical theory that will be discussed is *The Disturbance Theory*. Gort (1969) suggests that merger waves are triggered by a disturbance in economic conditions, thus, resulting in industry reorganisation through M&A. Similarly, Bruner and Perella (2004) and Harford (2005) argue that firms operating in a dynamic environment undertake acquisitions as a rational reaction changes in technological, economic, or regulatory conditions. The theory rests on the assumption that changes in the level of uncertainty affect individuals' expectations of valuation levels causing inclines and declines in the takeover activity. Critics argue that most disturbances

are of a sectoral nature, why we should only see a sectoral pattern of mergers and not actual merger waves. Additionally, critics point out that the oil crisis in 1973 did not trigger a merger wave like the one in the late 1960s (Trautwein, 1990). Harford (2005) explains that a shock in itself can not create a merger wave. Whether or not it leads to a merger wave depends on if there is sufficient capital liquidity to accommodate the asset reallocation. Without adequate capital liquidity the transaction costs will be too high, thus, offsetting the economic motivation from the industry shock. Another explanation is presented by Klasa and Stegemoller (2007) who find that takeover activity is a response to time-varying changes in investment opportunity sets. They argue that a takeover wave, or takeover sequence as they define it, occur in context of changes in the acquirer's growth opportunity set. The sequence begins with an expansion of the investment opportunity set and ends with a contraction of it. The expansion or contraction can happen at different times, however, it is logical that shocks in the environment can change these investment opportunities for many firms at once, thus, resulting in merger waves.

2.1.2 Behavioural theory

Two of the most well-known theories within behavioural finance is the Hubris Theory and the Agency Theory, which both are managerial motives for undertaking acquisitions (Ackert and Deaves, 2010).

The Hubris Theory stems from the managerial psychology and is often described as one of the main motives for conducting takeovers (Bruner and Perella, 2004). It was first discussed in relation to acquisitions when Roll (1986) suggests that acquisitions are driven by pride. He argue that a negative effect of acquisitions is well-known, hence, only a person irrationally believing that he is better than the rest would pursue acquisitions as a growth strategy. In line with that, Doukas and Petmezas (2007) and Malmendier and Tate (2008) claim that overconfident CEOs overestimate their ability to generate returns, thus, resulting in lower abnormal return. It is important to note that the hubris motive does not imply that managers act against their fiduciary duty. In fact, management undertaking an acquisition due to hubris believe that they are generating shareholder value and, therefore, act in alignment with shareholders best interests.

Ravenscraft and Scherer (1987) and Trautwein (1990) describe *The Valuation Theory* as being an approach where acquisitions are executed by managers who believe they have better information than the stock market regarding the target's value. This information could be better knowledge of the possible synergies or management believing that the target is undervalued. The Valuation Theory and the Hubris Theory share some of the same characteristics, namely that managers are overconfident. Shleifer and Vishny (2003) describe how the Valuation Theory might explain mergers waves. They argue that clustering in M&A activity happens because bull markets lead bidders with overvalued stocks to acquire undervalued targets in a stock swap deal.

Whereas managers suffering from hubris believe they act in the best interest of shareholders, the scenario is different in the *Agency Theory*. Most company structures have, as previously mentioned, a clear separation between the control and the ownership of the company. Agency

problems refer to the conflict that arises when there is an interest misalignment between the principal and the controlling power (Ackert and Deaves, 2010).

Agency problems are often associated with substantial additional costs incurred by the owners, which can be divided into two groups: direct costs and indirect costs. Some direct costs include expenses that only benefits management, e.g. overspending on offices and travel expenses. Other direct costs, such as management monitoring and external audits, are due to precautions taking by the owners to mitigate these costs. Indirect costs, on the other hand, are more difficult to quantify. These include costs such as forgone business opportunities and rejection of takeovers despite it being in the interest of the shareholders (Ackert and Deaves, 2010).

Agency costs could also occur in terms of empire-building. Ravenscraft and Scherer (1987) argue that as a result of the separation of ownership and control, management is keener to pursue transactions maximising their own utility above shareholders. Ackert and Deaves (2010), Jensen (1986), and Jensen and Meckling (1976) find evidence of empire-building behaviour by showing that the presence of excess cash induces over-investment, i.e. investments in negative NPV-projects instead of distributing cash to shareholders. In contrast, Martynova and Renneboog (2009) find no evidence supporting that financing decisions are driven by agency conflicts.

Hope and Thomas (2008) also propose that agency problems arise because of information asymmetry where the principal is unable to directly ensure that the agent is acting in its best interest. One way to establish a clear alignment between management and shareholders incentives is by motivating certain behaviour through compensation schemes, thus, resulting in fewer agency costs (Leblanc, 2016).

2.2 Review of relevant empirical evidence

The following section contains a review of the previous literature on acquisition performance. M&A is a broad field with an enormous amount of research already conducted, hence, a critical assessment of which literature to discuss is necessary. The studies that are presented here have been selected based their academic credentials and the maturity of the study. Common for all studies is that they are considered relevant in terms of content and methodology.

2.2.1 Wealth creation for shareholders of the acquiring firm

In Section 2.1 several motives were proposed for corporate takeovers. In the financial literature, value creation through acquisitions is a widely discussed area. In a review of 26 studies investigating target shareholder value creation, Bruner and Perella (2004) show that all studies find statistically significant positive CAR ranging from 8.6% to 45.6%. However, no consensus has been achieved regarding the acquirer's shareholders.

Based on a European data set consisting of 142 acquiring firms from 1993-2000, Goergen and Renneboog (2004) find a positive and statistically significant CAR of 0.7% and 1.18% with event windows [-1;0] and [-2;2], respectively. Further extending the event window results in insignificant results. Interestingly, in line with the Efficiency Theory, their findings suggest that

the main reason for acquisitions is synergy effects, although some evidence also point towards existence of managerial hubris. In a more recent study by Rose et al. (2017), based on data collected from 1995-2014 on publicly listed Nordic companies, a similar positive CAR of 0.98% is reported, although only significant at a 10% level. By extending the event window beyond [-1,1] the results become insignificant. Eckbo and Thorburn (2000) find similar results on North American data from 1964-1983. Based on an [-1;0] event window the study uncovers mixed results. A Canadian acquirer realises a statistically significant positive CAR of 0.81% given that the target company is also Canadian. In contrast, if the acquirer is from USA the effect is insignificant. Additional older studies also find evidence of a statistically significant positive CAR including Bradley et al. (1988), Jarrell and Poulsen (1989), Loderer and Martin (1990), and Maquieira et al. (1998).

On the contrary, Kaplan and Weisbach (1992) find, based on a sample of 271 US transactions between 1971-1982, that acquiring firms experience on average a statistically significant negative stock price reaction. More specifically, they find a CAR of -1.49% based on an event window of [-5,5]. Consistent with Kaplan & Weisbach's findings, Walker (2000) document, in a more recent study, a negative CAR of -0.84% for the acquiring firms, which is significant at a 10% level. Walker uses a sample of 278 US transactions during 1980-1996 and an event window of [-2,2]. A closer look into the sub-sample reveals that the results are mostly driven by negative CAR reactions for unrelated acquisitions, whereas acquisitions of related businesses realised a CAR around zero. Further evidence of negative CAR is presented by DeLong (2001) and Houston et al. (2001). Both studies are conducted on US data but apply event windows of [-10;0] and [-4,1], respectively.

Clearly, a common and consistent conclusion on whether acquirers' shareholders benefit from takeovers has not been reached. In a comprehensive review of literature from 1980-2003, Bruner and Perella (2004) find 22 studies reporting a statistically significant negative CAR, 17 studies reporting a statistically significant positive CAR, and 14 studies reporting insignificant results. Moreover, King et al. (2004) conclude in a meta-analysis that an acquiring firm's performance does not on average change as a function of its acquisition activity. More importantly, the study find results indicating that unidentified variables may explain significant variance in post-acquisitions CAR, indicating a need for additional theory development. Evidently from above, most of the studies are concentrated around US data and apply different event windows. Some of them even uncover inconsistent results across event windows. Thus, it remains relevant to investigate the effect on more recent European data. This paper, therefore, defines the following hypothesis:

Hypothesis 1: There is no statistically significant effect upon the announcement of an acquisition on the cumulative abnormal return for the acquirer's shareholders.

2.2.2 Financial crises

A vast amount of research has been conducted separately on financial crises and stock market reaction upon an acquisition announcement. However, an interesting, but overlooked, aspect of acquisition short-run stock performance is how time-dependent factors such as financial crises impact the shareholders' return. This area might have been disregarded as the efficient market hypothesis stipulates that there should be no time-dependent incentive to undertake an acquisition because the market incorporates with all available information (von Gersdorff, 2009; Fama, 1970). The following section will include an introduction to the recent economic crises and a discussion of the literature within the area.

Crises - a historical perspective

"*History repeats itself and History never repeats itself are about equally true.*"
- G.M. Trevelyan (Cushman and Mestrovic, 1996, page 66)

The Sociological Cycle Theory claims that events and stages of history and society are generally repeating themselves in cycles (Korotayev et al., 2006). One could argue that it is exactly what we see with the historical M&A activity, which tends to occur in waves as described in Section 2.1. Similar circular patterns are to be found within the general economic history, where several economic crises have occurred since the 1st century crisis called "the Financial panic of AD 33" and up until today with the recent 2008 Financial Crisis (Allen and Gale, 2009; Taylor, 2013). Furthermore, financial failure has been more extensive and pervasive in the last thirty years (Kindleberger and Aliber, 2011). Contrary to the Sociological Cycle Theory, Social Evolutionism proposes that society continuously progresses to a new stage, often due to changes in legislation, technical advances and society structures (Sanderson, 1990). Consequently, the Sociological Cycle Theory argues that crises will continue to occur whilst the Social Evolutionism states that each crisis is distinct in its own way.

Kliesen et al. (2003) argue that the early 2000s recession, also known as the Dot-com Crisis, was shorter and milder than the average recession. Clearly, as seen in Appendix A.1 the European GDP in 2000 was less impacted compared to 2008. However, what remains important is how the crisis affected the financial markets and businesses. Evidently from Figure 2.1, the annual combined deal value of the European takeover market was severely affected with a decline of 53% between 2000 to 2001 and has not recovered since. It is likely also correlated with the high valuations that were experienced during the Dot-com Crisis since the deal count was not impacted as much. Moreover, stock markets all over the world experienced significant drops. The German DAX-index declined to a lower level in 2002 than it did during 2008-09, cf. Appendix A.2. Furthermore, the prime interest rate for both USA and Europe seems to follow similar patterns in 2000 and 2008, which can be seen in A.4. It clearly suggests that the crisis was not only present in USA. Finally, the fact that the DAX-index declined severely but only had one company with IT as its primary industry, cf. Appendix A.3, suggests that the crisis was not isolated to IT sector.

The 2008 Financial Crisis was different from the Dot-com Crisis in many aspects. Ben Bernanke, the former Chair of the Federal Reserves, said: "*... I honestly believe that September and October of 2008 was the worst financial crisis in global history, including the Great Depression*" (Financial Crisis Inquiry Commission, 2009, page 24). The crisis was caused by heavy speculation in mortgage-backed and other debt-backed securities by financial institutions. As housing prices began to decline, banks began to suffer from liquidity problems, resulting in an increasing mistrust in the interbank market, which later led to bailouts and bankruptcies (Gaughan, 2009). It is evident from Figure 2.1 that the takeover market was heavily impacted by this crisis. Banks started to back out of deals they previously had agreed to finance and, as a result of the reduced access to capital, acquirers began to adjust to the thinner capital markets causing less M&A activity (ibid.). In contrast to the Dot-com Crisis, the 2008 Financial Crisis spread more widely and the European GDP was severely impacted in 2008. Also, stock markets plummeted and unemployment rates skyrocketed as shown in Appendix A.2 and Appendix A.5. Importantly, it should be noticed that large differences between European countries still exist in terms of unemployment rates, especially between Northern and Southern Europe.

Relevant literature on acquisitions during crises

Martynova et al. (2005) find evidence of a significant decline in acquisition activity during recessions and a large increase following economic expansion, proving that takeover activity is strongly influenced by the overall economic environment. Gaughan (2009) and Harford (2005) provide supporting evidence as they also find takeover waves to be very cyclical. They argue that this cyclical trend is because of changes in access to capital.

Beltratti and Paladino (2013) find no statistically significant abnormal return around acquisitions announcement during the 2008 Financial Crisis. The study is based on a sample of 139 acquisitions in the European banking sector during 2007-2010. However, a critique of this study is that it lacks the aspect of comparing across industries and relating it to ex-ante transactions since it might uncover interesting variations across economic states.

Despite a comprehensive search we have been unsuccessful at finding empirical literature investigating the effect of acquiring in and outside a financial crisis on acquirers' shareholder return across industries. Hence, this paper will contribute to the existing literature by investigating whether acquirers' CAR is different across economic expansion and recessions while accounting for other deal characteristics. Hence, the following hypothesis is defined:

Hypothesis 2: A financial crisis has no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders.

Gaughan (2009) further prove that, despite periods of turmoil, some firms were performing well and could, therefore, build up internal funding, which could be used to acquire targets at a lower cost. Adding to the latter Acharya et al. (2010) argue that despite financial downturn it can still be beneficial for the acquirer's shareholders to do acquisitions as the company can realise gains from purchasing assets at fire-sale prices. Furthermore, a reduction in the number of potential bidders and an increase in potential targets create a more favourable bargaining position for

acquirers (Diamond and Rajan, 2009; James and Wier, 1987). Assuming that the motive of the acquisitions is to exploit potential synergies, paying a smaller premium than would otherwise be the case should, logically, have a positive effect on cumulative abnormal return.

However, Ang and Mauck (2011) find evidence contradicting this "fire-sale" hypothesis. Based on 5,794 transactions between 1977 and 2008 they show that distressed firms in periods of crisis receive a 34% higher premium relative to non-distressed firms. Furthermore, they find that acquirers neither realise gains at the announcement nor over the long-term.

Given that the recent financial crisis is by many defined as a liquidity crisis (Allen and Gale, 2009), it is found particularly interesting to examine the fire-sale and bargaining power arguments presented above. Consequently, this paper defines the following hypothesis:

Hypothesis 2a: Acquiring a financially distressed firm has a statistically significant positive effect on the cumulative abnormal return for the acquirer's shareholders.

2.2.3 CEO acquisition history and overconfidence

As illuminated in Section 2.2.1 the empirical literature seems to agree that the target's shareholders earn significant positive abnormal return upon an acquisition announcement whereas the acquiring firms realise a negative, zero, or slightly positive abnormal return, implying that most of the expected synergies are transferred to the target shareholders through premiums (Andrade et al., 2001). Despite these findings, acquisitions remain popular among executives, which suggests that alternative motives for acquisitions exist.

According to Roll (1986) managers engage in acquisitions with an overly optimistic opinion of their ability to create value. Ben-David et al. (2007) find evidence in accordance with what Roll (1986) proposed. Based on a survey of 6,901 S&P500 forecasts made by US executives from 2001-2007, they find that companies with overconfident managers reported significantly lower IRR relative to their counter-parties. Hence, they use a lower discount rate to value cash flows and, thus, overestimate the value of potential targets. They measure overconfidence as the degree of miscalibration of beliefs defined by a too narrow probability distribution. Additionally, the survey uncover that overconfident managers are less likely to pay dividends and instead use the funds to make investments such as acquisitions. These findings confirm the behavioural theories explained in Section 2.1.2.

If no actions are taken, overconfidence by itself is not hurtful. However, a dominant feature emerging from overconfidence is a tendency for managers to overvalue projects and, thus, undertake more projects (Heaton, 2002; Shiller, 2000). This is consistent with Doukas and Petmezas (2007, page 534) who argue that "*high managerial acquisitiveness is a direct trait of overconfidence*".

Ackert and Deaves (2010) argue that it is not obvious that overconfidence, ceteris paribus, leads to more acquisitions. At first CEOs embodying the hubris motive will, as already mentioned, overestimate the synergies and their ability to exploit these, which leads to higher takeover activity. On the other hand, overconfident managers are also more likely to view their own company as being undervalued by the market and are, therefore, less likely to engage in an

acquisition if such a transaction is externally financed. Billett and Qian (2008) show in their study that the former force is more dominant. They investigate 3,537 public US acquisitions made during 1985-2002 and defined CEOs as frequent buyers if they had undertaken at least two acquisitions in a rolling five year period. Based on a [-1;1] event window they find a statistically significant negative relationship between higher order deals and CAR. Their results show that acquisitions conducted by infrequent CEOs have a CAR of zero, whereas acquisitions by frequent CEOs with a deal order of 2 or above have a negative CAR of -1.52%. Further, Billett and Qian find evidence supporting the self-attribution bias, which means that CEOs attribute successful outcomes to their own abilities and disregard negative outcomes, since they prove that CEOs are more likely to acquire again following a positive experience from the previous acquisition.

Doukas and Petmezas (2007) find similar effects in UK takeover data from 1980-2004. They are able to conclude that overconfident CEOs, here defined as those who have completed at least five deals within three years, realise lower announcement return and worse long-term performance relative to their counter-parties. Secondly, they claim to prove, similar to Billett and Qian (2008), that the overconfidence stems from the self-attribution bias based on their findings showing higher-order acquisitions being associated with lower return compared to the first deals.

Malmendier and Tate (2005) arrive at equivalent conclusions, but use a different measure for CEO overconfidence. Overconfident CEOs are defined as a "longholder", i.e. they do not exercise stock options in spite of the option being at least 40% in-the-money in the final year. The study is conducted on 477 large public-traded US companies from 1980-1994 and concludes, based on an event-window of [-1;1] and across cash and stock bids, that the market reacts negatively with an average CAR of -0.9% on acquisitions conducted by overconfident CEOs. This result is significant at a 1% level. In contrast, acquisitions made by their counter-parties have no statistically significant effect. An average CAR of -0.9% might not seem like a lot, but it translates into EUR 177bn lost immediately after the announcements. Additionally, they find that overconfident CEOs are reluctant to raise external finance because they believe that outside investors under-value their company. These findings are in accordance with the Pecking Order Theory (Myers and Majluf, 1984), which argues that there is a hierarchy in the sources of financing and that external funding is least preferred relative to internal, because investors believe managers will only finance externally if they find it to be economically preferable. Because of information asymmetry investors will discount the value based on the signals received, therefore, making external financing less preferable for overconfident executives. Finally, they also prove that the odds for making an acquisition is 65% higher for overconfident CEOs.

It is evident from above that the literature finds overconfident CEOs as being more likely to make more acquisitions despite the evidence of value destruction. Additionally, the majority of the previous research confirm that the market has a sense of this value destruction, which translates into negative CAR for higher order acquisitions undertaken by an overconfident CEO. Most of the previous research is conducted on US data before the 20th century, why it is considered relevant to uncover if a similar relationship exist in recent European data. Consequently, the following hypothesis will be investigated:

Hypothesis 3: A CEO's higher order deals have a statistically significant negative effect on the cumulative abnormal return for the acquirer's shareholders.

The above review shows that researchers use different approaches. Some define CEOs as overconfident before initiating the analysis while others find overconfidence as an explanation for high acquisitiveness. Nevertheless, they all seem to arrive at the same conclusion, namely that overconfident CEOs are more active when it comes to acquisitions (Billett and Qian, 2008; Doukas and Petmezas, 2007; Malmendier and Tate, 2005).

Until recently it was assumed that personality traits do not change in adulthood, however, a psychological paper by Roberts and Mroczek (2008) provides evidence suggesting that personality traits continue to change in adulthood, especially following dramatic events. Hence, it is found interesting to investigate if CEOs exhibit the same ability to change and, more specifically, if they on average are less overconfident during financial crises. We have been unsuccessful in finding studies investigating the potential changes in CEO overconfidence as a function of financial crises. Instead, Jlassi et al. (2014) provide evidence suggesting that overconfidence among professional traders was one of the main causes that triggered and prolonged the financial crisis in 2008. They find, based on a sample of 3,344 observations from 27 countries during 2000-2012, evidence that overconfidence among professional traders still exists during recession periods, although at different levels relative to ex-ante and ex-post, thus, suggesting a change in behaviour. Due to the lack of empirical literature, it is found interesting to investigate the relationship between CEO overconfidence and financial turmoil. This paper therefore defines the following hypothesis:

Hypothesis 3a: The negative effect of a CEO's higher order deals on the cumulative abnormal return for the acquirer's shareholders is significantly lower during a financial crisis.

2.2.4 Cross-country acquisitions and cultural distance

A total of 19,232 mergers & acquisitions were completed worldwide during 2018 for a total deal value of EUR 3.1tn. Hereof, 6,405 (33%) deals worth USD 1.2tn (38%) were cross-country deals (Mergermarket, 2019). Despite the cross-country deal count falling 6.6% from 2017 to 2018, the total cross-country deal value increased by 6.4%. These numbers indicate that foreign takeovers are a commonly used method to expand ones business. Numerous motives for cross-country acquisitions exists. Exploiting market imperfections, extending the reach of intangible assets, and exploiting differences in capital markets are, among other, some of the main motives that are commonly used (Bruner and Perella, 2004).

Given the increasing number of cross-country acquisitions in the past decades (Bruner and Perella, 2004), the interest in studying the effect of cross-country deals has grown. A common practice in the following reviewed studies is to either separate the deals into domestic and cross-country, studying each group individually, or solely study cross-country deals. Just a few studies are using cross-country as a factor in a cross-sectional regression. One of the few that does is Moeller and Schlingemann (2005) who study 4,430 US firms with an event window of [-1;1] and

find that the cross-country factor has a significant negative effect of 1.1 percentage points on CAR.

Similarly, Conn et al. (2005) find that domestic acquisitions on average have a CAR of 0.66%, while cross-country acquisitions have a CAR of 0.33%, when using an event window of [-1;1], implying that cross-country deals have a lower CAR than acquisitions made domestically. The effect do though vary depending on whether the target is private or public.

On the contrary, Goergen and Renneboog (2004) show a positive relationship between cross-country deals and the return to acquirer's shareholders with an average CAR of 2.38% for cross-country acquisitions and -0.45% for domestic acquisitions. The contradicting results are supported by a review of 12 studies conducted by Bruner and Perella (2004). They find that one reports significantly negative returns, two report significantly positive returns, and the remaining report insignificant returns for cross-country deals. Given the inconclusive results of previous research this thesis contributes to the literature by investigating the effect of cross-country deals more thoroughly by also taking into account other deal characteristics Thus, the following hypothesis will be analysed:

Hypothesis 4: Acquiring a foreign firm compared to a domestic firm has no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders.

However, while the overall effect of cross-country deals are studied frequently, uncovering which underlying factors might affect these acquisitions still requires more work (Stahl and Voigt, 2004). A phenomenon that has gained much popularity in recent studies of cross-country deals is cultural differences. Hofstede (1980) was one of the pioneers within the field of cultural differences when he through a global survey of IBM employees developed a model with four cultural dimensions. Based on his findings, the cultural distance hypothesis was developed, which suggests that difficulties, costs, and risks related to contact across cultures increase with larger cultural differences (Hofstede, 1980; Stahl and Voigt, 2004). The four cultural dimensions lay the groundwork for studying cultural differences in many contexts, but it was not until Kogut and Singh (1988) defined a measure for cultural distance that the research really kicked off. They find that cultural distance has a significant effect on the choice of entry mode. The Kogut & Singh cultural distance measure has since been applied repeatedly (Morosini et al., 1998; Slangen, 2006; Stahl and Voigt, 2008).

When discussing cultural differences it is important to differentiate between national cultural differences and organisational cultural differences. Hofstede et al. (1990, page 313) write that they *"believe that national cultures and organisational cultures are phenomena of different orders: using the term 'cultures' for both is, in fact, somewhat misleading"*, suggesting that one should not see the two phenomena as one. As national culture is the values that you acquire when you grow up, it has been argued that it represents a deeper layer of consciousness and, therefore, is more resistant to change compared to organisational culture, which is the practices you acquire through socialisation at the workplace (Hofstede et al., 1990; Weber et al., 1996; Stahl and Voigt, 2008). This is also supported by Barkema et al. (1996) who find that cross-

country takeovers are harder to implement due to "double-layered" acculturation, meaning that a cross-country deal needs to bridge cultural differences at both organisational and national level. The cultural difference being focused on in this paper is the national cultural difference.

Previous studies that investigate the effect of cultural differences vary considerably in their methodology. A great deal of the studies look at the post-acquisition performance measured through questionnaires sent to senior executives (Ahammad et al., 2016; Morosini et al., 1998; Reus and Lamont, 2009; Slangen, 2006). The performance measure between the studies vary between two years sales growth (Morosini et al., 1998), performance according to nine items (Ahammad et al., 2016), and performance as evaluated by the respondents (Reus and Lamont, 2009).

Only a few papers that study the effect of national cultural distance on short-term shareholder value creation exist. The only studies that could be found are Datta and Puia (1995), Dikova and Sahib (2013), Markides and Ittner (1994), and Olie and Verwaal (2004) as cited in Stahl and Voigt (2004). The findings in the four papers are very inconsistent. While Datta and Puia (1995) find results that are in line with the cultural distance hypothesis, namely that cultural distance is negatively associated with value creation, Olie and Verwaal (2004) and Dikova and Sahib (2013) both find that cultural distance is positively related to value creation. In between is the insignificant result which Markides and Ittner (1994) reports.

Similar to the previous studies on short-term shareholder value creation, the studies on post-acquisition performance are also inconsistent in their findings. Slangen (2006) shows that national cultural distance alone does not affect the acquisition performance, but that it instead depends on the level of post-acquisition integration. If the target is tightly integrated, then the cultural distance reduce the performance, whereas if integration is limited it enhances the performance. Stahl and Voigt (2008) argue that the effect of cultural distance on performance instead depends on the relatedness of the two companies. Finally, Ahammad et al. (2016) show a positive but insignificant relationship, while Morosini et al. (1998) find a positive significant relationship between national cultural distance and acquisition performance. The positive effect is explained by cross-country acquisitions in more culturally distant countries providing a mechanism to access diverse routines and repertoires.

Where Datta and Puia (1995) and Markides and Ittner (1994) only investigate 112 and 276 cross-country acquisitions, respectively, and Dikova and Sahib (2013) use an event window of [-3 months;1 month], this paper seeks to fill the gap in papers investigating the effect on national cultural distance on short-term value creation for the acquirer's shareholders on a larger dataset, while at the same time building a bridge between domestic acquisitions, cross-country acquisitions, and cultural distance. Therefore, the following hypothesis is defined:

Hypothesis 4a: Cultural distance has no statistically significant relationship with the cumulative abnormal return for the acquirer's shareholders.

2.2.5 Other conclusions from previous literature

A handful of factors have been extensively studied in past literature, why it has been deemed important to briefly introduce them. As these factors are not the main focus of this paper, a comprehensive review will not be conducted. Instead a few selected papers will be presented in this sub-section.

Private versus public target

The previous empirical literature find that the acquiring shareholders' return on acquisitions of private targets exceeds the return of public targets (Bradley and Sundaram, 2006; Capron and Shen, 2007; Fuller et al., 2002). The studies that have been reviewed show a very uniform conclusion.

At first it is not obvious that there should be any difference in terms of value creation when acquiring a private relative to a public target. In fact, acquiring a private target is often associated with more risk as less information exists (Capron and Shen, 2007; Damodaran, 1999). However, Capron and Shen (2007) argue that there are three reasons why acquirers can appropriate a greater proportion of the potential benefits: lower bidder competition, private firm discount, and lower publicity in the acquisition process. First, whereas a public target is often sold in an auction-like contest, which attracts a lot of competition, a private target is typically sold through less public negotiation. Second, given the before-mentioned information asymmetry, acquirers often discount their offer to reflect the higher risk. Moreover, acquirers might discount the value of the target's shares to reflect its illiquidity, which is also argued by Fuller et al. (2002). Third, due to the lower publicity on private targets, private information is less likely to be dissipated to other buyers, thus, not affecting the offer price.

Method of payment

In a perfect market investors should be indifferent between methods of payment. However, Wansley et al. (1983) argue that because of tax effects premiums should be greater for cash takeovers. Furthermore, the method of payment might also act as an information signal, as described in Section 2.2.3. As a result, bidders offering stocks over cash signal to the seller that the bidder's stock is overvalued and, subsequently, the seller will demand a higher premium. At the same time, the opposite can be argued for cash offers. If the acquirer purchase using cash, investors may think that the acquirer's equity is undervalued (Myers and Majluf, 1984). The empirical literature finds that acquirers who use cash as the method of payment realise higher CAR, thus, supporting the information asymmetry hypothesis (Franks et al., 1988; Loughran and Vijh, 1997; Rau and Vermaelen, 1998; Sudarsanam and Mahate, 2003; Wansley et al., 1983).

Related versus unrelated

The majority of academics investigating related versus unrelated acquisitions report uniform conclusions, namely that related takeovers lead to a greater cumulative abnormal return relative to unrelated takeovers (Berger and Ofek, 1995; Doukas et al., 2002; Goergen and Renneboog,

2004; Martynova and Renneboog, 2006; Morck et al., 1990; Sicherman and Pettway, 1987). Additionally, when examining the long-term effect Healy et al. (1992) find greater cash flow improvements for related acquisitions.

In general, financial theory does not support business diversification as a method to enhance firm value (Myers, 1967). It is well-known that there exists a conglomerate discount when integrating an acquired distinct firm (Berger and Ofek, 1995; Burch and Nanda, 2003), and it has also been shown that corporate combinations are more likely to succeed if it is related as they can be managed more efficiently (Sicherman and Pettway, 1987). However, Bruner and Perella (2004) argue that diversifications might create value through knowledge transfer, reduced costs, larger critical mass for facing competition, and internal capital markets. Accordingly, Elgers and Clark (1980) find that the return for unrelated acquisitions is larger than related acquisitions.

Relative size

Several scholars document the existence of a size effect in acquisitions' announcement return (Asquith et al., 1983; Kitching et al., 1967; Moeller et al., 2004). The conclusion seems to be that cumulative abnormal return is positively related to the relative size of the acquisition, i.e., all else equal, the abnormal return increase as the target becomes relatively larger. Having said that, a negative relationship between relative size and acquisition performance has also been documented (Travlos, 1987). Moeller et al. (2004, page 216) argue that: *"if a dollar spent on acquisitions has the same positive return irrespective of the size of the acquisition the abnormal return should increase in the size of the target relative to the size of the acquirer"*. Be that as it may, logically a larger firm is expected to possess greater bargaining power relative to a smaller firm, which expectedly should translate into relative size having an inverse relationship with CAR. The contrasting results suggest that several other aspects than relative size affect the CAR.

Industry

Naturally, different industries are exposed to very different competitive environments and the companies within a specific industry might share some distinct characteristics relative to other industries. As a result, some industries experience higher consolidation. Institute for Mergers, Acquisitions and Alliances (2019b) provide data showing that the Technology and Industrials industries together account for 26% of the total number of acquisitions since 1985, whereas the Retail and Real Estate industries only constitutes 10%. Kiymaz and Baker (2008) present evidence proving that acquirers realise a negative CAR upon takeover announcement and that it varies significantly across industries, something they were unable to explain the rationale for.

CEO gender

Levi et al. (2008) show, in a comprehensive literature review, the significant role that management gender plays in the context of investment, financial performance, and other metrics. Subsequently, they show that the bid premium over the pre-announcement target share price

is economically and statistically lower for a bidder with a female CEO. They find no evidence suggesting a stronger bargaining ability for women, instead they point out behavioural differences as a possible explanation, where especially male overconfidence serves as a central argument. Lundeberg et al. (1994) and Prince (1993) document that men are more prone to exhibit overconfidence, i.e. to be subject to hubris, which is also likely to impact their acquisition behaviour.

CHAPTER 3

Sample data

This chapter includes a discussion of the data selection process undertaken to arrive at the final sample. There will further be provided descriptive statistics highlighting the characteristics of the sample. It should be noted that data and methodology are essentially parts complementing each other, as methodology will, logically, be applied on the sample to arrive at the later results.

3.1 Data selection process

Following the formalisation of the research area and the subsequent hypotheses one can now collect the data necessary for the analysis. Before reaching the final sample, one must perform a thorough selection process. In this paper the process is divided into two: the collection of data from external sources and the cleaning of the data.

3.1.1 First selection process - Zephyr data

Zephyr is the main database, supported by Mergermarket, from which the acquisition data is extracted. Orbis and CapitalIQ are used to supplement the gaps in Zephyr with regards to financial information. Datastream is then used to obtain stock prices and Bloomberg is used for verifying the announcement- and rumour dates. The databases are selected based on their reliability and are all extensively applied by practitioners and scholars (Martynova and Renneboog, 2009; Rose et al., 2017).

The hypotheses formulated in Section 2.2 have set some natural selection criteria for the data. Consequently, the following requirements are applied upon extracting the data:

i. The deal is announced within the time period 01.01.1999 to 31.12.2018
ii. The deal is completed
iii. The deal is classified as an acquisition
iv. Acquirer gains control over the target (initial stake is max. 49.9% and final stake is min. 50.1%)
v. Acquirer must be listed on one of the European stock exchanges
vi. The deal must have a minimum value of EUR 100m
vii. Acquirer is not a bank or an insurance company

First, Zephyr started covering European deals from 1998, hence, starting the data selection around that time period is considered appropriate. Starting the data selection in 1999 gives a

20 year period and covers two crises, as previously mentioned, which is essential for the later investigation of financial crises.

Second, it is a requirement that the deal is completed for one to detect how the stock market reacts upon the announcement and, thereby, measure the short-term value creation.

The third criteria naturally follows from this paper's overall research question, which is to investigate acquisitions. Moreover, the acquisition must result in the acquirer achieving majority ownership. Different rules apply for control changes in terms of voting power and share majority, but using >50% ownership is considered a fair proxy for control. More formally, the acquirer must hold an initial stake of less than 50% before the transaction and above 50% after.

Naturally, from the geographical scope of this paper, the acquirer must be listed on a European stock exchange as stock prices are used to measure the CAR, cf. Section 4.3.

This paper follows a similar approach as Goergen and Renneboog (2004) and Fraunhoffer et al. (2018) by setting a minimum deal value requirement of EUR 100m as the sixth requirement. The minimum deal value will ensure that the transactions are of such size that it is possible to detect its effect on the share price. Since listed companies often are of a certain size, acquiring a small target is unlikely to affect the share price. A further advantage of having a minimum deal value is that it initially sorts out some stocks that suffer from thin trading.

Finally, similar to Doukas and Petmezas (2007) and Klasa and Stegemoller (2007), all banks and insurance companies are excluded. These industries, especially banks, are materially different from other industries in terms of regulatory frameworks such as the bank capital adequacy requirements in Basel III (Basel Committee, 2010).

Following the above criteria, the gross sample extracted constitutes 2,871 deals.

3.1.2 Second selection process - own choices

It is necessary to clean the data after the initial extraction. Four additional selection criteria are applied in the second round:

viii. Reverse mergers are excluded
ix. No overlapping events in the estimation period and event window
x. Data must be available at least 210 trading days before the event and 10 days after
xi. Thinly traded stocks are excluded

The result of the process is seen in Table 3.1.

First, observations that do not comply with the initial seven criteria are removed. This includes 41 banks, 1 observation prior to the selected timeframe, 112 acquirers from outside Europe, 49 uncompleted deals, and 33 deals not being acquisitions. These 33 acquisitions, after manually checking, turned out to be mergers or de-mergers. In total 236 deals are removed as they do not fulfil the initial seven criteria. The data inspection also identified 15 acquisitions that are in fact reverse mergers and, thus, removed.
Furthermore, 302 acquisitions are excluded due to overlapping events. Overlapping events are incidents where multiple events occur during the estimation period or the event window, and could

Table 3.1: Second selection process

	Removed	Left in sample
Not fulfilling criteria from first round	236	2,635
Reverse mergers	15	2,620
Overlapping event	302	2,318
Acquirer missing data	774	1,544
Thin trading	91	1,453

Source: Own contribution

potentially bias the results. Most of the excluded observations are due to additional acquisitions announced during the estimation window, while others are due to multiple announcements on the same day.

Evidently, a lot of the observations are excluded due to missing data. We have tried to extract the missing information from elsewhere. However, 650 observations have no BvdID, 15 acquirers have no ISIN code, and 109 acquirers do not have sufficient stock data in the estimation period.

Thomson Reuter's database Datastream is, as previously mentioned, used to extract the acquiring firms' and benchmark indices' historical share prices and volumes for thin-trading. Thin trading occurs if the stock is traded infrequently. As a result, one observe an artificially low risk in these illiquid stocks as their covariance with the market return is very low. This leads to their beta approaching zero when, in fact, the stock might be riskier. Further, the low beta will cause the expected return to be lower, thus, triggering an upward bias in the abnormal return calculation. Dimson and Marsh (1983) find evidence that when shares are subject to thin trading, serious overestimation of the stability of risk measures occurs, resulting in biases. Campbell and Wesley (1993) further show, based on daily returns, that parametric standardised abnormal return tests become misspecified when including thinly traded stocks.

In order to ensure the reliability of the later findings it is necessary to make some adjustments for thin trading. The academic literature reports different methods, however, no consensus for the most optimal adjustment is reached. Scholes and Williams (1977) and later Dimson (1979) provide a model where unbiased betas eliminate the bias introduced by thin trading. Having said that, this paper will not pursue the unbiased-beta-strategy as Cowan and Sergeant (1996) find that no significant benefits are obtained and instead argue that it could, on the contrary, worsen the predictions.

The logical approach for this paper has been to exclude thinly traded stocks. Bartholdy et al. (2007) argue that a stock is considered thick traded if it is traded more than 80% of the days in the estimation period, why stocks traded less than this is defined as thinly traded. Accordingly, 91 acquisitions are considered thinly traded. It is not surprising that only a few observations are excluded since most often thin traded stocks are small and, therefore, most of the problem should have been dealt with when applying a minimum deal size. If the cut-off point is lowered to 50%, 46 acquisitions would have been excluded instead. Given that the change in cut-off point only leads to a small amount of additional firms being excluded it has been found most appropriate to set the cut-off at 80% to ensure higher reliability.

Comparing the excluded acquisitions to the remaining sample show a large difference in deal value. The thinly traded stocks have an average value of EUR 672m whereas the remaining has an average deal value of EUR 1.2bn.

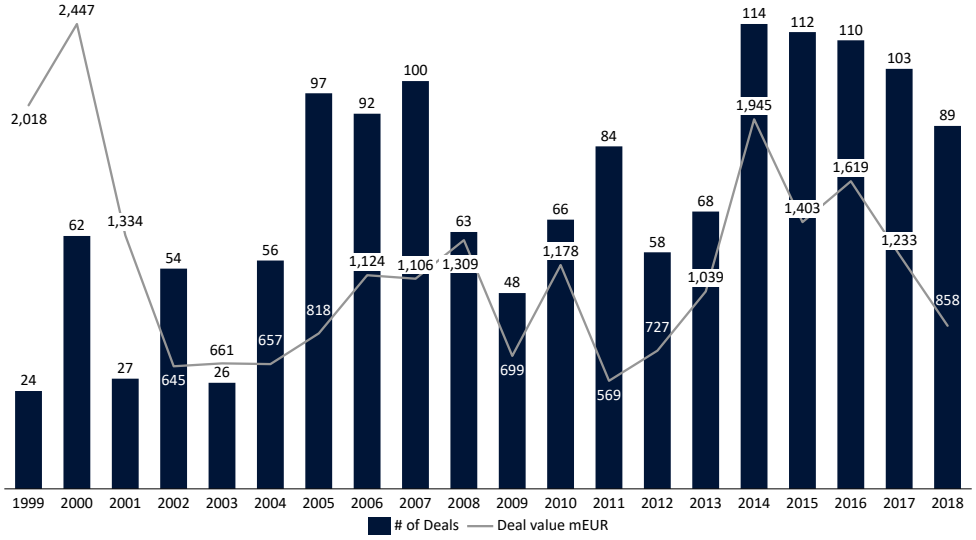
It should be noted that the data collection process has been comprehensive. For instance, databases with information regarding the CEO of a company in a given period is very limited, why the majority of these have been found through time-consuming searches in annual reports, articles and Google searches. Moreover, several financial databases have been utilised to collect financial data for both acquirers and targets, and the data has been cross-checked to ensure the validity of it.
A list of the 1,453 acquisitions in the final sample is included in Appendix E.

3.2 Descriptive statistics

Having defined the final simple, it is interesting to dive into the data and see how the acquisitions differ from one another in order to find interesting patterns. First of all, Figure 3.1 shows how the acquisitions are distributed over the 20 year sample period, while it also presents the average deal value. The sample data shows patterns similar to that described in Section 2.1, namely that the value per transaction was very high during 1999-2000 before declining sharply, and that a lot of deals were undertaken just before the 2008 Financial Crisis and in the latest years. Naturally, this leads to a discussion of which periods should be considered as a financial crisis. Distinguishing between what is a financial crisis and what is not allows us to discuss potential differences in the sample.

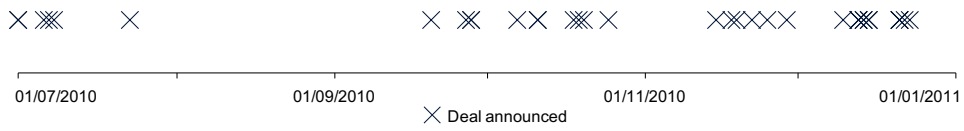
The National Bureau of Economic Research (2019) claims that two major crises are worth considering during 1999-2018. The same conclusion can be drawn from Figure 2.1 and Figure 3.1 as large decreases in both deal value and deal count are observed during both 2000-2003 and 2008-2010. During the same periods large cuts were made in the prime rates both in Europe and USA, as can be seen in Appendix A.4. Defining specific cut-off points for a crisis can be tricky, however, Rangvid et al. (2013) attempt to provide a more specific time frame for the 2008 Financial Crisis. In their report they argue that the crisis on the financial market escalated during September 2008 and was followed by almost two years of continuous decline in GDP, thus, narrowing the time frame for the crisis to be from fall 2008 to fall 2010. Based on that, this paper will use Lehman Brothers' bankruptcy date, September 15, 2008, as the starting date of the crisis. The end date is based on the arguments presented by Rangvid et al. (2013), who define the ending as September 15, 2010. According to Figure 3.2 there appears to be a gap in transactions between July 23, 2010 and September 20, 2010, making it an appropriate cut-off point for the end of the crisis.
Narrowing the start and end point for the Dot-com Crisis, a number of sources claim that the crisis began when the stock market crashed on March 11, 2000 (Gama et al., 2017; Ljungqvist and Wilhelm Jr, 2003). The National Bureau of Economic Research (2019) argues that it ended in November 2001. Consequently, this paper will define the Dot-com Crisis as occurring between March 11, 2000 to November 11, 2001. Acquisitions undertaken within these two periods will be

Figure 3.1: Historical development of sample data



Source: Own contribution based on data from Zephyr

Figure 3.2: Timeline of acquisitions in fall 2010



Source: Own contribution based on data from Zephyr

defined as undertaken during crisis. We are aware that the crises might differ in certain aspects, however, they will be treated as one factor in order to investigate the effect of financial crises generally. Even so, potential differences will be examined in the analysis.

Next, several deal characteristics are presented in Table 3.2. First, the targets are categorised as being either financially distressed or not based on Altman's adjusted Z-score, Z". The Z"-score has been adjusted from originally being made for public firms within the manufacturing industry to now also include non-manufacturers and private firms. The formula for calculating the Z"-score is (Altman et al., 2000):

$$Z'' = 6.56 \cdot \left(\frac{Working\,Capital}{Total\,Assets}\right) + 3.26 \cdot \left(\frac{Retained\,Earnings}{Total\,Assets}\right) + 6.72 \cdot \left(\frac{EBIT}{Total\,Assets}\right) + 1.05 \cdot \left(\frac{Book\,Value\,of\,Equity}{Total\,Liabilities}\right) \tag{3.1}$$

Altman et al. (2000) suggest that firms with a Z"-score of 1.21 or below are more likely to go bankrupt and are, therefore, defined as being financially distressed. The financial data has been collected by using the current version of Orbis as well as several historical offline versions. Due to limitations in the data available for unlisted targets it has been necessary to use Other Shareholders Funds as a proxy for Retained Earnings.

It can also be seen in Table 3.2 that there are more financially healthy targets acquired across business cycles relative to distressed targets. However, there are substantially more healthy

Table 3.2: Deal characteristics

	Crisis		Not Crisis		Total	
	N	%	N	%	**N**	**%**
Data missing	102	58%	585	46%	**687**	**47%**
Distressed	23	13%	131	10%	**154**	**11%**
Healthy	52	29%	560	44%	**612**	**42%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Frequent	100	56%	714	56%	**814**	**56%**
Infrequent	77	44%	562	44%	**639**	**44%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Deal order = 1	130	73%	867	68%	**997**	**69%**
Deal order ≥ 2	47	27%	409	32%	**456**	**31%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Cross-country	107	60%	837	66%	**944**	**65%**
Domestic	70	40%	439	34%	**509**	**35%**
Total	177	100%	1,276	100%	**1,453**	**100%**

Source: Own contribution

targets acquired outside a crisis than during a crisis. It could potentially be a sign of the fire-sales hypothesis described earlier, which argues that acquirers are more likely to look for assets being sold at a discount. It is important to notice that a substantial amount of data is missing. This follows as a natural consequence of most targets being private and fewer financial details being available. In terms of generalisation it is important to verify if the missing data is different in any way. Evidently from Table 3.3, the acquisitions with and without missing data are relatively homogenous. Most noteworthy is the difference in cross-country and domestic acquisitions. It appears that a large fraction of the data that is missing consists of cross-country acquisitions. This could be due to these targets being located outside Europe and in countries where the databases used lack coverage, which could explain why such a large fraction of the missing data is cross-country. Moreover, the average deal value of the acquisitions with missing data is EUR 301m smaller.

The next two characteristics are based on the CEOs' acquisition history. The acquisitions are categorised as undertaken by a CEO who is either a frequent or infrequent acquirer. All deals are assigned a deal order based on the number of acquisitions undertaken by the CEO in a five year rolling period. Frequent acquirers are those that have at least one deal with an order of two or above. If they do not have any deals of a higher order, i.e. only have deal orders of one, the CEOs are defined as infrequent acquirers. It is evident from Table 3.2 that 56% of the deals are made by CEOs that acquire frequently, and that the pattern is similar both outside and during a crisis. Of those 814 acquisitions made by frequent acquirers, 456 have a deal order of two or above. The remaining 358 acquisitions are first order deals which together with the 639 acquisitions made by infrequent acquirers make up the 997 first order deals.

Finally, there are almost twice as many cross-country acquisitions than domestic acquisitions within the data set. Interestingly, there are percentage-wise more domestic takeovers during a crisis relative to outside a crisis and, logically, the reverse is the case for cross-country acquis-

Table 3.3: Missing data on targets overview

	Data Missing		Not Missing	
	N	%	N	%
Crisis	102	15%	75	10%
Not Crisis	585	85%	691	90%
Total	687	100%	766	100%
Frequent	388	56%	426	56%
Infrequent	299	44%	340	44%
Total	687	100%	766	100%
Deal order = 1	473	69%	524	68%
Deal order ≥ 2	214	31%	242	32%
Total	687	100%	766	100%
Cross-country	519	76%	425	55%
Domestic	168	24%	341	45%
Total	687	100%	766	100%

Source: Own contribution

itions. It could indicate less desire for risk-taking during crisis as cross-country transactions might be associated with higher uncertainty, as also pointed out by Hofstede (1980). However, in practice, other factors such as diversification and international expansion might also influence the acquisition decision.

Table 3.4 allows us to go more into depth with the 944 cross-country deals by assessing the cultural distance between the acquirer and the target's countries. The cultural distance is calculated based on the formula proposed by Kogut and Singh (1988), which, despite having been criticised lately (Harzing, 2003; Shenkar, 2001), still remains the most commonly used measure of cultural distance (Slangen, 2006; Stahl and Voigt, 2008). The advantage of using Kogut and Singh's formula is that it utilises Hofstede's (1980) cultural dimensions and, therefore, cover the vast majority of the world. The cultural distance formula is:

$$CD_{jk} = \frac{1}{4} \cdot \sum_{i=1}^{4} \left(\frac{(I_{ij} - I_{ik})}{V_i} \right) \tag{3.2}$$

where CD_{jk} is the cultural distance between country j and k, I_{ij} is the index for the ith cultural dimension and country j, and V_i is the variance of the ith cultural dimension. Recall that there are four cultural dimension in Hofstede's (1980) terminology: power distance, uncertainty avoidance, masculinity, and individualism. Hence, the cultural distance measure becomes an average of the deviations in each cultural dimension scaled by the variance of that dimension.

Table 3.4 displays that the means are almost identical in terms of cultural distance with 1.5068 and 1.5390 for Crisis and Not Crisis, respectively. In order to better understand the size of the cultural distance one can use Denmark as a focal point, where the distance to Sweden is 0.22 and the distance to China is 6.11. The spread between the median and the mean indicates that there generally is a higher cultural distance during crises as a few large acquisitions increase the mean cultural distance outside crises.

Beside those deal characteristics that are tested in the hypotheses, Table 3.5 gives an overview

Table 3.4: Cultural distance of cross-country acquisitions

	Crisis	Not Crisis	**Total**
N	107	837	**944**
Mean	1.5068	1.5390	**1.5354**
Std. Dev	1.1355	1.3226	**1.3022**
Median	1.4990	1.2953	**1.2953**
Min	0.0882	0.0374	**0.0374**
Max	5.4499	6.1087	**6.1087**

Source: Own contribution

Table 3.5: Overview of other deal characteristics

	Crisis		Not Crisis		**Total**	
	N	%	N	%	**N**	**%**
Private target	150	85%	1,018	80%	**1,168**	**80%**
Public target	27	15%	258	20%	**285**	**20%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Cash	43	24%	298	23%	**341**	**23%**
Shares	26	15%	74	6%	**100**	**7%**
Mixed Payment	68	38%	590	46%	**658**	**45%**
Other Payment	10	6%	86	7%	**96**	**7%**
Unknown	30	17%	228	18%	**258**	**18%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Female	7	4%	38	3%	**45**	**3%**
Male	170	96%	1,238	97%	**1,408**	**97%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Unrelated	98	55%	579	45%	**677**	**47%**
Related	79	45%	697	55%	**776**	**53%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Agriculture, forestry and fishing	1	1%	4	0%	**5**	**0%**
Construction	11	6%	59	5%	**70**	**5%**
Financial and insurance activities	5	3%	44	3%	**49**	**3%**
Information and communication	23	13%	196	15%	**219**	**15%**
Manufacturing, mining and quarrying and other industry	99	56%	666	52%	**765**	**53%**
Other services	0	0%	3	0%	**3**	**0%**
Professional, scientific, technical, administration and support service activities	16	9%	103	8%	**119**	**8%**
Public administration, defence, education, human health and social work activities	4	2%	12	1%	**16**	**1%**
Real estate activities	2	1%	48	4%	**50**	**3%**
Wholesale and retail trade, transportation and storage, accommodation and food service activities	16	9%	141	11%	**157**	**11%**
Total	177	100%	1,276	100%	**1,453**	**100%**
Central and Eastern Europe	3	2%	28	2%	**31**	**2%**
Northern Europe	20	11%	192	15%	**212**	**15%**
Southern Europe	19	11%	137	11%	**156**	**11%**
Western Europe	135	76%	919	72%	**1,054**	**73%**
Total	177	100%	1,276	100%	**1,453**	**100%**

Source: Own contribution

of other deal characteristics. It is evident that by far the largest majority of the acquisitions are of private targets and that this proportion is in fact relatively larger during a crisis. Since 80% of the data set consists of private targets it provides a great opportunity to test hypothesis 3 as limited public information exists on the target and the decision to acquire is, therefore, more likely to be based on executives' beliefs regarding potential synergies (Doukas and Petmezas, 2007).

Cash and mixed payment are the most popular methods of payment, irrespective of being in a crisis or not. Interestingly, shares are used relatively more during crises. One could with economic reasoning postulate that an acquirer would prefer to pay with high valued stocks during economic expansions and cash during recessions. Nevertheless, we do not see a change in popularity for cash as a mean of payment across the business cycles. The increased use of stocks during crisis could be due to limited access to external funding and potential scarce internal resources. In practice there are several factors, including perceived risk, bargaining power, and liquidity, affecting the method of payment.

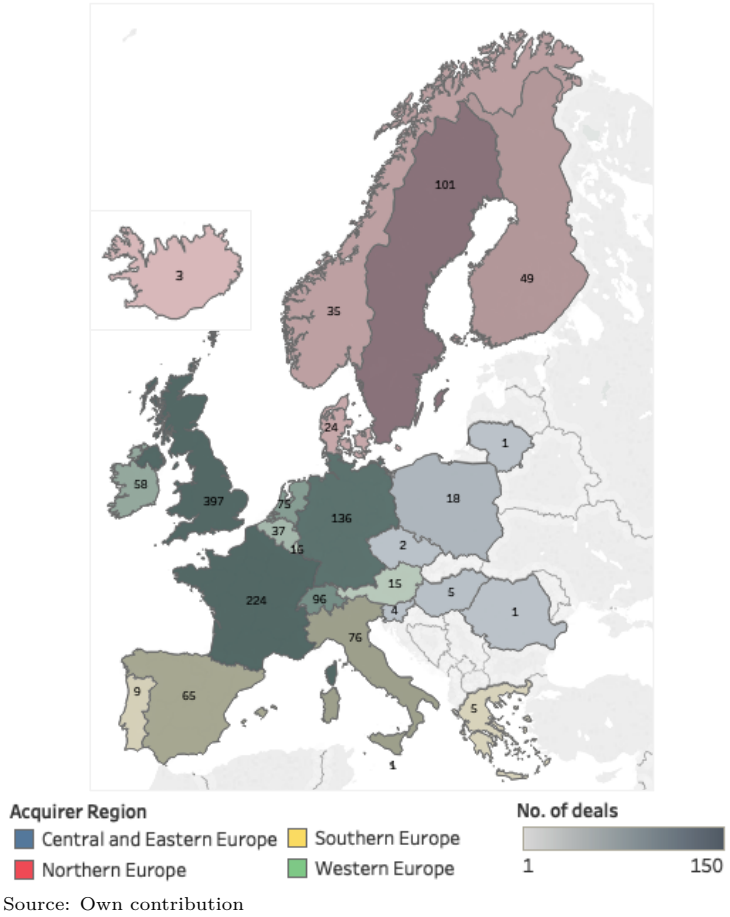
In terms of CEO gender males are significantly overrepresented relative to the general gender distribution in society and this odd distribution is consistent across business cycles. It is not surprising as there generally is a lack of gender diversity in the executive office. Adams et al. (2007) finds an even more unbalanced distribution in their study of gender difference in CEO compensation.

All acquisitions are further categorised as being either related or unrelated based on the NACE four-digit industry classification code. If the two first digits are identical for the acquirer and the target, the acquisition is defined as related. If not, it is defined as unrelated. This approach is commonly used in the literature (Alexandridis et al., 2012; Doukas et al., 2001; Ghosh, 2001). Interestingly, more unrelated acquisitions are carried out during crises relative to related acquisitions whereas the reverse pattern is present outside crises. It could indicate an increasing desire for diversifying during crises. Beckmann et al. (2012) show that the European conglomerate discount decreased by 6% following the recent crisis as a consequence of a superior risk profile. Further, they argue that diversified companies had easier access to capital during the crisis as the credit default swap spreads were on average 27% lower for diversified companies, enabling more unrelated acquisitions to be carried out.

The NACE industry codes are also applied in categorising the acquirers into ten major sectors as proposed by the high-level aggregation from Eurostat (2008). Manufacturing remains the largest industry in terms of acquisitions both in and outside crises, although it represents a slightly higher fraction during crises, whereas both the Real Estate and Retail industries decline in relative weight during crises. The 2008 Financial Crisis was, as previously mentioned, characterised by significant declines in real estate prices and might be influencing the desire for acquiring within Real Estate. The remaining industries are relatively stable in and outside crisis.

Not surprisingly, a substantial amount of the sample originates from Western Europe (73%) as some of the world's largest economies such as UK, France, and Germany, who accounts for

Figure 3.3: Geographical map of acquirers



Source: Own contribution

almost 50% of the GDP in Europe (IMF, 2019), are located here. Further, important financial districts such as those in London and Frankfurt makes it a natural source for high takeover activity. As displayed by Figure 3.3, 397 of the acquirers stem from UK, which is almost as much as Northern-, Central and Eastern-, and Southern Europe combined. In Northern Europe the acquisitions are primarily dominated by Swedish firms. Evidently from Table 3.5, the distribution across the regions remains fairly stable across economic cycles, with only a slight relative incline in Western Europe during crisis and a contrasting decline within Northern Europe. The acquisitions are assigned to a region based on the acquirer's country code and the categorisation used by EuroVoc (2018). It is ambiguous whether the Baltic States should be included in Central and Eastern Europe or Northern Europe, as they are mentioned in both. In this paper the Baltic States will be included in Central and Eastern Europe, which then leaves only the Nordic countries in Northern Europe.

Ultimately, Table 3.6 gives an overview of the acquisition size, market capitalisation of the acquirer, and the two relative to one another. Calculating the relative size as the deal value divided by the market value of equity is commonly used in past literature (Travlos, 1987; Moeller et al., 2004). Interestingly, it appears that larger acquisitions are undertaken during crisis as the deal value is on average EUR 303m higher. Moreover, the acquisitions are carried out by larger acquirers with an average market cap of EUR 7,049m greater than to acquirers outside crises.

Table 3.6: Relative size overview

Averages	Crisis	Not Crisis	**Total**
Deal value (EUR m)	1,459	1,156	**1,193**
Acquirer Market Cap	19,670	12,621	**13,480**
Relative Size	0.3034	0.3376	**0.3334**

Source: Own contribution

It could indicate that larger firms have easier access to capital or internal finance during crises, thus, enabling them to acquire potentially undervalued assets. Beckmann et al. (2012) show that the price-to-earnings ratio declined by 25% during crises, making more targets attractive. Finally, as relative size decreases during crises, it indicates that not only is it larger acquirers undertaking the acquisitions, but they also acquire larger targets.

CHAPTER 4

Event study methodology

It is evident from the literature review that the event study methodology has become the standard method for measuring the share price reaction of an event. Binder (1998) argue that event studies are used for roughly two major reasons: i) to test whether the market incorporates new information efficiently and ii) to investigate the impact of some event on the shareholder value. Ergo, the convenience of the event study methodology stems from the premise that markets are efficient, which enables a direct measurement of the event. Therefore, after describing the typical event study procedure, this chapter starts with a general discussion of the efficient market hypothesis.

Campbell et al. (1997) propose a seven-step process for conducting an event study, however, due to the structure of this paper the order will be different from the chronological process proposed. First is the *Event Definition* in Section 4.2, which includes defining the event and identifying the period over which the security prices will be examined. The second step in the seven-step process is *Selection Criteria*. This process was dealt with in Chapter 3. Next is defining *Normal and Abnormal Return,* including modelling choices, which is described in Section 4.3. The *Estimation Procedure* is the fourth step and will be collectively dealt with when the event definition is determined in Section 4.2. The fifth step is the *Testing Procedure*, which is divided into two and discussed in Section 4.4 and Section 4.5. Ultimately, *Empirical Results* and *Interpretation* constitute the sixth and seventh step, respectively, and will follow in the succeeding chapter.

4.1 Efficient market hypothesis

The purpose of this section is to elucidate the implications that the Efficient Market Hypothesis (hereafter EMH) has on this study and potential anomalies to be aware of. That being the case, no complete test of the EMH will be provided since numerous scholars already have investigated and discussed its plausibility (Borges, 2010; Jensen, 1978; Malkiel, 2003).

Fama (1970) proposes an equilibrium theory called *The Efficient Market Hypothesis*, which suggests that security prices at all times fully reflect all available information. He proposes three degrees of efficiency: weak, semi-strong and strong form, suggesting that security prices reflect all historical, publicly available, and insider information, respectively, and that all price changes should be a random walk from the previous prices because news is unpredictable (Malkiel, 2003). Ergo, no investor should expect to consistently earn an abnormal return.

Andrew (1999) and Cootner (1964) find evidence of a short-run serial correlation between price movements, implying some momentum anomaly, which contradicts the random walk theory in the *weak form*. Bernard and Thomas (1990) and Rendleman Jr et al. (1982) document a post-drift in security prices upon unexpected earnings announcements suggesting that the market gradually incorporates the new information, i.e. over/under-react in the short-run, which conflicts with the *semi-strong* form. This is particularly important for this study as it has a short-term focus. To overcome the problem with delayed reactions, different event windows will be applied. Easton et al. (2009) find existence of a pre-announcement drift followed by a significant jump upon earnings announcements. This suggests leak of information or that insiders trade on information prior to the announcement, which is contradicting the *strong form* of the EMH.

The EMH has been subject to extensive debate. Malkiel (2003) argues that the EMH relies upon unrealistic assumptions. Especially the fact that securities are not over- or undervalued and that market participants must hold rational beliefs to not be driven out of the market by arbitrageurs. Ackert and Deaves (2010) describe that psychological aspects have a central role in the price determination, why, due to limits of arbitrage, noise traders are able to survive even in the long-run and, in fact, drive out rational investors. Rhodes-Kropf and Vishwanathan (2005) prove the existence of bubbles and merger waves originating from market values that deviates from their fundamental values, which is also contradicting the EMH. Several additional anomalies have been detected, most of which have been transitory (Ackert and Deaves, 2010).

Despite the critique, EMH is considered untestable due to the joint hypothesis problem. A comprehensive test of EMH requires expected prices to be specified, i.e. a pricing model is required, and as Fama (2014, page 1467) states: "*We cannot test whether the market does what it is supposed to do unless we specify what it is supposed to do*". Consequently, all tests become a test of both the EMH and the pricing model applied.

Summarising, EMH serves as a vital premise for conducting an event study. It will be assumed that markets fulfils the semi-strong form of efficiency, which according to Petersen and Plenborg (2012) implies that any news affecting the future cash flows or discount rate should immediately be reflected in the security prices. Consequently, it should be possible to detect any abnormal activity in the share price upon the announcement of an acquisition and, therefore, deduce the effect.

4.2 Estimation period and event window

The initial task of conducting an event study is to define the event that serves as the centre of the analysis. Following our problem statement, the *event* is defined as an acquisition announcement.

Next up is the specification of the *event date*. As Peterson (1989) suggests, multiple event dates may exist including completion date, rumour date, and announcement date. It is critical to specify the event date as the day where new information is released because that is when the market is presumed to price the event into the stock. It is sometimes unclear on which day

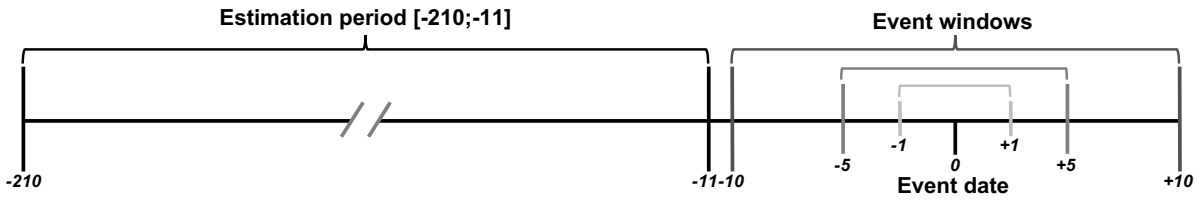
the information reaches the market, however, this paper will follow the approach proposed by Bruner and Perella (2004) who specify the announcement date as the event date. Having said that, takeovers are often poorly held secrets. Keown and Pinkerton (1981) provide evidence of pre-announcement drifts as they prove that investors earned an excess return just prior to a takeover announcement. The rumour date will be applied instead of the announcement date if the rumour date is within three weeks from the announcement date to account for the impact of potential leaks. If there is more than three weeks between the rumour date and the announcement date, the acquisition is manually looked up in Bloomberg, from which the announcement date is used. The problem occurred for 28% of the acquisitions in the data set. Logically, if the event day falls on a non-trading day the event date will be defined as the next trading day.

Theoretically, the *event window* should simply be the event date. However, in practice, the event window is often expanded to capture the full price effect (Campbell et al., 1997). The post-announcement drifts, which is documented by Rendleman Jr et al. (1982), must also be accounted for. This if commonly done by extending the event window after the event date. Furthermore, Goergen and Renneboog (2004) argue that defining a too narrow event window could result in substantial measurement error, especially in the presence of information leakage. As a consequence, the event window will be extended beyond the announcement date. Having said that, Campbell et al. (1997) argue that extending the event window is not without a cost since clustering problems can arise. Nevertheless, it is not considered a problem in this paper, cf. the discussion in Section 4.4.

As is evident from the literature review there is a certain degree of freedom in selecting the appropriate event window. As mentioned in Section 2.2.1, empirical papers find inconsistent results across different event windows. Based on the meta-analysis conducted by Bruner and Perella (2004), the following three event windows will be applied: [-1;1] day, [-5;5] days, and [-10;10] days, as the majority of the studies apply similar ranges.

Finally, in order to capture any potential abnormal return of the event one must specify the expected return, which is done by using an *estimation period*. It is critical that no overlap exists between the estimation period and event window to prevent the event from influencing the estimation of the normal return. The appropriate length has not been theoretically specified. Cowan (1993) argues that extending the estimation period increases the power of the statistical test, however, a trade-off exists between the length of the estimation window and the relevance of the observations as one must avoid systematic risk changes. Hanvanich and Çavuşgil (2001) show that different studies use estimation windows ranging between 45 to 239 days. Campbell et al. (1997) favour a period of 120 days prior to the event window. Bartholdy et al. (2007) suggest that the standard length of an estimation window is between 200 to 250 days, which corresponds to about a year of trading prior to the event window. Armitage (1995) concludes that when using daily-based time series the estimation period should be between 100 to 300 days. An estimation window of 200 days, i.e. [-210;-11], is used in this paper because it is considered adequate to achieve a robust estimate while remaining relevant. Figure 4.1 summarises the above discussion.

Figure 4.1: Timeline of estimation period and event windows



Source: Own contribution

4.3 Normal and abnormal returns

To appraise the acquisitions' impact, a calculation of the abnormal return is required, which is defined as the difference between the actual ex-post realised return and the otherwise expected return:

$$AR_{it} = r_{it} - E\left(r_{it}\right) \tag{4.1}$$

where r_{it} is the actual return realised and $E\left(r_{it}\right)$ is the expected return, also known as the normal return, had the event not taken place.

Logarithmic returns are empirically and theoretically more attractive and, therefore, also the returns applied in this paper (Strong, 1992). The potential problem of non-synchronous trading is important to notice when applying daily closing prices, however, Brown and Warner (1985) proves that it should not be of major concern.

Next, in order to calculate the abnormal return, one must correctly specify the normal return as it is pivotal for the successful application of the event study method. MacKinlay (1997) proposes two approaches: a statistical and an economic approach. The statistical approach follows from statistical assumptions regarding the behaviour of assets returns, while economic models relies on assumptions concerning investors' behaviour. The statistical approach is generally preferred as the economic approach in practice also requires statistical assumptions, therefore, outweighing the advantages it possess. Consequently, this paper follows the statistical approach.

There are two common choices for modelling the normal return within the statistical approach: the market model and the constant mean return model (ibid.). Both methods will be applied in this paper to validate the results. Other return models, such as the capital asset pricing model (CAPM), have also been discussed in the literature, however, Strong (1992) finds that the market model and CAPM yield similar results, with the market model being dominant in some cases. Secondly, Seyhun (1986) outlines that the market model assumes prediction errors with an expected value of zero ($E\left[\varepsilon_{it}\right] = 0$) for any firm independent of size, thus, avoiding some biases that CAPM might introduce. The market model and the constant mean return model will briefly be discussed below.

The market model assumes a stable linear relationship between the security and market return (MacKinlay, 1997). It is to a great extent considered the preferred method in the literature (Binder, 1998; Dyckman et al., 1984).

Strong (1992) argues that in cases where event dates are widely spread over time, the market model in conjunction with ordinary least squares (OLS) is the preferred model. The market model reduces the variance of the abnormal return by eliminating the portion of the return related to the variation in the market return. The market model is found appropriate for this paper as the event dates in the sample are widely spread over a 20 year horizon. The market model is given by:

$$R_{it} = \alpha_i + \beta_i \cdot R_{mt} + \varepsilon_{it} \tag{4.2}$$

Under the assumption that:

$$E\left[\varepsilon_{it}\right] = 0 \quad Var\left[\varepsilon_{it}\right] = \sigma^2_{\varepsilon_i} \tag{4.3}$$

where R_{it} is the return of security i at period t, R_{mt} is the market return at period t, and ε_{it} is the disturbance term. Applying the market model by using OLS and the estimation period defined in Section 4.2, the parameters α_i, β_i are estimated. Subsequently, the expected return for each observations i is calculated following:

$$E\left(r_{it}\right) = \hat{\alpha}_i + \hat{\beta}_i\left(R_{mt}\right) \tag{4.4}$$

Substituting Equation 4.4 into Equation 4.1 we are able to derive the abnormal return:

$$AR_{it} = r_{it} - \hat{\alpha}_i + \hat{\beta}_i\left(R_{mt}\right) \tag{4.5}$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the estimates given by the market model.

In order to measure the abnormal return using the market model, the appropriate index for calculating the market return must be chosen. Koller et al. (2010) propose that the index must, in general, fulfil two requirements: i) it must resemble the market-wide systematic risk reliably and ii) the stock must be related to the index. The previous literature recommends using a broad value-weighted and well-diversified market portfolio (Fama et al., 1969; Koller et al., 2010; MacKinlay, 1997). There appears to be a tradeoff between using a local index and a global index. Using a local index one is insuring that requirement two is fulfilled, however, the downside is that local indices are often heavily weighted towards a few industries or companies making it more a calculation of the sensitivity towards a specific industry and not the market-wide systematic risk (Koller et al., 2010). In contrast, a global index is assumed to be a more reliable measure of the systematic risk, despite some companies operating very locally being less related to that index. Consequently, this paper will calculate the normal return using both a national index and a European-wide index to make the result more robust. The local indices are the MSCI index of the respective country, while the European index is the MSCI AC Europe, which captures large and mid cap representation across 15 developed markets and 6 emerging markets (MSCI, 2019).

The second method applied for calculating the normal return is the constant mean return (hereafter CMR) model, also known as the mean-adjusted-return model (Brown and Warner, 1985; MacKinlay, 1997). The model is given by:

$$E\left(r_{it}\right) = \overline{R_i} = \frac{1}{T_i} \sum_{t=-210}^{-11} R_{it} \tag{4.6}$$

where T_i is the length of the estimation period and R_{it} is the realised return on security i at time t. Hence, the model assumes that the mean return is constant over time. The abnormal return is then the mean return over the estimation period subtracted from the realised return. Despite its simplicity, Brown and Warner (1985) find that it often yields results similar to more sophisticated models. Important to notice is that the CMR model has lower power in cases involving event date clustering relative to the OLS market model (ibid.). Therefore, using only CRM is found insufficient.

Ultimately, having obtained the abnormal returns one can now calculate the cumulative abnormal return (CAR), which is the total abnormal return during the event window. The CAR for firm i is given by:

$$CAR_i = \sum_{t=-D}^{D} AR_{it} \tag{4.7}$$

Where AR_{it} is the abnormal return of company i at time t, and D is the number of days on each side of the event day. The CAR is calculated for all three event windows specified previously. How the CAR is applied in the statistical tests follows next.

4.4 Statistical tests

To draw inferences following the calculation of abnormal returns, MacKinlay (1997) suggests to analyse them using statistical tests. Hence, to uncover whether an acquisition has an effect for the acquirer's shareholders, a selection of statistical tests will be used. The results are applied to test hypothesis 1. Formally, the hypothesis for the statistical tests are:

$$H_0 : \ CAR = 0$$
$$H_1 : \ CAR \neq 0$$

Which statistical tests should be applied depends very much on the data. In general they can be divided into two groups: parametric and non-parametric tests. Parametric tests statistics are based on the classical t-test of the mean. Bartholdy et al. (2007, page 232) describe that *"the numerator of the parametric tests measures the absolute impact of some event relative to the return expected using some kind of market model. The denominator scales this number by some measure of the estimated variance"*.

A number of assumptions regarding the statistical distribution of the population must be fulfilled to reliably draw inferences from these parametric tests. One of the main assumptions is that the population, from which the sample is drawn, has to be normally distributed. Should this not

be the case, the probability of making a type I error, i.e. rejecting that an acquisition has no effect when that is in fact true, increase (Brown and Warner, 1985). It is a well-known fact that daily stock returns are likely to depart from normality, however, as the sample size increases the mean excess return in a cross-section of securities converges to normality. Thus, standard parametric tests are well-specified (ibid.).

Non-parametric tests are, on the contrary, free of specific assumptions regarding the distribution of the returns (MacKinlay, 1997). Consequently, the above mentioned problems regarding normality of daily data is not an issue in these tests. Bartholdy et al. (2007) argue that they should be more reliable than parametric tests when the returns deviate from normality. This is also confirmed by Corrado (1989, page 385) who states that *"non-parametric tests are better specified under the null hypothesis and more powerful under the alternative hypothesis"*. Non-parametric tests often complement the parametric tests to validate the results (MacKinlay, 1997). A Jarque-Bera test can be conducted to assess whether the abnormal returns do indeed follow a normal distribution. It tests whether the skewness and kurtosis jointly are different from those of a normal distribution, i.e. a skewness of zero and a kurtosis of three. The Jarque-Bera test statistic is presented formally as (Verbeek, 2008):

$$N\left[\frac{1}{6}\left(\frac{1}{N}\sum_{i=1}^{N}\hat{\epsilon}_i^3/\hat{\sigma}^3\right)^2+\frac{1}{24}\left(\frac{1}{N}\sum_{i=1}^{N}\hat{\epsilon}_i^4/\hat{\sigma}^4-3\right)^2\right]\sim\chi_2^2 \tag{4.8}$$

where the first term in parentheses is the third moment, skewness (S), and the second term in parentheses is the fourth moment, kurtosis (C). The kurtosis is deducted by three to get the excess kurtosis. The formula can be rewritten to:

$$\frac{N}{6}\left[S^2+\frac{1}{4}(C-3)^2\right]\sim\chi_2^2 \tag{4.9}$$

The distribution of the abnormal returns and the Jarque-Bera test results are elaborated on in Section 5.1.

When applying statistical tests for testing hypotheses, Binder (1998) describes that there are several potential problems relating to the abnormal return estimators. He specifically points out four problems:

i. Cross-sectionally (in event time) correlated abnormal return estimators
ii. Abnormal return estimators not independent across time for a given firm
iii. Different variances across firms
iv. Greater variance during the event period

First of all, event clustering, or cross-sectional correlation, is not a problem as long as the event periods are randomly dispersed through time and the securities are chosen randomly from different industries (Binder, 1998; Brown and Warner, 1985). Moreover, time series dependence is also not considered a problem when the event period is short relative to the estimation period (Binder, 1998). The two remaining problems can be overcome by using different test statistics. Brown and Warner (1985) argue that the test statistics differ in how they tackle

different data problems by their approach to calculating the variance. As a result, since none of the test statistics are superior to one another, Bartholdy et al. (2007) recommend using a battery of statistical tests. Following the recommendation, this study will apply seven different test statistics. The first two test statistics are parametric:

- T_1 t-test with cross-sectional independence (Bartholdy et al., 2007; Brown and Warner, 1985)
- T_2 t-test with standardised abnormal return (Bartholdy et al., 2007; Brown and Warner, 1985)

Given that the data is randomly sampled over a time span of 20 years, clustering is not assumed to affect the data. Consequently, by assuming that the abnormal return estimators are cross-sectionally independent, T_1 calculates the variance of the test statistic by simply summing the individual stocks' variance. To overcome that the variances might differ across firms, T_2 first standardises each individual stock's abnormal return, by dividing it with the standard deviation, before calculating the test statistic.

A commonly used adjustment for parametric tests is the Patell adjustment (Bartholdy et al., 2007; Brown and Warner, 1985). Patell (1976) propose to adjust the variance of the abnormal return estimators to take into account forecast errors. To adjust the variance, the following is multiplied on each individual stock's variance:

$$\left(1 + \frac{1}{T_i} + \frac{\left(R_{m,0} - \overline{R_m}\right)^2}{\sum_t^{T_i}\left(R_{mt} - \overline{R_m}\right)^2}\right) \tag{4.10}$$

where T_i is the number of days in the estimation period where a return is observed. It can be seen from Equation 4.10 that the second and third term approaches zero as T_i increase. Following the choice of excluding all thinly traded stocks, cf. Section 3.1.2, this adjustment becomes negligible. Hence, the Patell adjustment will not be applied in this study.

To validate the results of the parametric tests, three non-parametric tests will also be applied:

- T_3 Rank test (Bartholdy et al., 2007; Corrado and Zivney, 1992)
- T_4 Sign test (Bartholdy et al., 2007; Corrado and Zivney, 1992)
- T_5 Generalised sign test (Bartholdy et al., 2007; Cowan, 1992; Cowan and Sergeant, 1996)

By ranking the abnormal returns in the estimation period and the event window, T_3 analyses whether the abnormal returns during the event window are ranked sufficiently high to be statistically significant. Whereas T_3 ranks the abnormal return, T_4 and T_5 are both sign tests. Sign tests measure whether the proportion of positive signs during the event window is statistically higher than a benchmark. The standard sign test, T_4, assumes that there is an equal probability of observing a positive and negative return, i.e. the benchmark is 0.50. However, this test can be sensitive to increases in the length of the event window, increases in return variance, and thin trading (Cowan, 1992). Therefore, T_5 can be used as a viable alternative. Instead of using 0.50, the generalised sign test estimates the probability of a positive abnormal return from the estimation period.

Finally, to deal with the issue of abnormal return estimators having higher variance during the event window than in the estimation period, two additional test statistics will be applied:

- T_6 Variance-adjusted standardised abnormal returns (Bartholdy et al., 2007; Boehmer et al., 1991)
- T_7 Rank test of adjusted standardised abnormal returns (Bartholdy et al., 2007; Corrado and Zivney, 1992; Maynes and Rumsey, 1993)

These two tests are adjusted versions of T_2 and T_3, respectively. Whereas the previous versions estimated the variance based on the estimation period, T_6 and T_7 adjust the variance in the event window to take into account the increased variance. Being similar to T_2, T_6 is still a parametric test and, therefore, works under the same assumptions. T_7 is a non-parametric rank test which, instead of ranking the abnormal returns like T_3, first standardises the abnormal returns and then rank the standardised abnormal returns. The variance for the returns during the event window is adjusted upwards when standardising,

Appendix B describes all test statistics in more detail and includes all formulas.

4.5 Cross-sectional regression

"Multiple regression analysis is more amenable to ceteris paribus analysis because it allows us to explicitly control for many other factors that simultaneously affect the dependent variable."
- Wooldridge (2015, page 60)

In contrast to the test statistics presented in the previous section which solely tests the overall effect, a cross-sectional regression can be used to gain theoretical insights by examining the relationship between the abnormal return and some specific characteristics of the event (MacKinlay, 1997). Hence, by conducting a cross-sectional regression we are able to draw conclusions on how certain factors affect the abnormal return of the acquisition while holding all else equal, thus, allowing us to test hypotheses 2 through 4. Generally, the multiple linear regression (MLR) model can be written as:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k + u \tag{4.11}$$

where β_0 is the intercept and the betas are the parameters associated with their respective independent variable measuring the impact on the dependent variable (Wooldridge, 2015).

The CAR will be used as the dependent variable since this study investigates the impact on the abnormal return. As argued in Section 4.2 and Section 4.3, this paper applies three different event windows and three different benchmarks for the normal return. Consequently, nine different regressions will be estimated – three for each event window.

One factor for each of the hypothesis will be included as an independent variable. Therefore, the following independent variables are included: i) Financial crisis, ii) Distressed target, iii) CEO acquisitiveness iv) Higher order deal, v) Cultural distance, and vi) Cross-country. Moreover,

interaction terms will be included to assess how a financial crisis might affect the impact of the other factors. This applies to the factors distressed targets and higher order deal.

As argued by Wooldridge (2015), the strength of multiple regression is its ability to explicitly control for many other factors. Therefore, to ensure higher reliability when drawing inferences from the results, a group on control variables that are known to also affect the abnormal return, cf. Section 2.2.5, are included. These are: i) Target listing, ii) Method of payment, iii) Acquisition relatedness, iv) Industry, v) Relative size, vi) CEO gender, and vii) Acquirer region.

All the independent variables and control variables were described in Section 3.2. An overview can also be found in Table 4.1.

There are some important things to notice with regards to the regression. First of all, as mentioned in Section 3.2, financial data is missing for 687 (47%) of the targets. Consequently, these have been flagged such that the observations can still be included in the regression. A regression has been run where those observations with data missing are excluded and the coefficient of the financial distress variable did not change materially, why it has been deemed unnecessary to exclude them. A similar approach has been applied for those acquisitions where the method of payment is unknown. Again, excluding these from the regression did not yield any changes in the coefficients, thus, implying that excluding them is unnecessary.

Since all variables are categorical they will have to be transformed before being included in the regression. Commonly, a dummy variable is created for each category, which is then used in the regression instead. The final regression model is given by:

$$\begin{aligned} CAR = {} & \beta_1 \cdot Financial\,Crisis + \beta_2 \cdot Distressed\,Target \\ & + \beta_3 \cdot (Financial\,Crisis \cdot Distressed\,Target) + \beta_4 \cdot CEO\,Acquisitiveness \\ & + \beta_5 \cdot Higher\,Order\,Deal + \beta_6 \cdot (Financial\,Crisis \cdot Higher\ Order\ Deal) \\ & + \beta_7 \cdot Cultural\,Distance + \beta_8 \cdot Cross - country + \beta_9 \cdot Target\,Listing \\ & + \beta_{10} \cdot Method\,of\,Payment + \beta_{11} \cdot Acquisition\,Relatedness + \beta_{12} \cdot Industry \\ & + \beta_{13} \cdot Relative\,Size + \beta_{14} \cdot CEO\,Gender + \beta_{15} \cdot Region + u \end{aligned} \tag{4.12}$$

where all the betas and factors are vectors that include dummy variables if the variable is categorical. STATA will be applied in calculating the regression. All STATA codes can be found in Appendix F.

Ordinary least squares will be applied to estimate the coefficients. It calculates the estimates that minimises the sum of the squared residuals, i.e. the coefficients leading to the least error when predicting the abnormal return of the sample. Several other estimators could be used, however, the coefficients are the best linear unbiased estimators under assumptions MLR.1 through MLR.5 (Wooldridge, 2015). This is also known as the Gauss-Markov Theorem. Consequently, it is essential to discuss the underlying assumptions:

i. MLR.1 - Linear in parameters
ii. MLR.2 - Random sampling

Table 4.1: Overview of variables included in the regressions

Variable	**Label**	**Definition**
Financial Crisis	Crisis	Dummy variable: 1 if undertaking during 11/03/2000 and 11/11/2001 or 15/09/2008 and 15/09/2010, 0 otherwise
	Not Crisis	Dummy variable: 1 if undertaking outside the above-mentioned period, 0 otherwise
Financial Distress	Data Missing	Dummy variable: 1 if financial data is missing for target, 0 otherwise
	Distressed	Dummy variable: 1 if Altman's Z"-score $\leq$ 1.21, 0 otherwise
	Healthy	Dummy variable: 1 if Altman's Z"-score $>$ 1.21, 0 otherwise
CEO Acquisitiveness	Frequent	Dummy variable: 1 if the CEO has any deals with an order of two of above, 0 otherwise
	Infrequent	Dummy variable: 1 if the CEO only have first order deals, 0 otherwise
Higher Order Deal	Deal Order = 1	Dummy variable: 1 if it is a first order deal, 0 otherwise
	Deal Order $\geq$ 2	Dummy variable: 1 if it is a higher order deal, 0 otherwise
Cultural Distance	Cultural Distance	Measured in terms of the Kogut and Singh cultural distance measure, cf. Section 3.2
Cross-country	Cross-country	Dummy variable: 1 if the the acquirer and target are from different countries, 0 otherwise
	Domestic	Dummy variable: 1 if the acquirer and target are from the same country, 0 otherwise
Target listing	Private	Dummy variable: 1 if the target is not listed at any stock exchange, 0 otherwise
	Public	Dummy variable: 1 if the target is listed, 0 otherwise
Method of Payment	Cash	Dummy variable: 1 if the acquisition is paid solely in cash, 0 otherwise
	Shares	Dummy variable: 1 if the acquisition is paid solely using shares, 0 otherwise
	Mixed Payment	Dummy variable: 1 if the acquisition is paid with several different methods, 0 otherwise
	Other Payment	Dummy variable: 1 if the acquisition is paid solely using other payment methods, 0 otherwise
	Unknown	Dummy variable: 1 if Zephyr does not know the method of payment, 0 otherwise
Acquisition Relatedness	Unrelated	Dummy variable: 1 if the two first digits of the NACE industry codes are different, 0 otherwise
	Related	Dummy variable: 1 if the two first digits of the NACE industry codes are identical, 0 otherwise
Relative Size	Relative Size	Measured as Deal Value divided by Acquirer's Market Capitalisation
Industry	Sector 1	Dummy variable: 1 if the industry is Agriculture, forestry and fishing, 0 otherwise
	Sector 2	Dummy variable: 1 if the industry is Construction, 0 otherwise
	Sector 3	Dummy variable: 1 if the industry is Financial and insurance activities, 0 otherwise
	Sector 4	Dummy variable: 1 if the industry is Information and communication, 0 otherwise
	Sector 5	Dummy variable: 1 if the industry is Manufacturing, mining and quarrying and other industry, 0 otherwise
	Sector 6	Dummy variable: 1 if the industry is Other Services, 0 otherwise
	Sector 7	Dummy variable: 1 if the industry is Professional, scientific, technical, administration and support service activities, 0 otherwise
	Sector 8	Dummy variable: 1 if the industry is Public administration, defence, education, human health and social work activities, 0 otherwise
	Sector 9	Dummy variable: 1 if the industry is Real estate activities, 0 otherwise
	Sector 10	Dummy variable: 1 if the industry is Wholesale and retail trade, transportation and storage, accommodation and food service activities, 0 otherwise
CEO Gender	Female	Dummy variable: 1 if the CEO's gender is female, 0 otherwise
	Male	Dummy variable: 1 if the CEO's gender is male, 0 otherwise
Region	CE Europe	Dummy variable: 1 if the acquirer is from Central and Eastern Europe, 0 otherwise
	N Europe	Dummy variable: 1 if the acquirer is from Northern Europe, 0 otherwise
	S Europe	Dummy variable: 1 if the acquirer is from Southern Europe, 0 otherwise
	W Europe	Dummy variable: 1 if the acquirer is from Western Europe, 0 otherwise

Source: Own contribution

iii. MLR.3 - No perfect collinearity
iv. MLR.4 - Zero conditional mean
v. MLR.5 - Homoskedasticity

One additional assumption besides MLR.1 through MLR.5 is also important. To draw statistical inference one also needs to discuss normality of the error term. Together with the previous five assumptions, MLR.1 through MLR.6 are known as the classical linear model assumptions. Therefore, the final assumption will also be discussed:

vi. MLR.6 - Normality

According to MLR.1, the model in the population should be formulated as in Equation 4.11. Comparing the regression applied in this thesis, shown in Equation 4.12, to the general regression model clearly shows that the regression applied is linear in the parameters and, thereby, fulfils MLR.1. Second, MLR.2 suggests that one must have a random sample of n observations following the population model in the preceding assumption. Although certain selection criteria has been applied in choosing the sample, as described in Section 3.1, it is assumed that the sample is random and, thus, satisfy the assumption.

The third assumption states that none of the independent variables are neither constant nor have an exact linear relationship with another independent variables. It is important to note that correlation is expected and allowed for in MLR.3, but they simply cannot be perfectly correlated. One pitfall when working with dummy variables is that including all dummy variables from a factor could lead this assumption to fail as one dummy can be expressed as an exact linear function of the other dummy variables. Therefore, when a using dummy variables instead of a categorical variable, one dummy variable is excluded. This dummy variable instead becomes part of the base and all the coefficients of the other variables are interpreted as compared to this.

Despite the fact that high correlation is not a violation of MLR.3 as such, a discussion of correlation between the independent variables is pivotal. Because the linear relationship between the independent variables is one of three factors that make up the variance of the slope estimators, one should be aware of how it impacts the results. High correlation between independent variables is also known as multicollinearity and can cause the variance of the estimate to increase, thus, making it harder to detect causality (Wooldridge, 2015). To analyse how much the regression is impacted by multicollinearity a correlation matrix and variance-inflation factors (VIFs) are calculated and shown in Appendix C.2 and Appendix C.1. The correlation matrix implies that the independent variables do not suffer from high correlations at all. The only correlations that stand out are those between the dummy variables created from the same categorical variable, which was to be expected. Looking at the variance-inflation factors it is clear that the dummies for Region has the highest VIFs ranging from 5.53 to 9.91. Determining whether it is too high can be tricky as there is no formal threshold. However, a commonly accepted threshold is a VIF of 10 (Craney and Surles, 2002; Wooldridge, 2015). Given the threshold there does not appear to be a problem with high correlations, although the VIF for Western Europe (9.91) is borderline. Moreover, Murray et al. (2012) argue that one should be cautious when using

VIF to exclude variables and Wooldridge (2015) state that it is unnecessary to exclude control variables with high correlation if they do not affect the variables of interest. Finally, Allison (2012) argue that high VIFs can be ignored if it stems from dummies of a a categorical variable with three or more levels. As a result, multicollinearity is assumed not to be a problem.

The fourth assumption states that the error term u has an expected value of zero given any values of the independent variables. Should this assumption fail and one of the explanatory variables be correlated with the error term it is said to be an endogenous explanatory variable. This might happen for three reasons: i) measurement error, ii) omitted variable bias, and iii) mis-specified form. By using reliable data sources, it is assumed that measurement error is not a problem. Omitted variable bias could possibly be a problem due to data limitations or poor variable selection. However, by including those factors that previous literature has shown can explain abnormal return as control variables, it is assumed that omitted variable bias is not a problem. Finally, a RESET[1] test is conducted in order to detect general functional form mis-specification. With a p-value of 17.48% it cannot be rejected that the model is correctly specified. Therefore, the zero conditional mean assumption is assumed fulfilled.

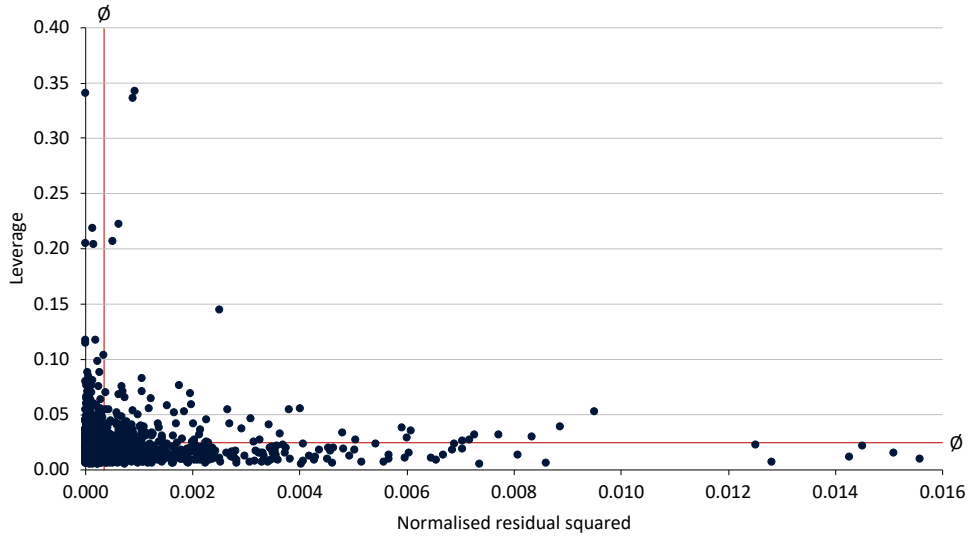
The next assumption is homoskedasticity and states that the error u should have the same variance for all values of the independent variables. Fulfilling MLR.5 ensures that one can calculate an unbiased estimator of the variance. Two tests for heteroskedasticity are applied: the Breusch-Pagan test and White's test. With p-values of 0.00% both tests reject homoskedasticity and conclude that the regression suffer from heteroskedasticity. To overcome this problem, robust standard errors will be applied for all regressions, as Wooldridge (2015) suggests.

Ultimately, MLR.6 states that the error is independent of the explanatory variables and is normally distributed with a mean of zero and variance σ^2. In theory, one should check whether the error term is normally distributed for all combinations of the independent variables, however, that is considered infeasible. In an attempt to evaluate whether the regression residuals deviate from normality the Jarque-Bera test is conducted. The Jarque-Bera test statistic is 415.27 with an accompanying p-value of 0.00% and, consequently, rejects normality. However, Wooldridge (2015) argues that, despite residuals deviating from normality, a sufficiently large sample size can make the residuals asymptotically normally distributed, thus, making it possible to draw inferences. A sample size of 1,453 is considered to be relatively large and definitely sufficient to fulfil normality given that some econometricians argue 30 is enough (Wooldridge, 2015). To assess whether the residuals are independent of one another, i.e. not suffering from autocorrelation, the Durbin-Watson test is conducted. The test results in a Durbin-Watson test statistic of 2.01, implying that the residuals are independent.
The comments made here are based on the [-1;1] event window with the MSCI Europe index as benchmark, however, they are valid for all 18 regressions. The results from the tests differ insignificantly and does not change any conclusion.

A final consideration in connection with regressions is the robustness of the results. In particular the robustness in regard to influential observations, also known as outliers. To identify outliers

[1] Ramsey's Regression Equation Specification Error Test (Ramsey, 1969)

Figure 4.2: Leverage-versus-Squared-Residual plot



Source: STATA and own contribution

this paper uses a Leverage-versus-Squared-Residual plot accompanied by Cook's Distance. The plot is shown in Figure 4.2 and clearly indicates six and nine observations standing out in terms of normalised residual squared and leverage, respectively. The six observations in the bottom right corner stand out due to either extremely high or low CAR with three observations ranging from -18.3% to -22.0% and three ranging from 22.7% to 23.2%. The nine observations that stand out in terms of leverage are the five observations within Sector 1 and the three observations in Sector 6, as well as one observation with a relative size of around eight. All of these are considered influential observations. With respect to Cook's Distance, Van der Meer et al. (2010) suggest that a cutoff level of 4/N is generally accepted. 66 additional observations are classified as being influential using that cutoff level, with the majority of these being because of large either positive or negative CAR. In total 81 observations are classified as outliers. To check the robustness of the original regression two additional regressions are conducted: i) one excluding the outliers and ii) a robust regression, i.e. a regression that assign weights to the observations based on the size of their residual (Hamilton, 1991; Wooldridge, 2015). These two regressions are compared to the base regression throughout the discussion in Chapter 5 to check how the coefficients are affected by influential observations. Having said that, it is believed that the observations are in fact correct data-wise, why they are not excluded from the sample.

CHAPTER 5

Empirical findings

In the subsequent chapter empirical findings are presented. Each hypothesis is being devoted an individual section in which the findings are presented and thoroughly discussed, including the robustness and reliability across return models and event windows. Each section will further contain a comprehensive evaluation of the findings, suggesting possible drivers and explanations for the results, as well as a comparison to previous empirical findings. Finally, the findings are discussed in relation to the overall research question and across the hypotheses.

5.1 Hypothesis 1: General acquisition value creation

5.1.1 Introduction

Hypothesis 1 investigates the overall short-term value creation experienced by the acquirer‘s shareholders and serves as the starting point for the analysis. It is tested using a battery of t-tests across multiple event windows and return models. As already mentioned in Section 2.1, several motives exist for engaging in takeover activities, some of which are rational while others are embedded in selfish motives or irrational behaviour. Acquisitions are further associated with potential sources of value creation including financial, operational, and managerial synergies (Ackert and Deaves, 2010). However, as uncovered in the literature review, most of the value creation seems to be absorbed by the target's shareholders. What remains interesting is that contradictory results are reported in terms of the acquirer's shareholder's return. Thus, the following hypothesis was formulated for further investigation:

Hypothesis 1: There is no statistically significant effect upon the announcement of an acquisition on the cumulative abnormal return for the acquirer's shareholders.

The results are first discussed for the market model with local indices. Subsequently, a European index is applied before results from the constant mean return model are discussed. Any potential differences between the models will be highlighted.

5.1.2 Results and interpretation

5.1.2.1 Local indices

As discussed in Section 4.2, one must carefully select the length of the event window to ensure that the market fully incorporates the new information, while taking into account leakages, post-announcement drifts, and avoiding unnecessary noise. Evidently from Table 5.1, the average

Table 5.1: Average abnormal return using local indices

Day	AAR	T-stat	P-value	Cum. AAR
-10	-0.03%	-0.5845	55.89%	-0.03%
-9	-0.12%	-2.7118***	0.67%	-0.15%
-8	0.07%	1.6173	10.58%	-0.08%
-7	-0.05%	-1.0122	31.14%	-0.12%
-6	-0.01%	-0.3342	73.82%	-0.14%
-5	-0.02%	-0.4481	65.40%	-0.16%
-4	0.03%	0.6348	52.56%	-0.13%
-3	-0.02%	-0.5255	59.93%	-0.15%
-2	0.00%	0.0624	95.02%	-0.15%
-1	0.01%	0.1512	87.98%	-0.14%
0	0.67%	14.9358***	0.00%	0.53%
1	0.28%	6.1899***	0.00%	0.81%
2	0.05%	1.1996	23.03%	0.86%
3	0.02%	0.4560	64.84%	0.88%
4	0.04%	0.9665	33.38%	0.92%
5	0.04%	0.9511	34.16%	0.97%
6	0.00%	0.0283	97.74%	0.97%
7	-0.02%	-0.5042	61.41%	0.94%
8	-0.01%	-0.2865	77.45%	0.93%
9	-0.07%	-1.4550	14.57%	0.87%
10	-0.07%	-1.4576	14.50%	0.80%

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

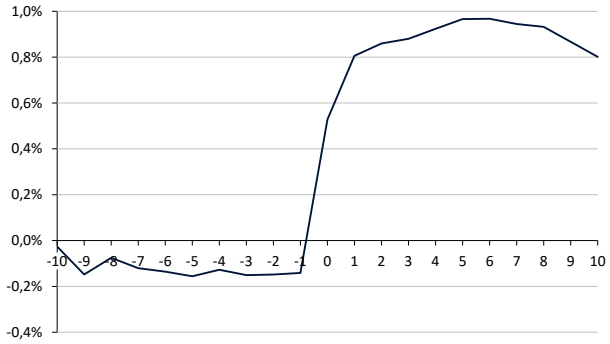
Source: Own contribution

abnormal return (AAR) is statistically significant at a 1% significance level for three days; -9, 0, and 1. It seems peculiar that day -9 is significant at the 1% level, however, as the AAR of -0.12% is quite small and all the surrounding days are insignificant it may very well be caused by noise. It can be seen that the market appears to be relatively efficient with the largest reactions happening at day 0 and 1 with AARs of 0.67% and 0.28%, respectively.

Figure 5.1 displays the described pattern graphically. Clearly, the abnormal return remains fairly stable and slightly negative from day -9 to -1 before shifting to a new positive level at the announcement day. The fact that the price reaction centres primarily around the announcement confirms that the market seems relatively efficient. The figure also indicates a post-announcement drift by first increasing slightly until day 5 before showing diminishing effect in the remaining period. Although the pattern is easy to see graphically, none of the days are statistically significant from zero, why we cannot confirm post-announcement drift as Rendleman Jr et al. (1982) find.

By comparing statistics of CAR across the event windows, Table 5.2 confirms the previous indications of a jump around announcement followed by an increase until day 5 and a subsequent decrease. There is a greater spread between the minimum and maximum CARs observed across event windows, which is also evident from the increasing standard deviation. It can be seen

Figure 5.1: Cumulative average abnormal return using local indices



Source: Own contribution

Table 5.2: Statistics for CAR for local indices

	[-1;1]	[-5;5]	[-10;10]
N	1,453	1,453	1,453
Mean	0.95%	1.10%	0.80%
Median	0.61%	0.96%	0.70%
Minimum	-20.73%	-49.04%	-57.04%
Maximum	23.82%	37.23%	37.94%
Std. Dev	5.05%	7.06%	8.75%
Skewness	0.2669	-0.2417	-0.2683
Kurtosis	5.7989	7.2162	6.2067
Jarque-Bera	491.54	1090.34	639.98
Jarque-Bera p-value	0.00%	0.00%	0.00%

Source: Own contribution

from the skewness that the negative reactions tend to increase relatively more than the positive ones across event windows as the distribution of the CAR changes from right-skewed (positive) to left-skewed (negatively). The Jarque-Bera test remains significant across all event windows, hence, it is rejected that the data have a skewness and kurtosis matching the normal distribution. However, as previously explained in the methodology, it should not be a major concern since it will converge towards a normal distribution due to the large sample size. The Jarque-Bera test statistic increases from [-1;1] to [-5;5] before declining to [-10;10]. This could indicate that other events are affecting the abnormal return before the announcement and a drift after the announcement, which is also more or less what was confirmed by Table 5.1. If the presence of other events is indeed affecting the abnormal return the event windows beyond [-1;1] should be disregarded to ensure reliability as the abnormal return must not measure any other events than the event of interest (MacKinlay, 1997). As a result, the [-1;1] event window will serve as a base for the subsequent discussions.

Table 5.3 presents the results of the seven t-statistics mentioned in Section 4.4. T_1, T_2 and T_6 are parametric tests and, importantly, T_6 accounts for the increasing variance in the event window that was displayed in Table 5.2. This is most likely also the reason why T_6 is half the size of T_1 and T_2. The three parametric tests are all statistically significant at a 5% level or lower across event windows. The parametric test should, given the assumed convergence towards normal distribution, be more powerful relative to the non-parametric tests. Anyhow,

Table 5.3: T-tests on CAR for local indices

	[-1;1]		[-5;5]		[-10;10]	
	T-stat	P-value	T-stat	P-value	T-stat	P-value
T_1	12.2843***	0.00%	7.4093***	0.00%	3.9003***	0.01%
T_2	14.5149***	0.00%	8.6276***	0.00%	5.1331***	0.00%
T_3	7.1355***	0.00%	4.3070***	0.00%	2.4980**	1.25%
T_4	5.5552***	0.00%	3.7241***	0.02%	2.5335**	1.13%
T_5	6.9107***	0.00%	4.6124***	0.00%	3.1063***	0.19%
T_6	6.3755***	0.00%	4.2068***	0.00%	1.9818**	4.75%
T_7	6.4706***	0.00%	4.1418***	0.00%	2.5535***	1.07%

Note: *Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

to validate the results the non-parametric tests are also displayed. All four arrive at the same conclusion and show similar patterns across event windows, namely that we reject that CAR is zero. Interestingly, T_6 becomes less significant at the [-10;10] window. This was expected given that AARs further away from the event date does not contribute additionally to the CAR, as presented in Table 5.1, but it is divided with a larger variance due to its longer event window, thus, causing a decline in significance. Table 5.2 and Table 5.3 together implies that the acquirer's shareholders realise a statistically significant positive abnormal return of around 1%.

5.1.2.2 European index

Similar tables and figures as used above are included below to discuss potential differences across benchmarks. From Table 5.4 it is clear that using the European benchmark provides conclusions that are almost identical to the local benchmark. The AAR is almost the same for the days in the [-1;1] event window. Most noteworthy is the change from insignificant to significant for day 9, which is now statistically significant at a 10% level with an AAR of -0.09%. On the other hand, day -9 is now just significant at the 5% level since its AAR changes from -0.12% with local indices to -0.10% with the European index. It could indicate that the European index eliminates some of the noise at day -9, but add additional noise around day 9.

Figure 5.2 arrives at a similar overall conclusion as using the local index. Having said that, there appears to be a slight decline in the days approaching the event day, whereas before it was flat. This is caused by small changes in the abnormal returns to the more negative side. However, as the days from -8 to -1 are insignificant we can not confirm the pre-announcement drifts found by Easton et al. (2009).

Consistent with the above results, and illuminated in Table 5.5, the overall pattern in terms of descriptive statistics is also similar across the two indices. The mean for window [-10;10] declines from 0.80% using local indices to 0.75%. The Jarque-Bera statistic is lower for the European benchmark, especially for the [-5;5] event window, which indicates that the problem with normality is less present using this benchmark relative to the local. Nevertheless, it remains statistically significant at a 1% level.

Table 5.4: Average abnormal return using European index

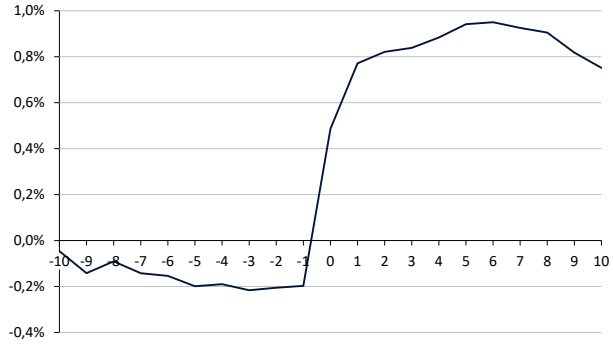
Day	AAR	T-stat	P-value	Cum. AAR
-10	-0.05%	-1.0143	31.04%	-0.05%
-9	-0.10%	-2.1068**	3.51%	-0.14%
-8	0.05%	1.1288	25.90%	-0.09%
-7	-0.05%	-1.1367	25.57%	-0.14%
-6	-0.01%	-0.2510	80.18%	-0.15%
-5	-0.04%	-0.9892	32.26%	-0.20%
-4	0.01%	0.1936	84.65%	-0.19%
-3	-0.03%	-0.5813	56.10%	-0.22%
-2	0.01%	0.2389	81.12%	-0.21%
-1	0.01%	0.1871	85.16%	-0.20%
0	0.68%	15.0282***	0.00%	0.49%
1	0.28%	6.2612***	0.00%	0.77%
2	0.05%	1.1004	27.12%	0.82%
3	0.02%	0.3830	70.18%	0.84%
4	0.05%	0.9968	31.89%	0.88%
5	0.06%	1.2699	20.41%	0.94%
6	0.01%	0.1902	84.91%	0.95%
7	-0.02%	-0.5445	58.61%	0.93%
8	-0.02%	-0.4481	65.40%	0.91%
9	-0.09%	-1.9206*	5.48%	0.82%
10	-0.07%	-1.4606	14.41%	0.75%

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

Figure 5.2: Cumulative average abnormal return using European index



Source: Own contribution

Table 5.5: Statistics for CAR for European index

	[-1;1]	[-5;5]	[-10;10]
N	1,453	1,453	1,453
Mean	0.98%	1.10%	0.75%
Median	0.63%	0.94%	0.75%
Minimum	-22.05%	-43.50%	-56.89%
Maximum	23.72%	36.89%	37.19%
Std. Dev	5.08%	6.99%	8.74%
Skewness	0.2255	-0.2118	-0.2851
Kurtosis	5.6887	6.5348	6.1847
Jarque-Bera	449.98	767.30	633.73
Jarque-Bera p-value	0.00%	0.00%	0.00%

Source: Own contribution

In terms of the t-tests in Table 5.6 the overall conclusion also remains the same irrespective of using a local versus an European benchmark, especially for the event windows [-1;1] and [-5;5]. However, it is important to notice that T_6 changes from being significant at a 5% level to not being significant at all for [-10;10]. It is, as previously explained, likely to be caused by the increasing variance. As T_6 penalise increasing variance in the event window this is expressed in terms of a change in significancy. Nevertheless, it is still believed that the value creation is significant as the [-10;10] window is probably affected by some noise that has nothing to do with the acquisition itself and all the remaining test statistics are still significant.

By applying the findings from Table 5.6 in conjunction with the means reported in Table 5.5, it can be seen that the acquirer's shareholders still realise a statistically significant positive cumulative abnormal return of around 1% upon an acquisition announcement. Given that the results are statistically significant across all event windows, except for one result, it gives the impression of the results being robust. Despite being statistically significant, an effect of approximately 1% does not seem like a lot. Yet, in terms of economic value it translates into an average value creation of EUR 30.5m and a total value creation for the sample of EUR 44.4bn realised by the acquirer's shareholders just around the announcement date.

Table 5.6: T-tests on CAR for European index

	[-1;1]		[-5;5]		[-10;10]	
	T-stat	P-value	T-stat	P-value	T-stat	P-value
T_1	12.3994***	0.00%	7.2630***	0.00%	3.6061***	0.03%
T_2	14.6706***	0.00%	8.5466***	0.00%	4.7703***	0.00%
T_3	7.0820***	0.00%	4.1591***	0.00%	2.0632**	3.91%
T_4	5.3832***	0.00%	3.5864***	0.03%	2.4286**	1.52%
T_5	7.2208***	0.00%	5.5441***	0.00%	3.1369***	0.17%
T_6	6.4342***	0.00%	4.0711***	0.00%	1.5925	11.13%
T_7	6.3320***	0.00%	3.9531***	0.01%	2.0098**	4.45%

Note: *Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

5.1.2.3 Constant mean return

Finally, following the same order as above, the results using the constant mean return model are presented below.

Consistently with the two other benchmarks, the CMR model arrives at similar conclusions in Table 5.7, namely that most of the effect of the event happens at day 0 and 1. Both days are still significant at a 1% level and almost identical in terms of AAR when compared to the other two benchmarks, with an AAR of 0.69% and 0.26% for day 0 and 1, respectively. The CMR model also shows that day -9 is negative and statistically significant at 5%. However, different from the two other benchmarks day -8 is now also significant at a 10% level. But, as previously argued, it could simply be the result of noise.

It can be seen from Figure 5.3 that the CMR model also starts with a negative development up until the announcement day before taking a large shift upwards. Further, it appears to be a little more hump-shaped around day 8, but, nonetheless, shows the same diminishing pattern as the market models.

Table 5.7: Average abnormal return using constant mean return

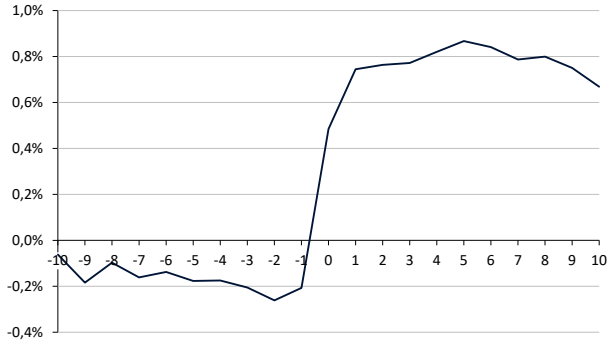
Day	AAR	T-stat	P-value	Cum. AAR
-10	-0.06%	-1.1950	23.21%	-0.06%
-9	-0.12%	-2.3534**	1.86%	-0.18%
-8	0.09%	1.6776*	9.34%	-0.10%
-7	-0.06%	-1.2383	21.56%	-0.16%
-6	0.02%	0.4531	65.05%	-0.14%
-5	-0.04%	-0.7558	44.97%	-0.18%
-4	0.00%	0.0413	96.71%	-0.17%
-3	-0.03%	-0.5910	55.45%	-0.21%
-2	-0.06%	-1.0797	28.03%	-0.26%
-1	0.05%	1.0510	29.33%	-0.21%
0	0.69%	13.3454***	0.00%	0.48%
1	0.26%	5.0095***	0.00%	0.74%
2	0.02%	0.3696	71.17%	0.76%
3	0.01%	0.1584	87.41%	0.77%
4	0.05%	0.9334	35.06%	0.82%
5	0.05%	0.9079	36.39%	0.87%
6	-0.03%	-0.5065	61.25%	0.84%
7	-0.05%	-1.0401	29.83%	0.79%
8	0.01%	0.2400	81.03%	0.80%
9	-0.05%	-0.9484	34.29%	0.75%
10	-0.08%	-1.5770	11.48%	0.67%

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

Figure 5.3: Cumulative average abnormal return using constant mean return



Source: Own contribution

Table 5.8: Statistics for CAR for constant mean return

	[-1;1]	[-5;5]	[-10;10]
N	1,453	1,453	1,453
Mean	1.01%	1.01%	0.67%
Median	0.67%	0.87%	0.57%
Minimum	-19.74%	-50.91%	-61.55%
Maximum	25.48%	37.54%	40.36%
Std. Dev	5.30%	7.54%	9.97%
Skewness	0.3094	-0.2179	-0.3288
Kurtosis	5.3142	6.3093	5.8532
Jarque-Bera	347.41	674.51	519.05
Jarque-Bera p-value	0.00%	0.00%	0.00%

Source: Own contribution

The CMR model does not change materially from the two other benchmarks in terms of descriptive statistics, as shown in Table 5.8. Some of the most noteworthy differences are the drops in mean and median for the [-10;10] event window as well as the greater standard deviation for the same period. The skewness still changes from positive to negative between the [-1;1] event window and the two longer event windows. The Jarque-Bera test statistic is a bit lower relative to the two other benchmarks, but once again clearly significant at a 1% level.

Again, the general conclusion remains the same in terms of the t-tests seen in Table 5.9. The CMR model also results in a rejection of hypothesis 1, i.e. it is rejected that there is no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders. It is worth mentioning that the t-tests are consistently lower across events windows relative to the two other benchmarks. Especially T_6 for the [-10;10] event window is, similar to the European benchmark, insignificant. However, different from the European benchmark, which is close to being significant at a 10%, the CMR find it to be highly insignificant. The cause of this difference can be related to several factors. Theoretically, the difference between the CMR and the market model is that CMR assumes beta to be zero (MacKinlay, 1997), hence, no correlation with the market is taken into account. This translates into higher residuals during the estimation period and, thus, results in greater variance leading the tests to be less significant.

Table 5.9: T-tests on CAR for constant mean return

	[-1;1]		[-5;5]		[-10;10]	
	T-stat	P-value	T-stat	P-value	T-stat	P-value
T_1	11.2040***	0.00%	5.8463***	0.00%	2.8155***	0.49%
T_2	13.2410***	0.00%	6.9531***	0.00%	3.6001***	0.03%
T_3	6.2777***	0.00%	3.3036***	0.10%	1.6775*	9.34%
T_4	5.8654***	0.00%	4.4418***	0.00%	3.1247***	0.18%
T_5	5.8575***	0.00%	4.5898***	0.00%	3.2520***	0.11%
T_6	6.3725***	0.00%	3.3082***	0.09%	1.0016	31.65%
T_7	5.7620***	0.00%	3.3900***	0.07%	2.0906**	3.66%

Note: *Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

5.1.3 Discussion and sub-conclusion

Summarising, not much changes in terms of the overall conclusion across returns models and event windows. It is clear that the majority of the reaction happens just around the announcement date and that results become less significant when the length of the event window is extended. This is most likely caused by the increase in variance without a subsequent increase in the AAR. As a result, hypothesis 1 is rejected implying that the acquirer's shareholders realise a statistically significant positive return upon the announcement. Despite it being a small average return of about 1% it sums up to a value creation of EUR 44.4bn when weighted by the firms' respective market capitalisation. Moreover, we find that the CMR model yields results similar to more sophisticated models such as the market model. This is equivalent to what Brown and Warner (1985) find.

The academic literature do, as previously discussed in Section 2.2.1, find contradictory results where studies report both negative, positive, and insignificant results. The studies that find negative results are primarily conducted on US data (DeLong, 2001; Houston et al., 2001; Kaplan and Weisbach, 1992; Walker, 2000). European studies, on the other hand, mostly find statistically significant positive CARs ranging between 0.7% and 1.18% (Goergen and Renneboog, 2004; Rose et al., 2017). The result presented above is to a great extent equivalent to these studies. Having said that, they do not find consistency across event windows as this paper does. This discrepancy could be explained by dissimilarities in the frameworks surrounding their studies and ours. First, the two studies apply statistical methods much similar to the ones used in this paper, but they do not use different return models. Secondly, the studies are conducted in a different time period and with a different geographical focus. The most similar to this study is Goergen and Renneboog (2004) who focus on Continental Europe and UK acquirers conducting large acquisitions, however, that study is conducted based on data from 1993-2000 and includes also mergers and divestitures, whereas this study is conducted in the subsequent time period and solely on acquisitions.

Despite the differences between Goergen and Renneboog (2004), Rose et al. (2017), and this study in terms of geographical focus, time period, and transaction types all arrive at the conclusion that the estimated synergies exceed the premium paid, suggesting that shareholders perceive

acquisitions as value creating. It supports to a certain degree the arguments of the classical financial theory that only value-creating investments should be undertaken by management. The statistically significant positive result initially points towards the neoclassical theories, such as the efficiency theory and monopoly theory, dominating the behavioural theories. However, this is an average consideration that might not reflect the actual underlying motives in each acquisition, why it is considered insufficient evidence of what the underlying factors are. Hence, the subsequent sections will investigate potential value drivers of the abnormal return using a number of deal characteristics and control variables in a multiple regression model.

5.2 Introduction to regression results

Table 5.10 presents the results of the multiple regression analyses across event windows using the European benchmark. The CAR serves, as previously described, as the dependent variable while different deal characteristics are the independent variables. The regressions are shown both with and without control variables in order to discuss the robustness, resulting in 6 regression models per benchmark and 18 in total. All 18 different combinations of models can be found in Appendix D.

The [-1;1] event window combined with the market model applying the European index serves as a base for the discussions in order to keep it as focused and relevant as possible. The choice of base model is selected following the discussion in Section 4.3 where Koller et al. (2010) recommended a well-diversified index, why the market model with the European index is chosen. The [-1;1] event window is selected based on the findings in Section 5.1, which uncovered that most of the effect is realised during this period. Moreover, with an adjusted R^2 of 0.0468 it is the model across all 18 models that yields the highest explanatory power. Any differences across return models and event windows will naturally be elucidated during the subsequent discussions.

Section 5.1 showed that no material variation across models is found in terms of CAR. By comparing the regressions across models not much changes in regards to the individual coefficients either. A few variables do though change in terms of significance across event windows, which will be discussed further in the following sections. It is noteworthy that all of the variables directly concerning hypothesis 2 through 4 are relatively similar across models both in terms of sign and statistical significance, which serves as an important element regarding robustness and validity of the results.

It is apparent from Table 5.10 that adding the control variables has a large effect on the adjusted R^2 as it increases from 0.0089 in model 1 to 0.0468 in model 2, thus, highlighting the importance to control for these factors in order to keep the effect of them constant when evaluating the variables of interest. Not surprisingly does the R^2 increase as more control variables are included, but to justify the inclusion of additional variables one must verify if these add any additional explanatory power to outweigh the loss in degrees of freedom. Consequently, each control variable have been added separately to track the changes in the adjusted R^2. As most of the variables have a well-documented effect on the CAR and the addition of them resulted in an increased adjusted R^2, none of the control variables are excluded.

Table 5.10: Regression results with European index

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Constant	0.0092**	-0.0060	0.0108**	-0.0195	0.0159**	-0.0187
	(0.0039)	(0.0129)	(0.0053)	(0.0182)	(0.0064)	(0.0236)
Explanatory variables						
Not Crisis	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Crisis	-0.0198***	-0.0173**	-0.0252	-0.0194	-0.0587***	-0.0492***
	(0.0073)	(0.0078)	(0.0176)	(0.0159)	(0.0199)	(0.0179)
Healthy	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Distressed	-0.0033	-0.0062	-0.0044	-0.0071	-0.0066	-0.0099
	(0.0050)	(0.0050)	(0.0066)	(0.0067)	(0.0086)	(0.0086)
Missing Data	0.0052*	0.0046	0.0032	0.0013	0.0017	-0.0012
	(0.0031)	(0.0031)	(0.0040)	(0.0041)	(0.0049)	(0.0052)
Crisis # Distressed	0.0162	0.0172	0.0250	0.0233	0.0755**	0.0736***
	(0.0115)	(0.0120)	(0.0245)	(0.0235)	(0.0299)	(0.0285)
Crisis # Missing Data	0.0065	0.0033	0.0138	0.0075	0.0416*	0.0335*
	(0.0088)	(0.0090)	(0.0181)	(0.0169)	(0.0214)	(0.0199)
Frequent acquirer	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Infrequent acquirer	-0.0028	-0.0035	-0.0004	0.0012	-0.0096	-0.0075
	(0.0035)	(0.0036)	(0.0048)	(0.0049)	(0.0061)	(0.0063)
First order deal	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Higher order deal	-0.0083**	-0.0059*	-0.0108**	-0.0085*	-0.0206***	-0.0187***
	(0.0033)	(0.0033)	(0.0046)	(0.0046)	(0.0057)	(0.0058)
Crisis # Higher order deal	0.0136*	0.0122	0.0193	0.0160	0.0179	0.0121
	(0.0072)	(0.0075)	(0.0130)	(0.0130)	(0.0164)	(0.0163)
Cultural Distance	0.0007	0.0002	0.0019	0.0016	0.0015	0.0013
	(0.0012)	(0.0012)	(0.0016)	(0.0017)	(0.0022)	(0.0023)
Cross-country	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Domestic	0.0083**	0.0078**	0.0053	0.0080	0.0089	0.0128**
	(0.0036)	(0.0037)	(0.0048)	(0.0050)	(0.0061)	(0.0062)
Control variables		√		√		√
Observations	1,453	1,453	1,453	1,453	1,453	1,453
R-squared	0.0157	0.0665	0.0099	0.0490	0.0232	0.0575
R-squared adjusted	0.0089	0.0468	0.0031	0.0289	0.0164	0.0377

Notes: The grey column, model 2, is considered the base model. Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

In terms of robustness, Appendix D contains an overview of the base regression, a regression where outliers are excluded, and a robust regression, as previously described in Section 4.5. Most of the results remain consistent even in the two robust models indicating a certain degree of robustness and low sensitivity to what might be considered as outliers. Having said that, a few variables does change. The interaction term between crisis and distressed changes from being insignificant to significant at a 5% level when excluding outliers before becoming insignificant in the robust regression. The significant result in the model excluding outliers is due to a slightly higher coefficient and a much lower standard error. The lower standard error can be explained by a few of the acquisitions of distressed targets during a crisis being categorised as large outliers and, thus, excluded. Moreover, domestic deals change from being statistically significant and positive with a coefficient of 0.78 percentage point to become insignificant in the two other models. It is worth mentioning that some of the control variables also change. Method of payment, CEO gender, and Region all change, something that will briefly be discussed later. Further comments on the individual variables and their robustness will be provided in the following sections.

5.3 Hypothesis 2: The impact of financial crises

5.3.1 Introduction

Multiple studies find that takeover activity follow a pro-cycle behaviour as described in the literature review. The arguments point towards the access to capital as the main driver for this cyclical pattern. However, given that not all companies are affected equally, some scholars argue that it might be beneficial for certain companies to undertake acquisitions during a crisis as a favourable bargaining position could exist and, thus, create the opportunity to acquire assets at a discount (Acharya et al., 2010; Diamond and Rajan, 2009; James and Wier, 1987). On the contrary, the efficient market hypothesis claims that there should be no price incentives across time as security prices should reflect the fundamental price at all times (Fama, 1970).

Despite the vast amount of research conducted on M&A activity, limited research exists on how and if a financial crisis impacts the value creation of acquisitions in terms of shareholder value. Consequently, the following hypotheses were formulated:

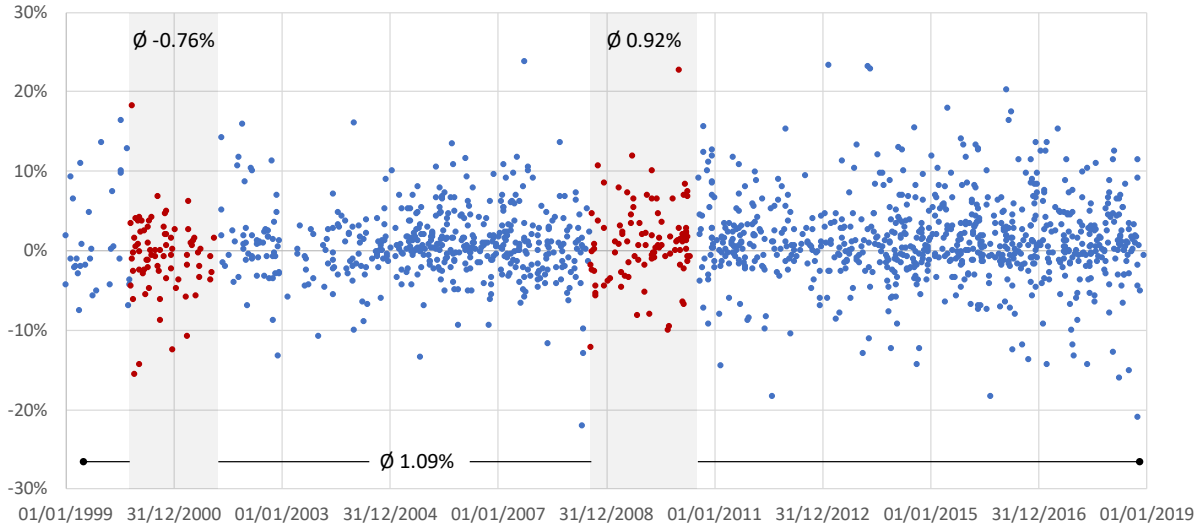
Hypothesis 2:	A financial crisis has no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders.
Hypothesis 2a:	Acquiring a financially distressed firm has a statistically significant positive effect on the cumulative abnormal return for the acquirer's shareholders.

As hypothesis 2a builds naturally upon hypothesis 2 they are considered inseparable and, therefore, the results of the two are presented and discussed together.

5.3.2 Results and interpretation

Before presenting the statistical findings, it is interesting to take a closer look at the data to potentially discover unconsidered characteristics, which might be beneficial for explaining the

Figure 5.4: Cumulative abnormal return across time



Note: The Y-axis is the CAR based on a [-1;1] event window with the European index as benchmark.
Source: Own contribution

results and otherwise add additional value to the discussion.

Figure 5.4 provides an overview of the CAR across time using [-1;1] as event window. First, it is clear that the majority of the observations are located within the range of ±10% CAR and concentrated at the centre of the interval around 0% to 1%. Secondly, as earlier seen in Figure 2.1 and also evident in Figure 5.4, there are periods with a higher concentration of deals and periods with less, especially around 1999 to 2004, which confirms the cyclical pattern of takeover activity. Thirdly, an interesting observation can be drawn when comparing the two crisis periods. There appears to be much fewer observations with positive CAR during the Dot-com Crisis relative to the 2008 Financial Crisis. The difference between the two crises becomes clearer by comparing the means of CAR: the 2008 Financial Crisis has a mean of 0.92%, similar to the average outside crisis of 1.09%, which is quite different from the average in the Dot-com Crisis of -0.76%. This large difference between the crises could indicate that the two crises are different in important aspects impacting the value creation or that valuable lessons were learned during the Dot-com Crisis. This difference will be further analysed below in order to verify if these crises are also statistically different from one another.

A carve out of the regression analysis presented in Section 5.2 is provided in Table 5.11. It is apparent that, ceteris paribus, an acquisition undertaken during a crisis results in a coefficient of -0.0173, which corresponds to a 1.73 percentage points lower CAR relative to acquisitions undertaken outside crisis. The result is significant at a 5% level. While the CMR model yields identical results, the effect becomes even larger (-2.13 percentage points) and significant at a 1% level when using the local benchmark. The result is inconsistent across event windows. The same pattern is seen for all the return models in Appendix D, namely that the result becomes insignificant for the [-5;5] window before returning to be significant for the [-10;10] window. A potential explanation for the insignificant results in [-5;5] can be found in the large increase in the variance, as reflected in the standard errors, which increases a lot without a corresponding

Table 5.11: Carve-out of regression results for financial crisis

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Not Crisis	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Crisis	-0.0198***	-0.0173**	-0.0252	-0.0194	-0.0587***	-0.0492***
	(0.0073)	(0.0078)	(0.0176)	(0.0159)	(0.0199)	(0.0179)

Notes: Robust standard errors in parentheses. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

Table 5.12: Average CAR by financial crisis for different event windows

	N	CAR [-1;1]	CAR [-5;5]	CAR [-10;10]
Crisis	177	0.19%	0.40%	-0.89%
Not Crisis	1276	1.09%	1.19%	0.98%

Note: European index applied.

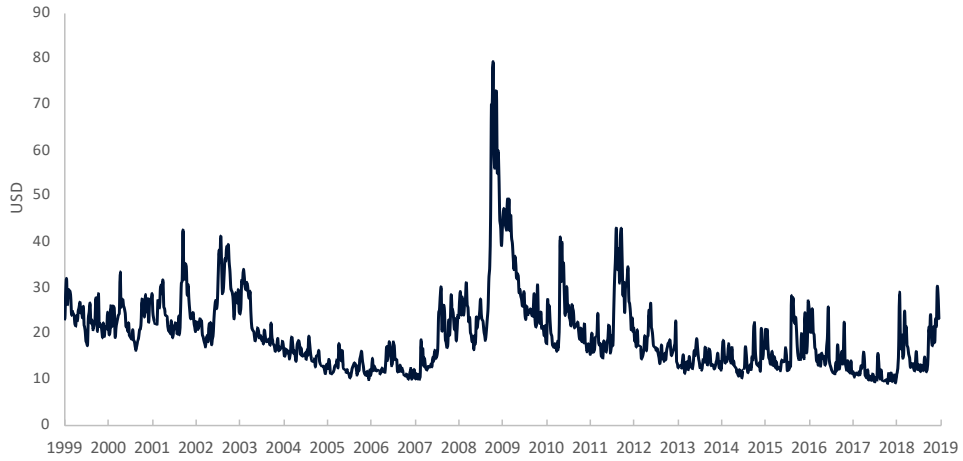
Source: Own contribution

increase in the coefficient. Looking at the [-10;10] window the effect appears to be lagged since the variance does not change, but the coefficient becomes much more negative relative to the narrower windows and, thus, highly significant again. This could also indicate the presence of other events affecting the results when applying broad event windows. The effect becomes smaller, but remains significant, when removing outliers and applying a robust regression, which displays the validity of the result.

Diving further into the data a more logical explanation arises. Table 5.12 shows an interesting development in the mean CAR across event windows. It appears that the mean of the acquisitions outside crisis does not change materially whereas a much greater volatility is present during crisis with the mean CAR changing from 0.19% for the shortest event window to -0.89% for the largest event window. Looking further into this reveals a pattern of acquisitions during crisis often having severe variation in their CAR. 31 observations are considered to be "high-changers" as their CAR change by more than 20 percentage points between [-1;1] and [-10;10]. 12 (38.7%) of these are observed during crisis, which is much greater than the proportion of 12% that crisis makes up in the sample, indicating a much greater volatility during periods of crisis. 75% of the 12 "high-changers" during crisis are negative changes, while only 56% of the 19 "high-changers" outside crisis are negative. The 12 "high-changers" during crisis is equal to 6% of all the observations during crisis whereas the 19 "high-changers" outside crisis is equal to 1.5%. Again it indicates that not only are there higher volatility across event windows during crisis, there is also a more negative development relative to outside crisis periods. The higher volatility is also evident from Figure 5.5, which shows the VIX-index for the twenty year period. The latter suggests that it is vital to choose a more narrow event window during a crisis to avoid the results being affected by other events.

As discussed in the literature review, Harford (2005) and Gaughan (2009) find compelling evidence proving that the takeover industry follows a cyclical behaviour with access to capital as the main driver. Gaughan (2009) further argue that firms building up enough internal fund-

Figure 5.5: VIX-index



Source: Yahoo Finance and own contribution

ing could potentially acquire targets at lower costs. If the latter statement is true one should see a higher return for cash payments during a crisis. Table 5.13 provides an overview of the average CAR realised across means of payments during crisis and outside of crisis. Evidently, cash, shares, mixed payment, and other payment provide on average a significant positive CAR outside crisis, with cash being the payment method yielding the highest average CAR of 1.56%. In contrast, during crisis all of the payment types decline and none of them remain significantly different from zero. Interestingly, outside crisis cash yields an average CAR of 0.68 percentage point greater than shares, while during crisis it yields an average CAR of -0.05 percentage point lower. Having said that, the table shows that the difference between cash and shares both in an outside crisis is insignificant. The results could be caused by the relatively small sample size during crisis, which might also explain why no significant difference is found.

Another aspect to look at is the change in choice of payment. Outside crisis 23.3% of the acquisitions are financed using pure cash, 5.5% using shares and 46.2% using mixed method, which was also shown in Section 3.2. Shares as a method of payment increases in popularity during crisis as 14.7% of the acquisitions are financed using shares. The finding seems a bit counterintuitive in relation to the Pecking Order Theory since one would expect management to prefer shares when they perceive them as overvalued. During a crisis where share prices generally decline management should be less willing to use shares to finance acquisitions. However, when looking at the share price development during the estimation period, i.e. 200 trading days before the event window, companies paying with shares during crisis increase relatively more than the companies utilising other payment methods. In fact, those using shares have experienced an average pre-announcement return of 36% whereas the other payment methods on average experienced an increase of around 10%. It could indicate that those using shares during crisis are on average more overvalued than those using other payment methods, thus, making the finding in line with the Pecking Order Theory. Comparing the pre-announcement returns outside crisis, the difference between shares and the other payment is still existing, but at a lower level, with 17.8% and 13.8% for shares and the rest, respectively. This implies that the spread between the pre-announcement returns is greater during crisis following large movements in stock prices.

Table 5.13: Differences in CAR by financial crisis and method of payment

	N	CAR [-1;1]	T-stat
Not Crisis			
Cash	298	1.56%	10.07***
Shares	74	0.88%	1.69*
Mixed Payment	590	1.26%	11.00***
Other Payment	86	0.86%	3.30***
Unknown Payment	228	0.18%	1.03
Crisis			
Cash	43	0.26%	0.45
Shares	26	0.30%	0.27
Mixed Payment	68	0.21%	0.44
Other Payment	10	0.62%	0.60
Unknown Payment	30	-0.17%	-0.27
Difference			
Not Crisis: Cash − Shares		0.68%	1.25
Crisis: Cash − Shares		-0.05%	-0.04

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

The Valuation Theory argue, as mentioned in Section 2.1, that bull markets lead bidders with overvalued stocks to acquire using stock swap deals. Our finding of a lower proportion of deals using shares outside crisis speaks against this, but, on the other hand, the 4 percentage points higher pre-announcement return implies that this could be the case.

A similar conclusion is derived when comparing Tobin's Q[1], which was used by Martin (1996) as an approximation for the market to book ratio. With an average Tobin's Q of 3.84 during crisis, those using shares have a much higher spread between market value and book value of assets than any of the other types of payments, which have an average Tobin's Q of 1.84. The opposing is evident outside crisis where the Tobin's Q on average is 1.65 and 1.87 for shares and the rest, respectively. It is puzzling why they still use shares as their method of payment when their Tobin's Q is lower. However, it could be that they still perceive shares to be the lowest cost of financing due to the relatively higher pre-announcement return.

There could also be other explanations for this shift in choice of payment. When looking at how the other methods of payment changes in popularity it can be seen that as shares increases in popularity mixed payment decreases from being used in 46.2% to 38.4% of the transactions in and outside crisis, respectively. Since mixed payment is a combination of several payment types and most likely includes debt, it could indicate that the shift is driven by the limited access to liquidity and, as a result, shares are used as an alternative method of payment. When comparing the companies using shares to those using another type of payment, the latter argument is further strengthened as those using another type of payment than shares on average have three times

[1]Tobin's Q is calculated as: (Book Value Assets - Book Value Equity + Market Value Equity) / Book Value Assets

Table 5.14: Differences in CAR for financial crisis

	N	CAR [-1;1]	T-stat
Not Crisis	1276	1.09%	13.73***
Crisis	177	0.19%	0.63
Dot-com Crisis	77	-0.76%	-1.57
2008 Financial Crisis	100	0.92%	2.36**
Difference			
Not Crisis − Crisis		0.89%	2.83***
Not Crisis − 2008 Financial Crisis		0.16%	0.40
Not Crisis − Dot-com Crisis		1.84%	3.75***
Dot-com Crisis − 2008 Financial Crisis		-1.68%	-2.70***

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.
*Significant at 10%, **Significant at 5%, ***Significant at 1%.
Source: Own contribution

more liquid capital than those using shares. This spread becomes even larger during crisis as they are here five times larger. However, those using shares are also much smaller in terms of total assets. Given the minimum deal size of EUR 100m it is likely that these "smaller" firms need external financing to complete the acquisition, why a larger proportion of the deals are financed using shares.

Returning to the early discussion of Figure 5.4 then Table 5.14 provides additional valuable insights. First, by looking at the means, it is clear that acquisitions undertaken outside crisis on average result in a positive CAR of 1.09% and is significant at a 1% level. Moreover, testing the difference in average cumulative abnormal return between crisis and not crisis proves that there is a statistical difference at a 1% level, and that acquisitions outside crisis yields on average a higher CAR. This is unsurprising since it was the same conclusion drawn earlier from the regression analysis.
Looking further into this it is found that the latter result is mostly driven by the Dot-com Crisis. The crisis has a mean of -0.76%, which is insignificant due to the small sample, why it cannot be rejected that it is equal to zero. On the contrary, acquisitions undertaken during the 2008 Financial Crisis on average realised a statistically significant CAR of 0.92%. When testing if these acquisitions are different from those outside crisis it yields an insignificant result. On the contrary, the difference of 1.84 percentage points between the Dot-com Crisis and not being in a crisis yields a statistically significant result at the 1% level. It is further evident that the two crises are different from each other as suspected from Figure 5.4. With an average of 1.68 percentage points lower during the Dot-com Crisis this difference is also significant at a 1% level.

One could be tempted to assume that the lower CAR for the Dot-com Crisis is driven by a single industry given the nature of the crisis where especially the technology companies were heavily affected. When applying the industry definition from Section 3.2, these companies are part of the Information and Communication (hereafter IC) industry. Table 5.15 provides an overview of the distribution of the acquisitions by industry during the Dot-com Crisis. First, the table provides an overview of the average CAR realised across industries. Clearly, none

Table 5.15: Differences in CAR for industries during the Dot-com Crisis

	N	CAR [-1;1]	T-stat
Information and communication	11	-1.47%	-0.96
Construction	4	-1.00%	-0.63
Financial and insurance activities	1	4.23%	0.83
Manufacturing, mining and quarrying and other industry	43	-0.77%	-1.25
Professional, scientific, technical, administration and support service activities	5	-2.38%	-1.13
Public administration, defence, education, human health and social work activities	1	-3.67%	-0.79
Wholesale and retail trade, transportation and storage, accommodation and food service activities	12	0.52%	0.44
Other than Information and communication	66	-0.64%	-1.27
Difference			
Information and communication − Other industries		-0.83%	-0.54

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

of the industries yields significant results due to the small sample sizes, hence, it cannot be statistically rejected that they are equal to zero. The IC industry realised a CAR of -1.47% and compared to the rest of the sample it experienced a 0.83 percentage point lower CAR. However, it is evident from the statistical test that the difference between this particular industry and the remaining industries is insignificant. It confirms the argument presented in Section 2.2.2, where the inclusion of the Dot-com Crisis was justified by it not being a sectoral crisis. Having said that, one should not rush to a conclusion as it is also apparent from the table that it is based on a small sample size and should be interpreted with care.

Hypothesis 2a seek to verify if it is beneficial to the acquirer's shareholders to purchase a financially distressed target. Table 5.16 shows that acquiring a financially distressed target will, ceteris paribus, result in a CAR of -0.62 percentage point relative to acquiring a healthy target. It is insignificant meaning that it cannot be rejected that acquiring a distressed target relative to a healthy target does in fact not have any impact on the CAR. The result is consistent across both event windows and returns models with relatively similar coefficients. Also, the result does not change when excluding outliers or considering the robust regression, indicating that the finding is robust. While both crisis and financially distressed targets have negative coefficients, the interaction term between crisis and distressed has a coefficient of 1.72 percentage points, implying that acquiring a distressed company during crisis have a positive effect which offsets some of the otherwise negative effect. Adding the coefficients together, one finds that an acquisition of a distressed target during a crisis is expected to have a 0.63 percentage point lower CAR than acquiring a healthy target outside a crisis, but a 1.1 percentage points higher CAR than acquiring a healthy target during a crisis. That being said, the coefficient for the interaction term is insignificant at the [-1;1] event window for the European index, but significant at the 5% and 10% level for the same window in the two other return models. Moreover, the interaction term becomes highly significant when considering [-10;10]. When examining the data it can be seen that four out of the 23 acquisitions satisfying being both in a crisis and with a distressed

Table 5.16: Carve-out of regression results for financial distress

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Healthy	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Distressed	-0.0033	-0.0062	-0.0044	-0.0071	-0.0066	-0.0099
	(0.0050)	(0.0050)	(0.0066)	(0.0067)	(0.0086)	(0.0086)
Missing Data	0.0052*	0.0046	0.0032	0.0013	0.0017	-0.0012
	(0.0031)	(0.0031)	(0.0040)	(0.0041)	(0.0049)	(0.0052)
Crisis # Distressed	0.0162	0.0172	0.0250	0.0233	0.0755**	0.0736***
	(0.0115)	(0.0120)	(0.0245)	(0.0235)	(0.0299)	(0.0285)
Crisis # Missing Data	0.0065	0.0033	0.0138	0.0075	0.0416*	0.0335*
	(0.0088)	(0.0090)	(0.0181)	(0.0169)	(0.0214)	(0.0199)

Notes: Robust standard errors in parentheses. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

target changes by more than 15 percentage points between [-1;1] and [-10;10], and that three of these move in a positive direction, which could be the cause of this sudden large increase in the interaction term. When using the [-10;10] event window, the coefficients actually imply that an acquisition of a financially distressed target during a crisis is 1.45 percentage points higher than acquiring a healthy target outside crisis and 6.37 percentage points higher than acquiring a healthy one during a crisis.

Table 5.17 explores the data in more details. Looking at some characteristics of the acquirers, smaller differences exist when evaluating the acquisitions outside crisis. Considering the median, since there are a few extremely large observations in this case, then acquirers of healthy targets are slightly bigger in terms of assets and market cap. They are also more liquid and purchase larger targets as is apparent from the relative size and deal value. On the contrary, during crisis the picture is reverse. The acquirers of distressed targets are much larger in terms of total assets and market cap. Moreover, they have much more liquidity which enables them to undertake more risky transactions with less need of external financing. Finally, it can be seen that the distressed targets acquired during crisis are much larger than the distressed targets outside a crisis. It could suggest that the acquirers during crisis are able to undertake acquisitions of companies which they were previously unable to acquire. It to some degree provides evidence in line with the higher bargaining power argument, since it could be that acquirers are able to purchase targets at a discount because of lower bidder concentration, but only during a crisis where it is assumed that fewer companies are able to undertake this kind of transaction. In addition to that, it is likely that scarcity of liquidity during times of crisis limits the possibilities for the distressed targets, thus, lowering their bargaining power and instead increases the possibility for the acquirer to conclude the deal at a favourable price. However, one must not be too confident in this conclusion as the CAR for the interaction term remains insignificant in the base model.

The regression model only separates distressed and healthy targets, hence, it does not consider degrees of credit-strength. Therefore, Table 5.18 provides an additional degree of detail. Evidently, acquiring a healthy target or distressed target both on average yield a statistically positive

Table 5.17: Size of acquirers

	N	Total Assets (m) Median	Market Cap (m) Median	Cash & Cash Equivalent (m) Median	Relative size Median	Deal value (m) Median
Outside Crisis						
Healthy target	560	3,765	3,635	319	0.16	335
Distressed target	131	3,486	3,558	249	0.13	234
During Crisis						
Healthy target	52	2,219	2,051	178	0.18	256
Distressed target	23	3,282	2,927	274	0.24	290

Note: (m) implies that the number is in EUR m. Only the acquirers for which their target has financial data available are shown.

Source: Own contribution

Table 5.18: Differences in CAR by Altman's Z"-score

	N	CAR [-1;1]	T-stat
Missing Data	687	1.18%	10.35***
Healthy (Z" $\geq$ 2.6)	421	1.15%	7.81***
Grey zone (1.21 $\leq$ Z" $<$ 2.6)	191	0.15%	0.71
Distressed (0 $\leq$ Z" $<$1.21)	77	1.31%	4.24***
Very distressed (Z" $<$ 0)	77	-0.09%	-0.24
Difference			
Healthy - Grey zone		0.99%	3.78***
Healthy - Distressed		-0.16%	-0.48
Healthy - Very distressed		1.24%	3.08***
Distressed - Grey zone		1.16%	3.06***
Distressed - Very distressed		1.40%	2.89***

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

CAR of 1.15% and 1.31%, respectively. The reason why the coefficients are insignificant in the regression model is likely to be the fact that healthy targets in the regression also includes the grey zone category and that distressed targets includes very distressed targets, while at the same time both grey zone and very distressed targets have much lower CAR and are insignificant. Furthermore, no statistically significant difference exist when looking at the difference between healthy and distressed targets. Interestingly, it can be seen that acquiring a healthy target yields on average a CAR of 0.99 and 1.24 percentage points higher relative to acquiring a target that is financially in the grey zone category and a very distressed target, respectively. A similar conclusion can be drawn when looking at the difference between distressed, grey zone and very distressed targets where acquiring a distressed company yields a higher CAR on average. The result highlights that differences in CAR exist when considering different degrees of targets' credit-strength, implying that when pursuing takeovers one should consider acquiring either a healthy target or one being distressed, but not too distressed or in between.

5.3.3 Sub-conclusion and discussion

Following the regression and the results presented above, hypothesis 2 is rejected as there is a statistically significant difference in the cumulative abnormal return that the acquirer's shareholders realises during a crisis and outside crisis.

Several arguments were presented during the literature review to explain both zero and nonzero effect:

i. No time-dependent incentive
ii. The fire-sale hypothesis
iii. Favourable bargaining position due to lower bidder concentration

This paper to some extends disconfirm the findings presented by Beltratti and Paladino (2013) as they find no statistically significant abnormal return around acquisition announcements during the 2008 Financial Crisis, which in contrast is found to be positive in this study. Whereas Beltratti and Paladino (2013) do not carry out statistical tests to compare crisis with no crisis, this paper does and finds no statistical difference between the 2008 Financial Crisis and being outside a crisis. The results suggest that combining the two crises yields a significantly lower CAR relative to acquisitions undertaken outside crisis. The evidence proposes that it is mostly driven by the Dot-com Crisis, which is statistically different from both the 2008 Financial Crisis and not being in a crisis at all. A potential explanation could be that valuable lessons regarding acquiring during crisis were learned after the Dot-com Crisis, thus, making executives more skilled at undertaking acquisitions in periods of crisis, i.e. supporting the Social Evolutionism Theory. This insight suggests that future scholars should separate the two crises when conducting a similar analysis, as some crises might be different from periods of no crisis while others are not. Furthermore, by comparing means across industries it is clear that no statistical difference exists during the Dot-com Crisis, supporting our initial argument for including the crisis as it is not isolated to one single sector. Moreover, there was, as previously shown in Figure 3.1, generally much higher average deal values in the period leading up to the Dot-com Crisis, indicating a potential overvaluation during this period. Given that the acquisition process in practice often take several months to complete, the deals conducted in the Dot-com Crisis most likely started before the crisis, why the market possibly perceives the deal as being overvalued translating into negative CAR.

Contradicting the statement by Gaughan (2009), it is proven that no significant return is realised for acquirers using internal funding to finance acquisitions during a crisis. Looking further into the method of payments, results in line with The Pecking Order theory are found. Acquirers using shares to finance acquisitions both inside and outside crisis are found to have experienced greater positive pre-announcement share price movements, which could indicate that their shares are overvalued and, therefore, be the cheapest way of financing a deal. Shares are also found to be much more popular as a financing method during crisis relative to outside crisis, which could imply that shares is the preferred alternative financing method when access to capital is restricted.

This paper moreover find evidence supporting the findings of Ang and Mauck (2011). It cannot be rejected that there is no statistical effect of acquiring a financially distressed company, why we are not able to confirm hypothesis 2a. As a result, the fire-sale hypothesis is not verified. It could indicate that the market is relatively efficient at pricing in the financial situation of the target without over- or under-reacting.

Interesting insights are uncovered by looking further into the credit-strength of the targets. It is found that acquiring a healthy or distressed company yields a greater CAR on average than acquiring a target in the grey zone or a very distressed target. Moreover, a positive effect for the interaction between acquiring a distressed target during a crisis is detected. This interaction effect offsets to a certain extent the negative effects of acquiring during a crisis and acquiring a distressed target. The interaction effect even becomes so large in the [-10;10] event window that it is considered better to purchase a distressed target during a crisis than to purchase a healthy one outside. The result is significant for both the local benchmark and the CMR model, but remains insignificant when using the European benchmark.

A closer look indicates higher bargaining power in favour of the acquirer. It is argued that acquirers of distressed targets are much larger and more liquid during crisis enabling them to finance acquisitions internally, while the targets, on the other hand, might have limited access to capital during a crisis, thus, lowering their bargaining power. Furthermore, the distressed targets during crisis are found to be larger compared to healthy targets acquired during crisis. Also, the size of distressed targets during crisis is much larger compared to distressed targets outside crisis. It could indicate that the acquirer is able to purchase targets which they were previously unable to purchase outside crisis. It could be interesting for future research to investigate this effect further and track the financial health of targets over time.

It has, as earlier mentioned, not been possible to obtain valid financial data for all targets. Consequently, it is necessary to flag those acquisitions with missing data to keep them in the regression analysis. Having said that, whether it is included or not is found to have no material effect on the coefficient of distressed, as shown in Section 4.4, why it is not been considered a large problem. However, it would of course have been preferable for the statistical tests to have had more financial data available. Moreover, due to the small sample size of distressed companies being acquired within a crisis, no separation of the two crises in the regression is conducted to verify if the effect of acquiring distressed companies vary across the two crises.

5.4 Hypothesis 3: CEO acquisition history and overconfidence

5.4.1 Introduction

The hubris phenomenon stems all the way back from the ancient greeks, however, it was not until Roll (1986) investigated how managers in US companies engage in acquisitions that it was introduced in the M&A theory. It is shown that overconfident managers have incorrect beliefs regarding their ability to create value, leading them to use available funds on acquisitions that are overvalued.

While the negative consequences of overconfidence are documented, it is less known what leads to this overconfidence. Is it likely that some managers are in fact born overconfident, or is overconfidence something that follows from previous experience? A few recent studies argue that overconfidence is caused by the self-attribution bias, resulting in differences in performance of the acquisitions depending on its order in a sequence (Billett and Qian, 2008; Doukas and Petmezas, 2007). As the majority of past research on the subject is confined to US data or older data, the following hypothesis was defined:

Hypothesis 3: A CEO's higher order deals have a statistically significant negative effect on the cumulative abnormal return for the acquirer's shareholders.

Furthermore, it is shown in new research that one's personality in fact changes through the adulthood, why it is interesting to see how times of financial crisis might affect the overconfidence of CEOs conducting acquisitions. While we have been unsuccessful in finding studies researching this, it has been shown that traders in fact become less overconfidence during a financial crisis (Jlassi et al., 2014). As a result, the following hypothesis was defined:

Hypothesis 3a: The negative effect of a CEO's higher order deals on the cumulative abnormal return for the acquirer's shareholders is significantly lower during a financial crisis.

5.4.2 Results and interpretation

A natural consequence of overconfidence in regards to acquisitions is that a CEO overestimates his or her own abilities in creating synergies and integrating the company into the focal firm, thus, leading the CEO to pay too much for the target, resulting in negative abnormal return. It has already been shown in this paper that acquisitions do lead to significant positive abnormal returns on average, why the synergies argued by neoclassical theory seems to dominate over the behavioural theories which, among other things, argue that overconfidence is likely to deteriorate the value creation.
Having said that, the positive abnormal return result does not prevent overconfidence being present. It could be that not everyone exhibits overconfidence and that the level of overconfidence differs, why all the value that is otherwise created is not always deteriorated.

It has been described that overconfident CEOs are inclined to undertake several acquisitions within a relatively short period (Doukas and Petmezas, 2007). Therefore, Table 5.19 shows the CAR for each deal order in order to investigate whether there could be differences in the value creation for different deals. By examining the table one can see an emerging pattern of decreasing CAR for higher deal orders. First deals, i.e. deals where there have not been an acquisition in the five years preceding, have an average cumulative abnormal return of 1.16% and is significant at the 1% level. Second order deals are also significant at the 1% level, albeit with a lower CAR of 0.71%. Third order deals have an average of 0.48% and is significant at the 10% level. The decreasing CAR continues for deal order 4 and 5 or greater with insignificant averages of 0.23% and -0.09%, respectively. The table displays that the more deals the CEO has conducted in the preceding five years, the lower is the abnormal return for the subsequent

Table 5.19: CAR by CEO deal order

Deal order	N	CAR [-1;1]	T-stat
1	997	1.16%	11.51***
2	301	0.71%	4.60***
3	94	0.48%	1.94*
4	35	0.23%	0.58
≥5	26	-0.09%	-0.20
≥2	456	0.58%	4.79***
Difference			
1st − ≥2nd		0.58%	3.67***

Note: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

deal. If the deals with a deal order of two or above are grouped together then they have an average of 0.58%. The table shows that this is exactly half of the return of the first order deals and that the difference is significant at the 1% level. It suggests that higher order deals are equivalent to a worse reaction at announcement. This finding does initially lead to hypothesis 3 being confirmed, namely that higher order deals result in lower CAR.

The findings from above could indicate that CEOs who acquire frequently are systematically more overconfident than the infrequent acquirers or that they suffer from the self-attribution bias. Table 5.20 shows the result when the sample is stratified based on the CEO acquisitiveness, thus, making it easier to clarify whether it is one or the other. Interestingly, it can be seen that the infrequent acquirers have an average of 1.09% for the 639 acquisitions while the frequent acquirers have an average of 0.89% for 814 acquisitions, which both are significant at the 1% level. This implies that infrequent acquirers in general are slightly better at acquiring than the frequent acquirers. However, since infrequent acquirers, naturally given the definition of the group, only have first order deals a more fair comparison would be to compare it with the first deals by the frequent acquirers. The table displays that there are 358 of these deals with an average of 1.28%. So, the frequent acquirers do in fact perform better on their first deals than the infrequent acquirers, although the difference of 0.18% is insignificant. The difference between the frequent acquirers' first order deals and higher order deals, on the other hand, is 0.70% and significant at the 1% level.

Before concluding anything, it is worth taking into account the deal characteristics. Table 5.21 presents the regression results for just the variables of interests: frequent acquirers versus infrequent acquirers and first order deals versus higher order deals. The results from the table does altogether confirm the previous findings. Starting with model number 2, the model applying a [-1;1] event window and utilising control variables, it can be seen that the coefficient is -0.0035, proposing that infrequent acquirers in general, ceteris paribus, have 0.35 percentage point lower abnormal return than frequent acquirers. The coefficient is though not very large and, therefore, also insignificant. Furthermore, the coefficient does not change much from the regression without control variables, however, looking across the three event windows the effect varies from 0.0012

Table 5.20: Frequent vs. infrequent acquirers

	N	CAR [-1;1]	T-stat
Infrequent	639	1.09%	8.27***
Frequent	814	0.89%	9.33***
1st deals	358	1.28%	8.44***
≥2nd deals	456	0.58%	4.79***
Difference			
1st infreq. −1st freq.		-0.18%	-0.92
1st freq. − ≥2nd freq.		0.70%	3.59***

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

to -0.0075 in the [-5,5] and [-10;10] event windows, respectively. Having said that, the coefficient is insignificant in all scenarios, why concluding that there is no significant difference between the CEOs seems reasonable. This conclusion is also robust to outliers and to applying different return benchmarks. The coefficient is almost the same when looking at the CMR model and the model with local indices in Appendix D. Only in the case of the [-10;10] event window and the local indices is it significant at the 10% level, although, that seems to be the odd one out. Turning the focus to the deal order in Table 5.21, it can be seen that the higher order deals have a coefficient of -0.0059, meaning that the CAR is on average 0.59 percentage point lower than for first order deals. This difference is significant at the 10% level, but the size of the coefficient and significancy varies across the event windows. The coefficient is larger when the control variables are not taking into account for all three event windows, implying that some of the negative effect of higher order deals stems from differences in their deal characteristics relative to the first order deals. The coefficient is also more negative in the [-5;5] and [-10;10] event windows than it is in the [-1;1] window and becomes significant even at the 1% significance level. By browsing through those deals that vary by more than 15 percentage points from the small to the large event window it can be seen that there are 13 higher order deals and that ten of those result in lower CAR, which explains the volatile coefficient. In any case, the coefficient is significant why higher order deals result in lower cumulative abnormal return than first order deals. The result is the same for all three return models, with coefficients that are almost identical in terms of size and significance levels. Thus, hypothesis 3 is confirmed. The conclusion is not particularly robust when considering the influential observations. The robustness regressions show that the effect is much smaller and actually becomes insignificant. As a result, one should be aware that the conclusions drawn from the base regression could be influenced by a few outliers.

It is evident from these results that the CEOs are not at first different, why the inverse relationship between CAR and deal order cannot be explained by a systematic difference in overconfidence of the CEOs. Instead, the significant difference for first order deals and higher order deals for the frequent acquirers implies that it is possibly the CEOs acquisition history and experience that leads to hubris. A finding that was also to some extent confirmed in the regression analysis. This is commonly explained by the self-attribution bias where frequent acquirers attribute

Table 5.21: Carve-out of regression results for CEO acquisitiveness and higher order deals

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Frequent acquirer	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Infrequent acquirer	-0.0028	-0.0035	-0.0004	0.0012	-0.0096	-0.0075
	(0.0035)	(0.0036)	(0.0048)	(0.0049)	(0.0061)	(0.0063)
First order deal	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Higher order deal	-0.0083**	-0.0059*	-0.0108**	-0.0085*	-0.0206***	-0.0187***
	(0.0033)	(0.0033)	(0.0046)	(0.0046)	(0.0057)	(0.0058)

Notes: European index applied. Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

successful first deals to their own abilities, consequently, leading them to be overconfident and conducting more, worse performing, acquisitions in the near future.

As explained in the literature review in Section 2.2.3 the method of payment might be affected by overconfidence. Overconfident CEOs are reluctant to raise external finance because they believe that outside investors undervalue their company. Table 5.22 shows the results for cash, mixed payment, shares, other payment, and unknown payment. Following the previous findings it seems reasonable to assume that the overconfidence exists to a larger degree in the deals of higher order, why it is interesting to see that shares are used 8.9% of the time for first order deals and just 2.4% for higher order deals. On the contrary, cash increases its proportion from 21.5% to 27.9% for first order deals and higher order deals, respectively. This confirms that overconfident CEOs are less likely to use their shares as financing method and instead turn to internal financing in terms of cash.
Surprisingly, the table displays that higher order deals do not consistently exhibit lower abnormal return for all methods of payment. This pattern is only seen for cash, mixed and other payment, although the difference between first order and higher order deals is only significant for mixed payment. For shares we actually find, unlike Billett and Qian (2008) and Doukas and Petmezas (2007), that second order deals yield higher abnormal return. Having said that, the sample size is small and the variance is large, why the difference is not statistically significant. This could indicate that higher abnormal return for the higher order deals paid with shares is caused by some other factors. Therefore, it is assumed that, in general, the overconfidence implied by the lower abnormal return for higher order deals exists for the various payment methods, although to different degrees.

It was illuminated in the literature review that unrelated acquisitions often lead to lower abnormal return than related acquisitions. Equivalently, it has been shown now that higher order deals result in lower return, why it is interesting to see whether this effect is the same for both related and unrelated acquisitions. Table 5.23 shows the CAR when the sample is stratified based on relatedness. It is evident that unrelated acquisitions have slightly lower CAR for both infrequent and frequent acquirers, which was also expected, even though it is nothing substantial. Given that both unrelated acquisitions and higher order deals often lead to worse CAR, it

Table 5.22: CAR by deal order and method of payment

		Cash	Mixed	Shares	Other	Unknown
1st deals	N	214	465	89	65	164
	CAR [-1;1]	1.54%	1.45%	0.63%	1.08%	0.14%
	T-stat	7.71***	10.28***	1.21	3.43***	0.63
≥2nd deals	N	1.15%	0.41%	1.49%	0.32%	0.13%
	CAR [-1;1]	127	193	11	31	94
	T-stat	4.88***	2.27***	1.37	0.73	0.50
Difference						
1st − ≥2nd deals	CAR [-1;1]	0.39%	1.04%	-0.85%	0.76%	0.01%
	T-stat	1.25	4.51***	-0.71	1.40	0.03

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

Table 5.23: CAR for deal order by relatedness and investment opportunities

		Related	Unrelated	Low TQ	High TQ
Infrequent	N	342	297	238	401
	CAR [-1;1]	1.14%***	1.03%***	0.76%***	1.29%***
Frequent	N	434	380	264	550
	CAR [-1;1]	0.97%***	0.79%***	0.82%***	0.92%***
Frequent: 1st deals	N	199	159	119	239
	CAR [-1;1]	1.47%***	1.03%***	1.15%***	1.34%***
Frequent: ≥2nd deals	N	235	221	145	311
	CAR [-1;1]	0.55%***	0.61%***	0.54%***	0.60%***
Difference					
Infrequent − Frequent	CAR [-1;1]	0.17%	0.24%	-0.05%	0.37%*
Infrequent − Frequent: 1st deals	CAR [-1;1]	-0.33%	0.00%	-0.38%	-0.05%
Frequent: 1st deals − ≥2nd deals	CAR [-1;1]	0.92%***	0.42%	0.60%*	0.74%***

Notes: The deals are classified as Low TQ (Q < 1.3) or High TQ (Q ≥ 1.3) based on the Tobin's Q measure. Servaes (1991) use 1.0 as cut-off, but argue that using the mean or median is also a viable approach. As this paper has larger Tobin's Q's on average, a slightly larger cut-off point is chosen.

The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

could be expected that more higher order deals are also unrelated, however, that is not the case. The proportion of related and unrelated deals is identical for infrequent and frequent acquirers, while the proportion of unrelated deals for the frequent acquirers' higher order deals is 48% versus 44% for the first order deals. Moreover, in neither related nor unrelated deals are there a statistically significant difference between infrequent and frequent acquirers. There is also no difference between the first deals of frequent acquirers and the infrequent acquirers. We find that the higher order deals are lower than the first order deals in both types of acquisitions. The difference is 0.92 percentage point and significant at the 1% level for related, whereas the effect is just 0.42 percentage point and insignificant for unrelated deals. Having said that, the pattern is the same as that found in Table 5.19.
It has been described in Section 2.1 that takeover sequences could also be explained by a company's investment opportunities. Table 5.23 also shows the results if instead the sample is divided into two groups based on Tobin's Q. A takeover sequence starts with an increase in investment opportunity and ends with a decrease in the opportunity set (Klasa and Stegemoller, 2007). Tobin's Q is commonly used as a proxy for investment opportunity (Doukas and Petmezas, 2007; Martin, 1996), why we would expect that if a takeover sequence ends with a decrease in the opportunity set then a majority of the higher order deals for frequent acquirers should be classified as Low TQ. However, this statement is rejected as the proportion of higher order deals is basically the same for Low TQ and High TQ. Moreover, we find the same pattern as before, namely that we cannot distinguish between infrequent and frequent acquirers' first deals, but instead see the difference in the frequent acquirers' first and higher order deals. The finding indicates that the overconfidence effect that is present for the higher order deals does not depend on the investigated deal characteristics.

Finally, it is possible that the difference between first order deals and higher order deals is simply driven by the CEOs conducting the higher order deals being worse at undertaking acquisitions. Should that be the case, it would rule against the self-attribution bias. Table 5.24 shows the CAR for first deals and higher order deals when the sample is stratified based on the CAR of the first deal. Hence, the CEOs that have a positive CAR in their first deal are classified as positive and those that have a negative CAR are classified as negative. Naturally, the CAR is very positive (negative) on average for the positive (negative) group. The interesting part is the average CAR for the higher order deals, where the positive CEOs have an average of 0.74% whereas the negative CEOs have an average of 0.39%. The difference between the two groups is 0.35 percentage point, but insignificant. This implies that we are not able to explain the lower abnormal return for higher order deals by those CEOs' acquisition abilities.

Besides the general presence of overconfidence in the higher order deals, hypothesis 3a sets out to test whether the effect of higher order deals changes during times of financial crisis. Table 5.25 displays the results from the regressions for the interaction term between financial crisis and higher order deals. The coefficient of the interaction term is 0.0122, implying that acquiring in a crisis and having acquired previously within the last five years has some sort of bonus effect worth 1.22 percentage points, all else equal. The effect is very close to being significant at the 10% level. Again, the size of coefficient is smaller when taking into account control

Table 5.24: CAR by sign of first deal

	N	CAR [-1;1]	T-stat
1st deals			
Positive	576	4.30%	32.83***
Negative	421	-3.14%	-20.01***
≥2nd deals			
Positive	244	0.74%	4.38***
Negative	212	0.39%	2.28***
Difference			
≥2nd deals: Positive − Negative		0.35%	1.43

Notes: The CEOs are divided into the positive or negative group based on the sign of the CAR for their first deal. The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

Table 5.25: Carve-out of regression results for interaction between crisis and higher deal order

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Crisis # Higher order deal	0.0136*	0.0122	0.0193	0.0160	0.0179	0.0121
	(0.0072)	(0.0075)	(0.0130)	(0.0130)	(0.0164)	(0.0163)

Notes: European index applied. Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

variables indicating that other deal characteristics also explain some of the variation in the CAR of the higher order deals conducted during crisis. The effect is relatively stable across the event windows, although it does not become significant at any point. Looking across the return models, the effect is once again almost the same for all three models. The only difference in terms of significance is in the model with the [-1;1] window and local indices where the effect is significant at the 10% level as seen in Appendix D. In terms of robustness to outliers the effect remains positive, albeit lower. The insignificancy of the coefficient makes us unable to reject that the interaction effect of CEOs higher order deals and crisis might be zero. Hypothesis 3a can, as a result, not be confirmed. Despite the fact that the coefficient is insignificant it is still considered economically interesting given its magnitude. Based on the market capitalisation of those 47 companies that conducted a higher order deal during a crisis the 1.22% is equivalent to approximately EUR 406m on average per company or EUR 19.1bn in total. It should be noted that the interaction effect does not completely make up for the otherwise negative effect of doing an acquisition in a crisis (-0.0173). Nevertheless, the positive coefficient of the interaction term makes up more than twice the negative coefficient of the higher order deals (-0.0059) implying that CEOs' acquisition experience makes them better at navigating the acquisition space during crisis than those with less experience.

To dive into the changing effect of CEO's higher order deals during crisis, Table 5.26 shows the CAR of deals made during a crisis stratified by CEO acquisitiveness and deal order. Moreover,

Table 5.26: CAR by CEO acquisitiveness and crisis

	N	CAR [-1;1]	T-stat
Crisis	177	0.19%	0.63
Infrequent	77	0.39%	0.75
Frequent	100	0.04%	0.11
1st deal	53	-0.54%	-1.05
Dot-com Crisis	29	-0.37%	-0.51
2008 Fin. Crisis	24	-0.74%	-1.04
2nd deal	47	0.69%	1.32
Dot-com Crisis	14	-0.37%	-0.34
2008 Fin. Crisis	33	1.14%	1.93*
Difference			
Infreq. Crisis - Freq. Crisis		0.35%	0.55
1st Freq. Crisis - 2nd Freq. Crisis		-1.23%	-1.68*
1st Freq. Dot-com Crisis - 1st Freq. 2008 Fin. Crisis		0.38%	0.37
1st Freq. 2008 Fin. Crisis - 2nd Freq. 2008 Fin Crisis		-1.89%	-2.03**
2nd Freq. Dot-com Crisis - 2nd Freq. 2008 Fin. Crisis		-1.51%	-1.24

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

the deals made by the frequent acquirers are shown for each crisis individually since they were found to differ in Section 5.3, to see whether the effect might be different. It is apparent from the table that we cannot statistically distinguish between the infrequent and frequent acquirers' deals during a crisis given its difference of 0.35 percentage point. Whereas the infrequent acquirers manage an average of 0.39% for their deals, which obviously all are first deals, the frequent acquirers have an average of -0.54% for their first deals. Contrary to the declining pattern that was previously found, but consistent with the result of the interaction term in the regression, the higher order deals now have an average of 0.69%, which is 1.23 percentage points higher than the first order deals and statistically significant. Interestingly, the difference is found only in the 2008 Financial Crisis. Where the average for the acquisitions made by frequent acquirers during the Dot-com Crisis is -0.37% for both first and higher order deals, the averages are -0.74% and 1.14% for first and higher order deals, respectively, during the 2008 Financial Crisis. While we can infer that the difference of 1.89% between the two is significant at the 1% level, we cannot infer that the there is a statistical difference between the higher order deals made during the Dot-com Crisis and the 2008 Financial Crisis. The findings from this table implies that the added bonus effect of conducting an acquisition during a crisis is actually only present in the 2008 Financial Crisis. On the other hand, it seems like the overconfidence effect vanishes and the CEOs acquisition experience becomes more important.

5.4.3 Sub-conclusion and discussion

Several findings were presented in the previous section. Initially an overview of the cumulative abnormal return for different deal orders was shown. The finding is very clear, namely that

the abnormal return deteriorates for the increasing deal order. It is shown that the CAR for deal order 1, 2, and 3 all are significantly higher than zero. Most importantly we find that the difference between the first deal by a CEO and the subsequent acquisitions is 0.58 percentage point and significant at the 1% level. The inverse relationship between abnormal return and the deal order is identical to the relationship that Billett and Qian (2008) and Doukas and Petmezas (2007) find. The findings remain valid when taking into account other deal characteristics in terms of the regression analysis. It shows that higher order deals have significantly lower CAR compared to the first order deals with a coefficient of -0.0059. The conclusion is the same across return models and event windows, however, when checking for robustness with regards to outliers the result becomes insignificant. Despite that, hypothesis 3 is confirmed and we conclude that higher order deals have a statistically significant negative effect on the CAR for the acquirer's shareholders.

This finding is interesting in several aspects and there are multiple possible explanations for the difference in higher order deals and first order deals:

i. The frequent acquirers could suffer from empire-building, thus, focusing more on maximising their own utility instead of the shareholders'
ii. The frequent acquirers might simply have an overweight of CEOs with poor endowed acquisitions abilities
iii. They might also suffer from overconfidence and, therefore, overvalue the targets
iv. Finally, it could be explained by the change in investment opportunities, with declining investment opportunities leading to worse returns

Several analyses were made to confirm or reject these explanations. One of these is the analysis of whether there is a difference between the frequent acquirers and the infrequent acquirers. It is found that frequent acquirers on average have 0.18 percentage point lower CAR than the infrequent acquirers. However, this difference is solely due to the higher order deals as the frequent acquirers actually have better performing first order deals compared to the infrequent acquirers. Instead, the difference between the first and higher order deals for the frequent acquirers is 0.70 percentage point and significant at the 10% level. The regression analysis does also confirm this. With an insignificant coefficient of -0.0035 or 0.35 percentage point it is shown that there is no statistical difference between the two types of acquirers. If the decreasing CAR deal for deal is to be explained by the empire-building theory, then one would expect that the CEOs differ fundamentally from one another for all deal orders. Therefore, this finding disproves that empire-building is the reason for the declining pattern. Similarly, this also speaks against that the frequent CEOs should simply be bad at acquiring. This explanation is rejected in the test where the CEOs are stratified according to the sign of their first deal and the difference between those with a positive and negative first deal is insignificant for the higher order deals. As a result, only the overconfidence and the change in investment opportunities explanations remain from the four suggested.

Finally, to test whether the declining effect is due to a change in investment opportunities the sample is stratified based on Tobin's Q. The analysis shows that the proportion of higher order

deals is basically the same for Low TQ and High TQ. Moreover, it displays that we cannot distinguish between frequent and infrequent acquirers, but just between the first and higher order deals for the frequent acquirers. In fact, it is also evident from the analysis that companies with many investment opportunities, i.e. those with a high Tobin's Q, have slightly lower CAR, implying that the investment opportunities do not explain the difference in CAR. This finding is in contrast to what Klasa and Stegemoller (2007) find, who argue that the declining CAR for deals of higher order is due to decreasing investment opportunities. The contrasting result could possibly be caused by Klasa and Stegemoller (2007) having a sample consisting solely of US firms from 1982 to 1999 whereas we use a newer European sample of acquisitions. Furthermore, they apply a different measure for investment opportunities than this paper.

Having rejected that the pattern of declining CAR deal for deal is caused by empire-building, endowed skills, or changing investment opportunities, only one of the suggested explanations remain: overconfidence. The declining CAR speaks to overconfidence growing larger for each deal that a CEO complete. Given that we reject that the frequent and infrequent CEOs are different in their first deal, the overconfidence appears not to be present at this time. Therefore, the best explanation for the overconfidence present in the higher order deals is the self-attribution bias. This finding is consistent to Billett and Qian (2008), who find a similar declining pattern and show that it is caused by the CEOs who had positive post-acquisition performance, and Doukas and Petmezas (2007), who also attribute the declining CAR to self-attribution bias. Thus, in the words of Billett and Qian (2008): overconfident CEOs are made, not born.

Having argued that higher order deals suffer from overconfidence, it is interesting to find that the proportion of deals using shares as payment method declines from 8.9% for first order deals to 2.4% for higher order deals, whereas cash increases from 21.5% to 27.9%. This is consistent with the findings by Ackert and Deaves (2010) and Malmendier and Tate (2008) as well as the Pecking Order Theory suggested by Myers and Majluf (1984). The declining pattern is present for cash, mixed payment and other payment. Shares on the other hand has an increasing CAR deal for deal, however, the difference is insignificant despite being 0.85 percentage point, suggesting that the small sample size is likely a factor and that an outlier could have caused it.

Besides method of payment, Doukas and Petmezas (2007) also argue that diversifying acquisitions are likely to be made by overconfident CEOs. Therefore, we investigate whether there is any difference in first order and higher order deals for related and unrelated acquisitions. It would be expected that more higher order deals were unrelated should their statement be correct. Nevertheless, we find that the proportion of unrelated deals remain the same and that the CAR is in fact slightly higher for higher order unrelated deals than it is for higher order related deals. Whereas Doukas and Petmezas (2007) find a larger difference in first order and higher order deals for diversifying acquisitions, we find the opposite, namely that related acquisitions actually have a greater difference. However, this is caused by the lower CAR on first order deals for unrelated acquisitions and not worse higher order deals, why we cannot infer that the overconfidence is larger in any of the two acquisition types.

Another dimension that would have been interesting to investigate is the difference for CEO gender, however, given the extremely low sample size for female CEOs this has not been feasible.

Ultimately, we also test how a financial crisis affects the higher order deals. The regression analysis reveals that conducting a higher order deal during crisis compared to a first order has a positive effect on the CAR of 1.22 percentage points. The coefficient is insignificant, albeit, close to being significant at 10%. The result is robust to other return models and event windows, and also relatively robust to outliers. Despite being statistically insignificant, thus making us unable to confirm hypothesis 3a, it is argued that the effect is economically significant as it is worth EUR 406m on average for the 47 companies or EUR 19.1bn in total. When combining the coefficient of higher order deals with the interaction between crisis and higher order deal the effect is 0.63 percentage point. Hence, the interaction effect turns the higher order deals into a positive scenario, suggesting that the previously argued overconfidence is dominated by the CEOs experience in the acquisition space, enabling the CEO to navigate better during a financial crisis.
Analysing the effect deeper, we find that the difference is present merely during the 2008 Financial Crisis and not the Dot-com Crisis. This could imply that the acquisition experience was not enough to make up for acquiring during the Dot-com Crisis. For the 2008 Financial Crisis, on the other hand, the lessons learned by the companies during the Dot-com Crisis in combination with a CEO with acquisitions history makes it possible to conduct value creating acquisitions. Given the lack of previous research in the areas of acquisitions, overconfidence, and crisis in combination, these findings lay an interesting foundation for further research.

5.5 Hypothesis 4: Cross-country and cultural distance

5.5.1 Introduction

Pursuing an acquisition can be driven by several underlying motives as outlined in Section 2.2.4. Furthermore, distinguishing between acquisitions that are made within a country and those that seek to exploit globalisation by pursuing targets from foreign countries to some extent creates dissimilarities in what those motives are. Domestic acquisitions are commonly connected to the more classical synergy motives whereas cross-country acquisitions are usually explained by the acquirer trying to capitalise on market imperfections, extend the reach of intangible assets, or exploit differences in capital markets (Bruner and Perella, 2004). Despite a vast amount of research having been conducted in the area, the findings remain inconclusive.

Having the whole world as ones playing field when conducting cross-country acquisitions, there are likely some interesting aspects of these deals that can uncover why investors react as they do when the acquisition is announced. One dimension is the distance between the two countries from which the acquirer and target originate in terms of culture, termed the national cultural distance. Although not being a new phenomenon, stemming from a worldwide survey on culture in the '80s, national cultural distance is still a relatively young discipline within the area of acquisitions. As a result, the following two hypotheses were previously formulated:

Hypothesis 4: Acquiring a foreign firm compared to a domestic firm has no statistically significant effect on the cumulative abnormal return for the acquirer's shareholders.

Hypothesis 4a: Cultural distance has no statistically significant relationship with the cumulative abnormal return for the acquirer's shareholders.

As one is naturally a subpart of the other, the following will commence with a discussion of the former and continue with the latter. In the end, both of the results will be discussed together.

5.5.2 Results and interpretation

Given the hypothesis, it is expected that acquiring a foreign firm compared to a domestic firm does not have any statistically significant effect on the abnormal return. Table 5.27 reports the mean cumulative abnormal return for all acquisitions within the two groups. The 509 domestic acquisitions have an average CAR of 1.38% and statistically significant at the 1% level. In terms of cross-country acquisitions, 944 are conducted with an average CAR of 0.76%. Again, despite being 0.62 percentage point lower than the domestic acquisitions, this average is also statistically significant different from zero. So far there are no surprising conclusions as we already knew from the discussion in Section 5.1 that the CAR is on average positive. What can further be derived from Table 5.27 is that the difference between the two groups is also statistically significant at the 1% level. It appears as if the domestic acquisitions do create a larger positive CAR relative to foreign acquisitions. Of course, this does not take into account possible differences in terms of other deal characteristics.

Table 5.28 presents the results for the cross-country variable from the regressions. In this case, the foreign acquisitions are part of the base which the domestic acquisitions are compared relative to. The regression results clearly support the previously reported result from the means table, namely that domestic acquisitions on average lead to a relatively more positive reaction on the share price. The size of the coefficient remains positive and similar across all event windows with and without the control variables. Having said that, the result is significant at the 5% level only when applying the [-1;1] and [-10;10] windows with control variables, and otherwise not. The coefficient of 0.0078 implies that a domestic acquisition is estimated to result in a 0.78 percentage point higher CAR relative to a similar acquisition conducted cross-country. Hence,

Table 5.27: Differences in CAR by cross-country

	N	CAR [-1;1]	T-stat
Domestic	509	1.38%	10.03***
Cross-country	944	0.76%	7.92***
Difference			
Domestic − Cross-country		0.62%	3.70***

Note: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

Table 5.28: Carve-out of regression results for cross-country

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Cross-country	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Domestic	0.0083**	0.0078**	0.0053	0.0080	0.0089	0.0128**
	(0.0036)	(0.0037)	(0.0048)	(0.0050)	(0.0061)	(0.0062)

Notes: European index applied. Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

when taking into account the deal characteristics it is actually a greater difference than the one reported in Table 5.27. Similar to what was argued in Section 5.3.2 the coefficient does not change in [-5;5], but the standard error does, implying more variance and leading to an insignificant result. The effect becomes significant again in the [-10;10] window despite higher standard error due to a larger effect. When examining acquisitions changing severely between [-1;1] and [-10;10] it is evident that of the 31 "high-changers", 17 (55%) are domestic and 14 (45%) are cross-country. Six (35%) of the 17 domestic "high-changers" and four (28%) of the 14 increased the CAR when extending the event window. There are, as described in Section 3.2, a larger proportion of domestic acquisitions during crisis compared to outside crisis (40% vs 34%). Interestingly, this is not the case during the Dot-com Crisis where the proportion is 35%. Instead, it must be during the 2008 Financial Crisis that executives turned relatively more towards domestic acquisitions than is otherwise the case for the remaining period. The split during the 2008 Financial Crisis is 43% and 57% for domestic and cross-country acquisitions, respectively. It is likely that this combination is one of the reasons why the coefficient becomes larger in the [-10;10] event window where the crisis coefficient is more negative and, thus, other factors need to change upwards to outweigh this.

This significant result is also found in the model applying local indices, whereas it is insignificant in the CMR model and in the models that takes into account outliers. It was hypothesised that there would be no statistically significant difference between the two groups, nonetheless, the analysis presented here shows that there is a statistical difference, why the hypothesis is rejected. However, this could be influenced by outliers why one should be cautious when using the finding.

Previous studies find that the effect of domestic and cross-country acquisitions differ according to whether the target is public or private, why it is interesting to see how the acquisitions perform based on the listing status of the target. Table 5.29 provides an overview of this along with some tests of the differences in the means of the groups. There is no doubt that an acquisition of a listed company leads to a much worse CAR than a private company, and it is not surprising as elaborated on in Section 2.2.5. Interestingly, the cumulative abnormal return when acquiring a listed target domestically is statistically significant negative at the 5% level, whereas the effect for listed cross-country targets is not significantly different from zero. However, it cannot with statistical certainty be concluded that the difference of -0.53 percentage point between the two groups is different from zero. For the targets that are unlisted the effect is 1.85% and 0.96% for domestic and cross-country acquisitions, respectively, with a significant difference of 0.90

Table 5.29: Differences in CAR by cross-country and target listing

	N	CAR [-1;1]	T-stat
Domestic			
Listed	99	-0.59%	-1.92**
Unlisted	410	1.85%	12.03***
Cross-country			
Listed	186	-0.05%	-0.25
Unlisted	758	0.96%	8.86***
Difference			
Domestic: Listed −Unlisted		-2.44%	-7.15***
Cross-country: Listed −Unlisted		-1.01%	-4.34***
Domestic Listed −Cross-country Listed		-0.53%	-1.45
Domestic Unlisted −Cross-country Unlisted		0.90%	4.75***

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

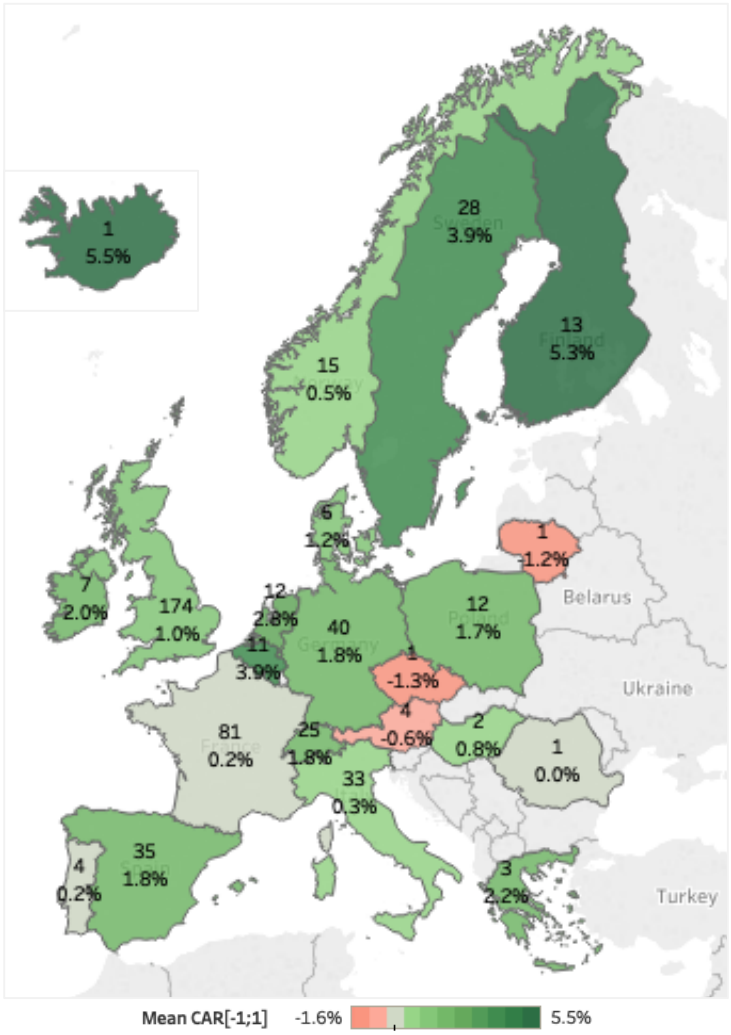
Source: Own contribution

percentage point. Given the significant difference, the larger proportion of private targets in the sample is an advantage for the domestic acquisitions, thus, positively influencing the average for domestic in general.

It is interesting to briefly take a closer look at the domestic acquisitions before diving into the cross-country acquisitions. Figure 5.6 maps out how the acquisitions are distributed among the European countries in the study as well as the average CAR of the acquisitions within a country. It is evident that the domestic acquisitions within the Northern part of Europe are doing particularly well with Iceland having the highest CAR of 5.5% for the one domestic acquisition conducted here. It is followed closely by Finland with thirteen acquisitions averaging impressive 5.3% and Sweden with 28 acquisitions averaging 3.9%. Unsurprisingly, reflecting the average of 1.38% for all domestic acquisitions, the majority of the countries yield a positive cumulative abnormal return. There are a few countries, however, that have negative CAR. Austria, Czech Republic, and Lithuania with -0.6%, -1.3%, and -1.2% for four, one, and one acquisition, respectively. Moreover, France, Portugal, and Romania have low albeit positive return. Finally, it can be seen that most of the domestic acquisitions are within Great Britain, which is not surprising as they make up 27% of the total sample. The figure indicates, at least within domestic acquisition, that Northern Europe performs better relative to the rest and that Central and Eastern Europe is likely to perform worse. This finding is confirmed when looking at the full regression in Appendix D. It is clear that Northern Europe performs significantly better than Central and Eastern Europe given its coefficient of 0.0206. It can, however, not statistically be concluded that they perform better than Southern and Western Europe, which at the same time cannot be concluded to be statistically better than Central and Eastern Europe.

Leaving behind the domestic acquisitions and instead focusing solely on the cross-country acquisitions, Figure 5.7 displays a world map presenting the target countries of the 944 cross-country acquisitions. While it is evident that many of the targets for these acquisitions are

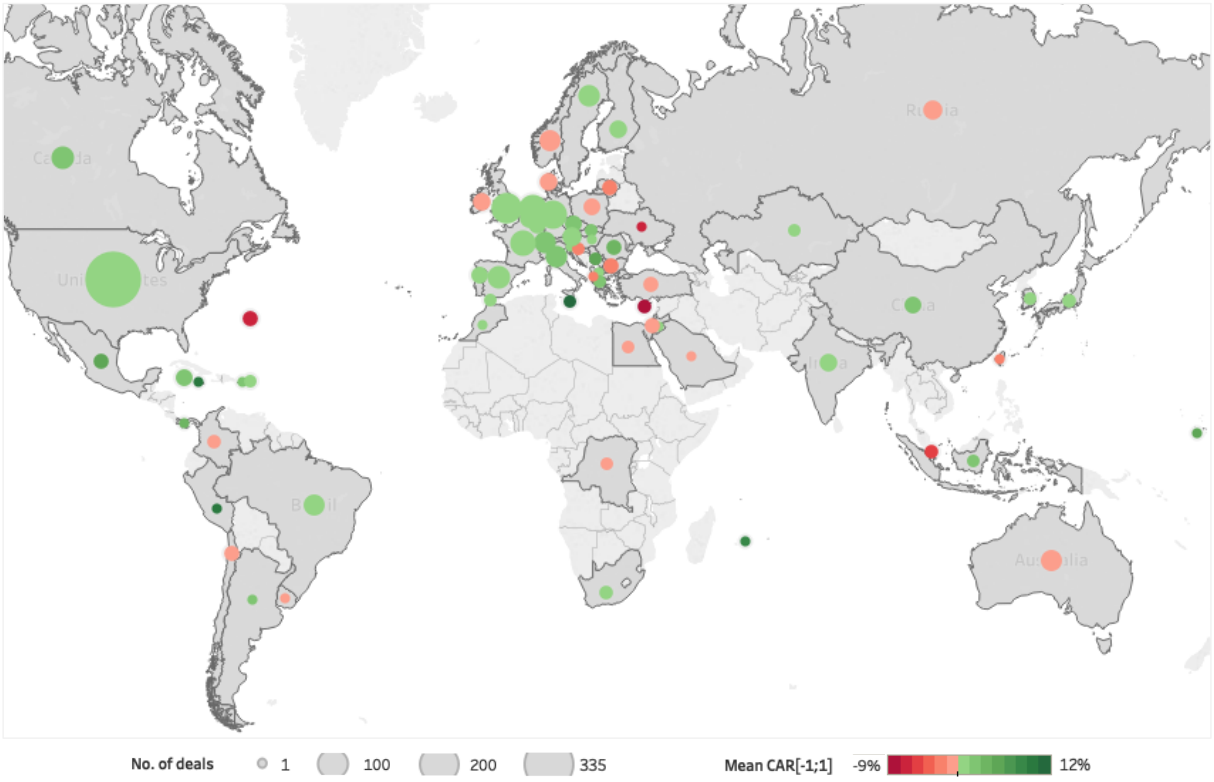
Figure 5.6: Geographical map of all domestic acquisitions



The CAR is based on the European index.
Source: Own contribution from Tableau

other European countries, the most targeted country is, in fact, USA. With 335 of the 944 acquisition, USA is by far the most frequent target country and is followed next by Great Britain with only 65 acquisitions. Digging into the differences between acquisitions made in USA and those in other countries reveals some interesting findings. Table 5.30 shows the distribution of acquisitions in terms of relatedness and the industry of the targets. A key finding is that USA has a by far larger proportion of acquisitions within Information and Communications than the acquisitions in other parts of the world. It is common knowledge that USA, in general, is on the forefront of capabilities in terms of IT and technology, why this could imply that many of these acquisitions are motivated by acquiring knowledge that the firm currently does not possess. By distinguishing between the relatedness of the firms this theory is further supported. It can be seen that while the split between related and unrelated acquisitions for USA and the remaining target countries is almost the same for all other sectors it differs considerably for Information and Communication. While 31 (35%) out of 89 acquisitions in Information and Communication are unrelated for all other target countries, this proportion is 59 (74%) out of 80 for USA, implying again that these acquisitions are most likely motivated by acquiring new knowledge and

Figure 5.7: Geographical map of all cross-country acquisitions



Note: The CAR is based on the European index.
Source: Own contribution from Tableau

not extending the reach of current assets or capitalising on market imperfections.

Returning to the world map in Figure 5.7 it is also apparent that quite a lot of the acquisitions are of other European firms. 451 of the acquisitions are made within Europe and, in general, they seem to react with positive returns. A number of acquisitions are made in distant countries leading to mixed results, e.g. the acquisitions of companies in South America. The acquisitions in Colombia, Chile, and Uruguay all on average resulted in negative abnormal return, whereas acquisitions in Brazil, Argentina, and especially Peru turned out to increase the share price. The same observation is found when looking to the East with positive CAR in countries such as China, Japan, India, and Indonesia while Australia, Russia, and Singapore result in negative CAR. The fact that the majority of the acquisitions are of either US companies or European companies implies that the cultural distance is also relatively low on average, something that was also described in Section 3.2. The mixed results that were accounted for just now implies that the cultural distance between the acquirer and target most likely does not have any impact on the return.

Delving deeper into the cultural distance and hypothesis 4a, Table 5.31 divides the cross-country acquisitions into four quartiles according to the cultural distance. It is evident that the cumulative abnormal return is greatest for the 4th quartile with 0.96% on average, followed by the 1st quartile, the 2nd quartile, and ultimately the 3rd quartile with 0.71%, 0.62%, and 0.54%, respectively. All quartiles individually are statistically significant different from zero. It appears that the CAR decreases going from the 1st to the 2nd quartile and again going from the 2nd

Table 5.30: Target industry by relatedness and target country for cross-country acquisitions

	United States			Other target countries		
	Unrelated	Related	**Total**	Unrelated	Related	**Total**
Agriculture, forestry and fishing	0	0	**0**	1	0	**1**
Construction	3	2	**5**	9	5	**14**
Financial and insurance activities	2	3	**5**	12	5	**17**
Information and communication	59	21	**80**	31	58	**89**
Manufacturing, mining and quarrying and other industry	65	105	**170**	104	206	**310**
Other services	1	0	**1**	2	0	**2**
Professional, scientific, technical, administration and support service activities	29	18	**47**	33	27	**60**
Public administration, defence, education, human health and social work activities	4	0	**4**	3	5	**8**
Real estate activities	0	1	**1**	4	8	**12**
Wholesale and retail trade, transportation and storage, accommodation and food service activities	12	10	**22**	53	43	**96**
Total	**175**	**160**	**335**	**252**	**357**	**609**

Source: Own contribution

to the 3rd quartile, before it increases in the 4th quartile. This suggests that there could be a convex relationship between cultural distance and CAR where a low or high cultural distance results in higher return while a cultural distance in between results in lower return. Testing the differences between the means of the groups do, however, not show any statistically significant differences. Consequently, the hypothesis that cultural distance does not affect the cumulative abnormal return is initially not rejected.

The result for cultural distance from the regression analysis is shown in Table 5.32. The coefficient is 0.0002 indicating that an increase of one in cultural distance increases the CAR by 0.02%, which is almost nothing. This is also confirmed by a p-value of 85.4%. Section 3.2 showed that the minimum and maximum cultural distance is 0.0374 and 6.1087, respectively, resulting in a range of 6.0713. Hence, the largest possible effect of cultural distance suggested

Table 5.31: Differences in CAR by cultural distance

	N	CAR [-1;1]	T-stat
1st Quartile Cultural Distance	236	0.83%	4.21***
2nd Quartile Cultural Distance	243	0.71%	3.99***
3rd Quartile Cultural Distance	230	0.54%	2.63***
2nd+3rd Quartile Cultural Distance	473	0.62%	4.63***
4th Quartile Cultural Distance	235	0.96%	5.08***
Difference			
1st Quartile − 2nd+3rd Quartile		0.20%	0.85
1st Quartile − 4th Quartile		-0.14%	-0.51
2nd+3rd Quartile − 4th Quartile		-0.34%	-1.46

Notes: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

Table 5.32: Carve-out of regression results for cultural distance

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	[-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Cultural Distance	0.0007	0.0002	0.0019	0.0016	0.0015	0.0013
	(0.0012)	(0.0012)	(0.0016)	(0.0017)	(0.0022)	(0.0023)

Notes: European index applied. Robust standard errors in parentheses.

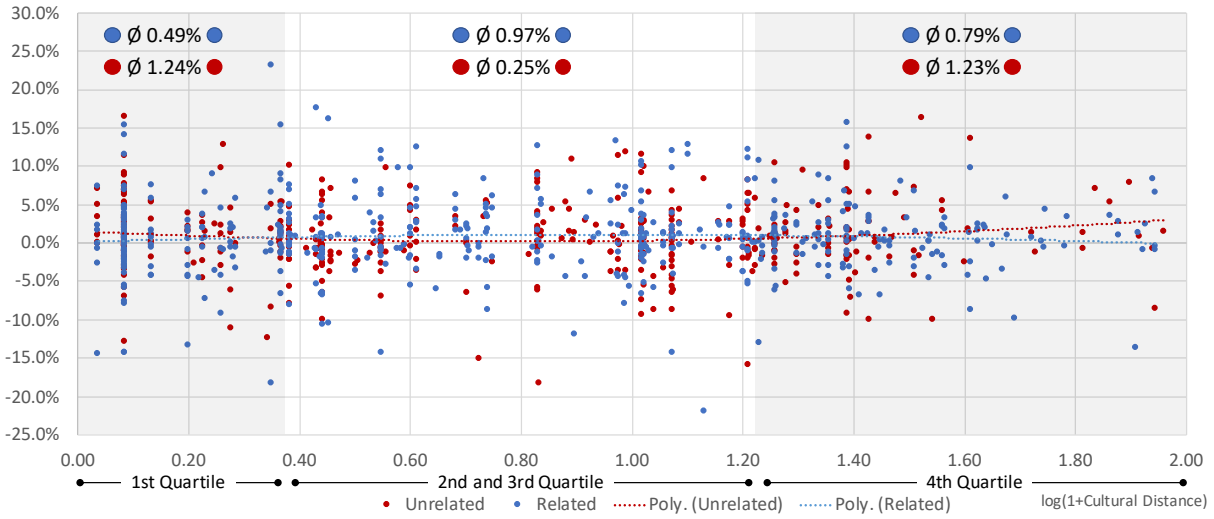
*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Own contribution

by the coefficient is approximately 0.12%. The coefficient once again varies a little between the event windows, although it never comes close to being significant. The same can be said if comparing the result for the different benchmark indices and when taking into account outliers, indicating that the result is robust. A second-order cultural distance term has been tested to check whether a convex relationship is present, which possibly distorts the result, but due to the second-order term also being insignificant and the test of differences in means showing likewise it is not included in the final regression models. The result of adding the second-order term will be shown in Table 5.35 at the end of this section. As a result of the insignificant coefficient for cultural distance, we are not able to reject hypothesis 4a.

The fact that we are unable to reject the hypothesises is not particularly surprising as it is in line with the meta-analysis of 46 studies by Stahl and Voigt (2008), which concludes that cultural differences affect sociocultural integration, synergy realisation, and shareholder value in different and sometimes opposing ways. As described in Section 2.2.4, Stahl and Voigt (2008) instead show that the effect varies depending on for instance the degree of relatedness. Therefore, Figure 5.8 plots all cross-country acquisitions by their cultural distance and the cumulative abnormal return, while at the same time distinguishing between related and unrelated acquisitions. To get a more even distribution along the x-axis, one has been added to the cultural distance

Figure 5.8: CAR by cultural distance and relatedness



Notes: European index applied. The Y-axis is the cumulative abnormal return. The X-axis is the logarithm of 1 + Cultural Distance. Ø stands for the average of the group.
Source: Own contribution

before it was log-transformed. The background colour indicates different quartiles, where the 2nd and 3rd quartiles are merged together. Looking at all of the acquisitions at once it is clear that they are scattered relative evenly out, which makes sense since no relationship was found between cultural distance and CAR. Be that as it may, interesting findings can be seen when investigating the combination of relatedness and the cultural distance. There are some clear differences between the effect of unrelated acquisitions depending on the cultural distance. The average for unrelated acquisitions is 1.24% and 1.23% for the 1st and 4th cultural distance quartile, respectively, while it is only 0.25% in the 2nd and 3rd quartile. Similar to when all cross-country acquisitions were evaluated this suggests a convex relationship between cultural distance and cumulative abnormal return for unrelated acquisitions as illustrated by the red dotted line showing the best polynomial fit for these acquisitions. The related acquisitions, on the contrary, show the exact opposite with averages of 0.49%, 0.97%, and 0.79% for the 1st, 2nd and 3rd, and 4th quartile, respectively.

A means table and test for differences is shown in Table 5.33 to test whether the differences actually are significant. All sub-groups, except the unrelated acquisitions in the 2nd and 3rd quartile, are significantly different than zero. The proportion of acquisitions within each sub-group does not reveal significant differences explaining the large deviations within the quartiles. The unrelated acquisitions are on average 0.75 percentage point greater than related acquisitions in the 1st quartile, which is significant at the 10% level. In the 2nd and 3rd quartile, the difference is significant at the 1% level with 0.71 percentage point in favour of related acquisitions. Finally, the difference is insignificant in the 4th quartile, despite an advantage for unrelated acquisitions. Considering the overarching theme of acquisitions during financial crisis Table 5.34 measures the mean CAR for acquisitions undertaken outside and during crisis split into the quartile groups. It is evident that the mean outside crisis is slightly larger for domestic acquisitions and that it

Table 5.33: Differences in CAR by cultural distance and relatedness

	N	CAR [-1;1]	T-stat
1st Quartile Cultural Distance	236	0.83%	4.21***
Related	130	0.49%	1.90*
Unrelated	106	1.24%	4.11***
2nd+3rd Quartile Cultural Distance	473	0.62%	4.63***
Related	245	0.97%	4.98***
Unrelated	228	0.25%	1.37
4th Quartile Cultural Distance	235	0.96%	5.08***
Related	142	0.79%	3.34***
Unrelated	93	1.23%	3.34***
Difference			
1st Quartile Related - Unrelated		-0.75%	-1.90*
2nd+3rd Quartile Related - Unrelated		0.71%	2.66***
4th Quartile Related - Unrelated		-0.43%	-1.30

Note: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

Table 5.34: Differences in CAR by cultural distance and crisis

	N	CAR [-1;1]	T-stat
Not Crisis			
Domestic	439	1.46%	10.46***
1st Quartile Cultural Distance	216	1.00%	5.06***
2nd+3rd Quartile Cultural Distance	410	0.83%	6.19***
4th Quartile Cultural Distance	211	0.88%	4.73***
Crisis			
Domestic	70	0.85%	1.77*
1st Quartile Cultural Distance	20	-1.04%	-1.17
2nd+3rd Quartile Cultural Distance	63	-0.71%	-1.39
4th Quartile Cultural Distance	24	1.69%	1.94*
Difference			
Crisis Domestic - Crisis 4th Quartile		0.84%	-0.85
Crisis 1st Quartile - Crisis 4th Quartile		-2.73%	-2.19**
Crisis 2nd+3rd Quartile - Crisis 4th Quartile		-2.40%	-2.37**

Note: The t-statistic is based on cross-sectional independence, i.e. the T_1 test statistic. European index applied.

*Significant at 10%, **Significant at 5%, ***Significant at 1%.

Source: Own contribution

varies very little by cultural distance. In contrast, a statistically significant difference is found between the acquisitions in the highest cultural distance quartile and those with lower cultural distance during a financial crisis. With an average of 1.69% for the 24 acquisitions within the 4th quartile it is 2.73 and 2.40 percentage points higher than the averages of the 1st and the 2nd and 3rd quartile, respectively. The CAR for the 4th quartile is also twice as high as the CAR for the domestic acquisitions, albeit the result is insignificant due to the small sample size. The results suggest that pursuing acquisitions in countries that has a very distant national culture is a way of mitigating the risks that are otherwise present when acquiring during a crisis.

As the relationship between cultural distance and CAR appear to be moderated by the relatedness of the acquirer and target, and whether it is during a crisis or not, Table 5.35 displays the result if these relationships are added to regression model 2. It is apparent that the cultural distance now has a negative coefficient of -0.0029 and a positive second-order term with a coefficient of 0.0008 implying a convex relationship. Moreover, the positive coefficient of 0.0037 for the interaction between cultural distance and crisis implies that there is an extra effect of acquiring in distant national cultures during crisis. Finally, the interaction terms between relatedness and cultural distance show exactly what was described previously, namely a concave relationship between cultural distance and CAR for related acquisitions. Since the effect for unrelated acquisitions is now part of the base of cultural distance, the convex relationship found here show precisely what was expected. Having said that, all of the results are insignificant with the lowest p-value being 20.8%, implying that the significant differences found in the means table are also affected by other factors. Consequently, these moderators are not being included as part of the final regression.

Table 5.35: Carve-out of regression results for polynomial effect of cultural distance

	(2)
VARIABLES	CAR [-1;1]
Cultural Distance	-0.0029
	(0.0045)
Cultural Distance^2	0.0008
	(0.0011)
Crisis # Cultural Distance	0.0037
	(0.0030)
Related # Cultural Distance	0.0065
	(0.0053)
Related # Cultural Distance^2	-0.0016
	(0.0013)

Notes: European index applied. Robust standard errors in parentheses.
*Significant at 10%, **Significant at 5%, ***Significant at 1%
Source: Own contribution

5.5.3 Sub-conclusion and discussion

First of all, hypothesis 4, which states that acquiring a foreign firm compared to a domestic firm has no statistically significant effect on the cumulative abnormal return, is rejected. The coefficient of 0.0078 in the regression is statistically significant at the 5% level, implying that acquiring a foreign firm compared to a domestic firm has a negative effect on the cumulative abnormal return. This finding is in line with Moeller and Schlingemann (2005), who study 4,430 US firms and find a significant negative effect of 1.1% on CAR for cross-country acquisition when applying a [-1;1] event-window. The study is also one of the few published studies that, similar to this paper, analyse the effect using a factor in a regression. When comparing means, Conn et al. (2005) argue that domestic acquisitions perform better with an average CAR of 0.66% versus 0.33% for cross-country acquisitions, although important differences depending on whether the target is public or private are found. They report that public domestic acquisitions result in negative announcement return whereas similar cross-country acquisitions result in zero announcement return. While Conn et al. (2005) investigate 4,000 acquisitions by UK firms occurring during 1984-1998 and this paper investigates acquisitions from 1999-2018, the result seems to be consistent. We find that domestic acquisitions have an average of 1.38% whereas cross-country acquisitions have a significantly lower average of 0.76%. Moreover, public domestic acquisitions result in significantly negative short-run return, thus, confirming the finding from Conn et al. (2005).

The finding that public acquisitions result in lower return confirms that the acquirer can appropriate a greater proportion of the benefits due to the lower competition, private firm discount, and lower publicity. The significantly higher return for private targets in domestic acquisitions relative to cross-country acquisitions can be interpreted as the domestic acquirers having an advantage in obtaining information, thus, mitigating the risk of asymmetric information that can otherwise be the case in private acquisitions (Capron and Shen, 2007; Damodaran, 1999). The information advantage for domestic firms is less present for public acquisitions as these

companies are obviously scrutinised at a more granular level given their status as a public company. As a result, the cross-country acquisitions perform better than the domestic acquisitions, although not significantly, most likely due to benefits of foreign expertise and extended reach of intangible assets offsetting the larger premium that is paid for public targets.

With regards to hypothesis 4a and cultural distance, the analysis shows an almost flat relationship between the cumulative abnormal return and the national cultural distance with the regression coefficient estimated to be 0.0002, implying that cultural distance neither lead to a better nor worse share price reaction in the short-run. Hence, we are not able to reject hypothesis 4a and, therefore, cannot confirm the "cultural distance hypothesis" as proposed by Hofstede (1980) or the findings in Datta and Puia (1995), who suggests a negative relationship. At best one could argue for a slight convex relationship, but this could not be statistically confirmed.
The finding is not surprising given the inconclusive results from the research that has previously been made (Datta and Puia, 1995; Dikova and Sahib, 2013; Markides and Ittner, 1994; Olie and Verwaal, 2004). Interesting results, on the other hand, are found when cultural distance is analysed by the relatedness of the firms and financial crisis. The analysis of the acquisitions, when grouped in four cultural distance quartiles and by relatedness, showed average CARs that were significantly different from one another. With averages of 1.24% and 1.23% for unrelated acquisition in the 1st and 4th quartile, respectively, both averages are significantly higher than the average of 0.25% for the 2nd and 3rd quartile, thus, implying a convex relationship. Surprisingly, the relationship that is found is opposite for related acquisitions with 0.49%, 0.97%, and 0.79% for the 1st, 2nd and 3rd, and 4th quartile, respectively. This suggests that Stahl and Voigt (2008) are right in stating that the effect varies by the degree of relatedness. However, while they argue that high relatedness leads to a negative relationship, our findings instead indicate that two different polynomial relationships exist: an unrelated acquisition should be pursued in countries that are either very similar or very distant in terms of culture whereas related acquisitions should be conducted in countries not too similar nor too distant. It is important to note that the relationship is insignificant when testing the it in the regression with control variables. That is indeed also similar to Stahl and Voigt (2008) who only find that their results are significant with regards to sociocultural integration and synergy realisation, but not shareholder value.
Ultimately, the effect of cultural distance is analysed along the financial crisis dimension. There are no clear differences when analysing the means of the cultural distance quartiles outside crisis. However, within acquisitions pursued during times of crisis, the means of the CAR for the cultural distance quartiles vary distinctly. With means of -1.04%, -0.71%, and 1.69% for the 1st, 2nd and 3rd, and 4th quartile, respectively, the mean for the 4th cultural distance quartile is found to be significantly different from the other two. It is also larger, although insignificantly, than the domestic acquisitions during crisis. This finding has not yet been documented in previous research, why it would be interesting for further research to dive deeper into how and why financial crisis and cultural distance are related to one another. One should be aware that the interaction between crisis and cultural distance is insignificant when taking into account other deal characteristics, why it could possibly be explained by other factors.

5.6 Additional findings

A vital part of a study as the one conducted here is to clearly identify the relationship between a dependent variable and some independent variables. In order to do so one must include variables that are known to have a contributing factor and, thus, keep the effect of these constant throughout the analysis. The control variables are not of primary interest and most of them have been subject to extensive analysis before, however, they might still provide an interesting perspective to the analysis. It is, therefore, found appropriate to devote a small part of the paper to discuss the control variables applied in this study. Table 5.36 in the end of this section includes a carve-out of all the control variables from the regression analysis.

Some of the control variables will be discussed less in details in the following section to avoid repetitiveness as they have already been discussed together with results presented earlier.

Public versus private targets

Consistent with the conducted literature on the area (Bradley and Sundaram, 2006; Capron and Shen, 2007; Fuller et al., 2002), this study also finds that acquisitions of private targets exceed the return realised for public targets. More specifically, Table 5.36 shows that acquiring a public target results in a coefficient of -0.0153, which is equal to a 1.53 percentage points lower CAR for the [-1;1] event window and using the European benchmark. The result is significant at the 1% level. In terms of robustness it is evident that the results are consistent across benchmarks and event windows. Also, as shown in Appendix D, the result remain unchanged when excluding outliers and using robust regression. There appears to be a slightly increasing effect across windows, implying that using a wider event window result in a more negative effect of acquiring a public target.

Numerous explanations have been proposed to explain this difference (Capron and Shen, 2007). Most of them seem to rely on the arguments concerning higher risk related to information asymmetry, lower bidder competition, and a higher concentration of owners. Additionally, taking over a public target often require a tender offer to be made. Walkling and Edmister (1985) show, based on data from 1972 to 1978, that the bulk of tender offer premiums lie in the 20% to 50% range. Furthermore, they confirm that the premium is on average 33.5% higher relative to when an opposing bid exists at the time an offer is made. It could be a rational explanation for the differences observed between public and private targets.

Method of payment

Evidently from Table 5.36, cash appears to be the superior method of payment as other methods realise, ceteris paribus, a lower return. For the [-1;1] event window both shares and mixed payment are negative, but statistically insignificant, whereas other payment and unknown payment are both statistically significant negative across benchmarks. The results, however, vary across event windows. For example other payment becomes insignificant and shares becomes significant when extending the event window. Applying the two other benchmarks the unknown

payment also becomes insignificant for the longest window. What remains consistent across windows and benchmarks is the negative sign of the other methods of payment relative to cash, except for mixed payment which is basically zero when using CMR. Finally, when applying a robust regression other payment becomes insignificant whereas the other results remain robust to outliers.

The result does to a great extent confirm the previous findings of Sudarsanam and Mahate (2003) who, based on a sample of UK takeovers completed between 1983 and 1995, find that cash acquirers generate higher returns than equity acquirers. The explanations also presented in the literature review centres around the information asymmetry hypothesis, stipulating that the method of payment serves as a signal to the target with whom they are negotiating. For instance, offering stocks over cash could signal to the target that the stock offered is overvalued and, consequently, lead the target to demand a premium. Furthermore, Rose et al. (2017) argue that managers of target companies should aim at maximising the cash portion of the payment to reduce valuation risk. This might also explain a possible discount given for pure cash payments as the target thereby eliminate the future stock price risk, which then explains why cash is superior to stock payments, especially for the longer event windows.

Related versus unrelated acquisitions

As elucidated in the literature review, the majority of studies conducted on related versus unrelated acquisitions concludes that related takeovers lead to a greater CAR (Berger and Ofek, 1995; Doukas et al., 2002; Goergen and Renneboog, 2004; Martynova and Renneboog, 2006; Morck et al., 1990; Sicherman and Pettway, 1987). However, both Elgers and Clark (1980) and Rose et al. (2017) find opposing results and conclude that acquirers' shareholders realise a greater CAR following an unrelated acquisition. This paper finds no statistical difference between related and unrelated acquisitions, hence, we cannot reject the two acquisitions types to have the same or no impact on the CAR. The result appears to be consistent across benchmarks, event windows, and when excluding outliers or using the robust regression. The literature review in Section 2.2 presented arguments for and against unrelated acquisitions, but none of them appears to explain this result. Optimally, it would be preferred to estimate and distinguish between the potential synergies that arise from both related and unrelated acquisition in order to verify that the two are equal, however, it is considered beyond the scope of this paper as the variable merely serves a control variable.

Relative size

As displayed in Table 5.36, relative size is statistically significant with a coefficient of 0.0069 implying that if an acquirer goes from purchasing a target that is 0.16 (16%) of its size to 1.16 (116%) of its size it will, all else equal, lead to an increase in CAR of 0.69 percentage point. The result confirms the findings from previous research, which also finds a positive relationship between relative size and CAR (Armitage, 1995; Kitching et al., 1967; Moeller et al., 2004). Even though the result is statistically significant it might be less economically interesting as it requires the bidder company to acquire a target as large as itself to realise a small increase

in CAR. Furthermore, the result is consistent across return models, but not for the different event windows. Also, the result of relative size appears to be less robust to outliers as the result becomes insignificant even for the narrow window in the two robustness regressions.

Industries

Similar to Kiymaz and Baker (2008) this paper also finds evidence of differences across industries in terms of CAR. More specifically, it is found that both Sector 1 (Agriculture, Forestry, and Fishing) and Sector 9 (Real Estate) on average realise a CAR of -7.5 and -2.1 percentage points, respectively, lower than Sector 10 (Wholesale and Retail Trade, Transportation and Storage, Accommodation and Food Service), while, in contrast, Sector 6 (Other Services) is 5.0 percentage points higher. The results are consistent across all benchmarks for the narrow event window, but as the window is extended the coefficients becomes less significant. In fact, only the large negative effect for Sector 1 remains significant. Having said that, the result for Sector 1 and 6 is likely affected by the few deals conducted in these industries resulting in them being excluded in the regression without outliers. The result is though, similar to Sector 9, consistent for the robust regression.

CEO gender

As discussed in the Section 2.2.5, Levi et al. (2008) show that the bid premium is reduced by over 70% when female CEOs conduct the acquisition, subsequently leading to a lower target CAR and a higher bidder CAR. It is evident from Table 5.36 that opposing evidence is found in our analysis. The base model shows a positive relationship between the CEO being a male and CAR. More specifically the coefficient is 0.0158 meaning that, ceteris paribus, it results in a 1.58 percentage points higher CAR if the CEO of the bidder company is male. The result is statistically significant at the 5% level for the [-1;1] and [-5;5] event windows. However, the result becomes insignificant for the [-10;10] window and is likely affected by outliers as the result becomes insignificant when excluding outliers or applying robust regression.

A possible explanation is the amount of deals being conducted by females. It was shown in Table 3.5 that only 45 (3%) of the acquisitions are undertaken by female CEOs. Given that the median CAR for both females and males is 0.6% while the mean is -0.5% and 1.0%, respectively, the result could be affected by a few large negative CARs. It is also important to point out that this paper is quite different from the study performed by Levi et al. (2008). Their dataset only included acquisitions of public US targets, because it was then easier to calculate the premium.

As discussed earlier the central argument for the difference between CEO genders in terms of CAR is embedded in males being more overconfident. Unfortunately, as discussed in Section 5.4.2, it has not been possible to verify this due to the small sample size.

Region

Ultimately, it is evident from Table 5.36 that only Northern Europe bidders perform statistically significantly better than the Central and Eastern Europe. With a coefficient of 0.0206 it can be

said that bidders in Northern Europe realise on average a 2.06 percentage points higher CAR relative to bidders from Central and Eastern Europe. The result is statistically significant across benchmarks, but extending the event window to [-10;10] leads to an insignificant result. Also, the result becomes insignificant, despite a higher coefficient, when using the robust regression. No further investigation will be made as this control variable already to some degree has been discussed in Section 5.5.2.

Table 5.36: Carve-out of regression results for control variables

VARIABLES	(2) CAR [-1;1]	(4) CAR [-5;5]	(6) CAR [-10;10]
Control variables			
Private target	(Base)	(Base)	(Base)
Public target	-0.0153***	-0.0176***	-0.0210***
	(0.0036)	(0.0048)	(0.0062)
Cash	(Base)	(Base)	(Base)
Shares	-0.0072	-0.0201**	-0.0426***
	(0.0071)	(0.0100)	(0.0124)
Mixed Payment	-0.0048	-0.0031	-0.0044
	(0.0033)	(0.0046)	(0.0057)
Other Payment	-0.0087**	-0.0113	-0.0088
	(0.0043)	(0.0072)	(0.0094)
Unknown Payment	-0.0146***	-0.0107**	-0.0133**
	(0.0037)	(0.0051)	(0.0065)
Unrelated	(Base)	(Base)	(Base)
Related	0.0007	-0.0005	0.0013
	(0.0027)	(0.0037)	(0.0046)
Relative Size	0.0069**	0.0024	0.0060
	(0.0035)	(0.0044)	(0.0053)
Sector 1	-0.0755***	-0.1039***	-0.0539*
	(0.0152)	(0.0381)	(0.0290)
Sector 2	-0.0049	-0.0059	0.0065
	(0.0071)	(0.0096)	(0.0136)
Sector 3	0.0038	0.0000	-0.0028
	(0.0087)	(0.0110)	(0.0141)
Sector 4	-0.0048	-0.0115	-0.0031
	(0.0054)	(0.0074)	(0.0099)
Sector 5	-0.0050	-0.0065	0.0029
	(0.0045)	(0.0061)	(0.0083)
Sector 6	0.0502*	0.0338	0.0341
	(0.0274)	(0.0283)	(0.0373)
Sector 7	0.0012	0.0058	0.0022
	(0.0067)	(0.0095)	(0.0117)
Sector 8	-0.0086	-0.0195	-0.0170
	(0.0108)	(0.0154)	(0.0186)
Sector 9	-0.0210***	-0.0231**	-0.0057
	(0.0073)	(0.0100)	(0.0119)
Sector 10	(Base)	(Base)	(Base)
Female	(Base)	(Base)	(Base)
Male	0.0158**	0.0262**	0.0212
	(0.0077)	(0.0112)	(0.0160)
Central and Eastern Europe	(Base)	(Base)	(Base)
Northern Europe	0.0206**	0.0258*	0.0266
	(0.0098)	(0.0135)	(0.0162)
Southern Europe	0.0093	0.0120	0.0079
	(0.0098)	(0.0136)	(0.0162)
Western Europe	0.0098	0.0188	0.0226
	(0.0092)	(0.0127)	(0.0150)

Note: Robust standard errors in parentheses. Model 1, 3, and 5 are not shown as they do not include control variables. *Significant at 10%, **Significant at 5%, ***Significant at 1%.
Source: Own contribution

5.7 General discussion of findings

Overall research question

The previous section sought to discuss the hypotheses individually, while the following section, conversely, considers the findings across the hypotheses to provide a comprehensive understanding of how certain deal characteristics interact with each other and impact the value creation in multiple settings. To ensure a leitmotif throughout the paper an overall research question was formulated at the beginning:

Does the acquisition announcement create positive abnormal return for the acquirer's shareholders and how do financial crises, the deal order of the CEO, and cultural distance affect this value?

In order to answer this rather broad question, individual hypotheses are formulated with shareholder value creation as the common denominator. As presented in the literature review, conflicting results are found concerning acquirer's shareholder value creation. This study, on the other hand, finds an overall significant positive CAR of around 1% realised by the acquirer's shareholders. Several possible explanations might drive this result as discussed in Section 2.1. While it is difficult to highlight the single most important factor, this paper investigates different deal characteristics to uncover the source of the value creation.

First, a financial crisis is found to lead to a value destruction of -1.78 percentage points for acquirer's shareholders relative to acquisitions undertaken outside crisis. Further investigation uncovers that this result is driven by the Dot-com Crisis and, consequently, the two crises are found to be significantly different from one another. A possible explanation for this could be the fact that much greater average deal values were seen in the late '90s and early '00s, indicating that companies during that period were generally believed to be overvalued, hence, acquisitions could possibly also be perceived as being overvalued by the market. Moreover, no statistical difference is found in terms of CAR between acquiring a target that is financially distressed and a healthy one. However, separating the categorical variable into four different degrees of credit-strength reveals that acquiring just distressed or healthy targets result in an average CAR of 1.31% and 1.18% respectively. On the contrary, acquisitions of targets in the grey zone or very distressed target are found to have no effect, which might explain the initial insignificant result.

Second, hypothesis 3 proves that the CAR deteriorates for the increasing deal order. More specifically, comparing higher order deals with first order deals shows that CAR decreases by 0.59 percentage point on average. The result appears to be explained by CEOs suffering from the self-attribution bias as it is proven that infrequent and frequent CEOs are not significantly different from one another in terms of their first order acquisitions.

Third, domestic acquisitions are found to have 0.78 percentage point higher CAR relative to cross-country acquisitions. Furthermore, cultural distance is shown to have no significant effect on CAR as the coefficient is almost zero. It is, however, important to mention that only

national cultural distance is being investigated and not company culture, which, given that most large companies today operate internationally, enables them to navigate better in a global environment.

Most of the deal characteristics that this paper focuses on are found to be value destroying as described above. Only domestic is found to have a positive effect on CAR. Having said that, it is important to have in mind that the variables are all categorical and, thus, should be interpreted as value destroying relative to the base of that categorical variable.

When taking a look at the control variables, acquiring a private target is especially value creating relative to acquiring a public target with a coefficient of 0.0153, translating into a 1.53 percentage points higher CAR for private targets. Since 80% of the sample are acquisitions of private targets it might help explain the overall positive CAR that is in hypothesis 1. It is suggested that it can be explained by lower bidder competition, private firm discount, or less publicity during the negotiation process (Capron and Shen, 2007). Furthermore, the variable has the largest effect on the adjusted R^2 compared to all other variables included, as removing the variable decreases it from 0.04679 to 0.0348, thus, proving its explanatory power.

It is evident from the relatively low adjusted R^2 that a lot remain unexplained when it comes to determining the factors influencing the acquisition value creation.

Financial crisis

Financial crisis is an overarching theme of this paper. In an attempt to investigate the linkage between hypothesis 2 and 3, hypothesis 3a was formulated. The result shows that higher order deals during crisis on average yield a CAR of 1.23 percentage points greater than first order deals, driven by the 2008 Financial Crisis with a difference of 1.89 percentage points in favour of higher order deals. Once again it is proven that the two crises investigated are different from each other as no such difference between first and higher deal orders is detected during the Dot-com Crisis. The findings cannot be compared with relevant studies due to the lack of previous research. It could imply that CEO overconfidence is being mitigated during some crises or that valuable learnings from the Dot-com Crisis enable CEOs to navigate better during crisis and utilise past experience.

Cultural distance is found to have no significant effect on the CAR in the regression analysis. However, when paired with financial crisis cultural distance becomes influential. The results show that, in contrast to outside crisis, acquiring targets in the 4th quartile, i.e. with the highest cultural distance, during crisis has a significantly positive CAR. The CAR is also higher than the remaining three quartiles as well as domestic acquisitions. It implies that to maximise value creation of cross-country acquisitions undertaken during crisis one should focus on targets with a very distant national culture. Numerous plausible explanations could be driving this result, one of which might rest on the argument of diversification. As a financial crisis limits growth in the European region or regions similar to it, acquiring outside these regions, i.e. countries with greater cultural distance, is likely driven by a desire for continued growth. Relating this finding to the descriptive statistics discussed in Section 3.2 it is interesting to see that there

is an increase in the number of domestic acquisitions during financial crises relative to outside crises.

Method of payment

Despite method of payment merely serving as a control variable, it has uncovered interesting findings when being investigated together with other variables. Findings in line with the Pecking Order Theory are found as those using shares on average have experienced much greater pre-announcement returns. This spread becomes even greater during crisis. It indicates that those using shares possibly evaluate it as being the cheapest way of financing because their shares are perceived to be overvalued. Moreover, also in line with the Pecking Order Theory, shares increase almost threefold in popularity during crisis. It is shown that those using shares are generally 3 times less liquid than those using other types of payments, while during crisis they are on average 5 times less liquid. Furthermore, there is less access to capital during crisis as it was shown that banks backed out of deals they previously had agreed to finance (Gaughan, 2009). This could indicate that shares are used as an alternative method of payment relative to cash and debt.

Including method of payment in the discussion of hypothesis 3 reveals findings similar to Malmendier and Tate (2005). It is shown that CEOs of higher deal orders, who we argue exhibit overconfidence, are favouring internal financing more as shares decreases from being used in 8.9% of the first order deals to only 2.4% in the higher order deals. The explanation rests on the argument that overconfident CEOs are more reluctant to use external funding since they believe outside investors discount the value of the company too much.

CHAPTER 6

Conclusion

6.1 Conclusion

This paper investigates, among other factors, how financial crisis, the deal order of the CEO, and cultural distance affect the short-term stock price return realised by the acquirers upon acquisition announcement using different event windows. The analysis is conducted on a sample consisting of 1,453 European acquisitions in the period of 1999-2018. Moreover, classic event study methodology is applied and both the market model and the constant mean return model is being utilised in estimating the normal return. A cross-sectional analysis is used to complete the analysis by uncovering explanatory factors. The findings are summarised below.

First, the cumulative abnormal return of around 1% for the full sample is found to be statistically significant using a battery of parametric and non-parametric tests. The result is significant at the 5% level or lower for all seven tests across the three benchmarks and event windows. The only exception is the variance-adjusted standardised abnormal returns test, T_6, for the [-10;10] window, which is found to be insignificant. We find that the insignificant result is likely caused by the fact that most stock price reaction happened just around the event day. Hypothesis 1 is thereby rejected, implying that European acquirers do create value to its shareholders when engaging in takeover activity. The average return of 1% might not seem like a lot, however, it translates into a value creation of around EUR 44.4bn for the 1,453 deals in the sample.

Second, interesting findings are uncovered when conducting a multiple regression analysis on the cross-sectional data. Hypothesis 2 is rejected as the findings suggest that acquiring during a crisis results in a 1.73 percentage points lower CAR. The results are relatively consistent across benchmark models implying that one should not undertake acquisitions during times of financial turmoil. Having said that, it is subsequently shown that the result is mostly driven by the Dot-com Crisis since the two crisis are proven to deviate significantly from one another with a difference of 1.68 percentage points. It is further proven that the negative result during the Dot-com Crisis is not driven by a specific sector, as some might suspect. Additionally, a shift in preference of payment method is present during crisis indicating that shares are used as an alternative method of payment when there is limited access to capital. Moreover, it is shown that those using shares on average are less liquid, relatively smaller, and have experienced greater pre-announcement stock price return than the acquirers using other payment methods. This return is much larger for those using shares during a crisis.

Hypothesis 2a is, likewise, rejected since acquiring distressed targets on average leads to a CAR of -0.62 percentage point relative to acquiring a healthy target. The result is consistently

insignificant across windows and models in spite of the relatively large negative coefficient. Subsequently, it is shown that acquiring a distressed target during crisis results in an interaction effect of 1.72 percentage points, thus, resulting in a CAR of 1.1 percentage points higher relative to a healthy target outside crisis. A detailed review of the data reveals that acquirers of distressed targets during crisis are in general larger and more liquid firms who focus on larger targets in terms of relative size. This implies that with less need of external funding they are able to undertake larger and, likely, riskier acquisitions of distressed targets during a crisis, where access to capital is limited. Separating the targets into four categories of credit-strength it can be concluded that acquiring a distressed or healthy target lead to positive and significant CARs, whereas targets that are very distressed or in a grey zone area results in CARs that are not statistically significant different from zero.

Besides financial crisis and the financial status of the targets it is concluded that the CEOs' higher order deals deteriorates abnormal return. More specifically, acquisitions with deal orders of two or above lead to a 0.59 percentage point lower CAR on average relative to first order deals. The conclusion is consistent across return models and windows. No statistical difference is found between the infrequent and frequent acquirers' first order deals, why it is concluded that the worse CAR is solely due to the higher order deals. Also, no relationship is found between investment opportunities and the declining effect on CAR for higher order deals. These findings lead us to conclude that the pattern of CAR declining for increasing deal orders is not due to empire-building, changing investment opportunities, or the endowed skills. Instead it is, similar to Billett and Qian (2008), ascribed to overconfidence caused by the self-attribution bias. Finally, the use of shares is proven to have a negative relationship with higher order deals and, on the contrary, cash has a positive relationship, thus, confirming that overconfident managers are likely to prefer internal funding over external funding. These findings are in line with Malmendier and Tate (2008) and Ackert and Deaves (2010).

Hypothesis 3a is confirmed since higher order deals during crisis have an interaction effect of 1.22 percentage points. Although insignificant, it is argued that the 1.22 percentage points is still economically relevant. The result suggests that CEOs with previous acquisition experience are better at acquiring during times of financial crisis. This could likely be explained by acquisition experience simply outweighing overconfidence in deals undertaking during crisis. Having said that, further analysis shows that the effect is only present during the 2008 Financial Crisis and not the Dot-com Crisis, why one should be careful of generalising the results across crises.

Domestic acquisitions are proven to yield a 0.78 percentage point higher CAR relative to cross-country acquisitions. The result is significant for both the local and the European benchmark, but not for CMR and event windows broader than [-1;1]. The Northern Europe region performs especially well on domestic acquisitions. Looking at all acquisitions Northern Europe also does significantly better than the Central and Eastern Europe. The supplementary analysis reveals that acquisitions of unlisted domestic targets perform significantly well with an average CAR of 1.85%, while, on the contrary, the CAR for listed domestic targets is -0.59%. Moreover, it is concluded that acquisitions of domestic unlisted target lead to an 0.90 percentage point higher CAR on average relative to unlisted cross-country acquisitions. An investigation of the cross-

country acquisitions shows that USA is by far the most popular country for European companies to undertake large acquisition in. Interestingly, we uncover that most of the acquisitions within the IT sector in USA are likely motivated by sourcing for capabilities rather than extending existing assets.

Ultimately, hypothesis 4a is confirmed as cultural distance does not have any effect on the acquirer's CAR. The lack of any effect of cultural distance is consistent across models and event windows. However, analysing relatedness and cultural distance together demonstrates that acquiring unrelated targets with very low or very high culture distance lead to greater CAR than more moderated cultural distances. The opposite is the case for acquisitions of targets in similar industries. Pairing cultural distance with crisis shows that acquisitions of targets with very large cultural distance during crisis yield a significant positive CAR. However, when controlling for other variables the result becomes insignificant.

Given the lack of previous research, the above-presented findings could serve as an interesting foundation for further research.

6.2 Further research

Despite extensive investigation of the value creation for the acquirer's shareholders having been conducted, research within the field of M&A and empirical finance is considered inexhaustible.

Naturally, following the specification of the research area and the data selection process, certain restrictions are imposed on the data. The implication of this is that the results are not necessarily representative of the population but could be specific to the sample. It would be interesting to see if the results remain valid when relaxing the criteria e.g. by extending the geographical focus beyond Europe, lowering the minimum deal size to include smaller acquisitions, or choosing different cut-off points for the start and end of the crises.

This paper investigates less traditional deal characteristics relative to previously published studies, hence, it could be interesting to also include the target's realised return in the analysis as potential patterns might emerge, which could add additional value to the analysis. It could further contribute to what effect financial crisis, cultural distance, and CEO acquisitiveness have on acquisitions.

The use of stock price data to measure the value creation restricts the analysis to only concern listed acquirers. An alternative is proposed in terms of accounting data, which would enable the inclusion of private acquirers, thus, expanding the generalisability. However, as also pointed out earlier, one should carefully consider the differences in accounting principles and the possibility of manipulation.

It was only possible to extract valid accounting data on the targets for approximately half of the sample despite sourcing from several financial databases. One could, similar to what was done with the CEOs, lookup data manually using annual reports if time had allowed. The additional accounting data could contribute to the results and the discussion of distressed versus not distressed targets.

This paper focuses merely on the short-term value creation upon acquisition announcement. Further research could investigate the persistence of the results over a longer horizon similar to what Billett and Qian (2008) do when they examine ex-post acquisition performance using three-year buy-and-hold excess returns (BHER). However, unlike short-term investigation, where the effect is easier to detect and less likely to be affected by other events during the narrow event-window, it can be more difficult to determine that something is caused by one particular event when testing the long-term return.

In relation to the methodology choices, alternative models to estimate the normal return can be used. Strong (1992) investigates and compares alternatives including CAPM, Control Portfolio Benchmark, and Market Adjusted Returns. Despite this paper showing that the results are relatively consistent across models, it could be interesting to see if the findings remain valid using alternative models. This would also just add to the robustness of our results.

Besides changing the methodology it could also be interesting to conduct further research on some of our findings. In relation to hypothesis 2, future research could look more into the difference between the two financial crises and, more specifically, what drivers cause the Dot-com Crisis to be value destroying and the 2008 Financial Crisis to be value creating. Is it a result of valuable learnings acquired during the past crisis or is it caused by a fundamental difference between the two crises? Uncovering this could help executives in their decision process and potentially save billions in negative returns. Furthermore, it is proven that previous acquisition experience added value during the 2008 Financial Crisis, but, on the contrary, had no effect during the Dot-com Crisis. It could potentially be explained by similar factors causing the two crises to deviate from one another in terms of overall value creation, why investigating this further is interesting.

Moreover, this paper finds indications of shares being used as a payment method for acquirers that experienced greater pre-announcement returns. It could be interesting to further investigate if these companies actually are overvalued and potentially confirming the Pecking Order Theory's stipulations. The choice of payment method during crisis also yields interesting results, namely that cash payment is preferred due to limited access to capital. The limited access to capital and how it affects acquisitions would be another interesting aspect to look at going forward.

In this study the organisational culture and integration method is ignored. Controlling for these variables could assist in creating a better understanding of how acquirers can maximise the value creation of acquisitions. This applies especially for cross-country deals as Barkema et al. (1996) show that cross-country takeovers are harder to implement because of the double-layered acculturation. Further, Slangen (2006) shows that the level of post-acquisition integration influence the acquisition performance more than the national cultural distance, hence, controlling for these deal characteristics one could potentially disprove that domestic acquisitions on average create more value than cross-country acquisitions.

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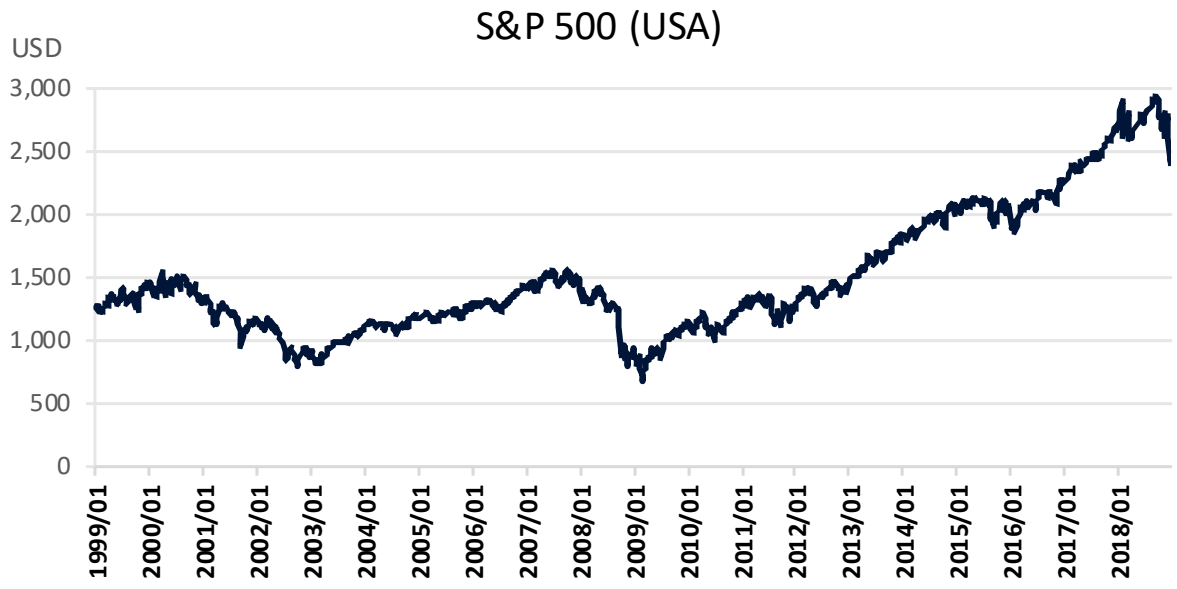
APPENDIX A

Financial Crisis

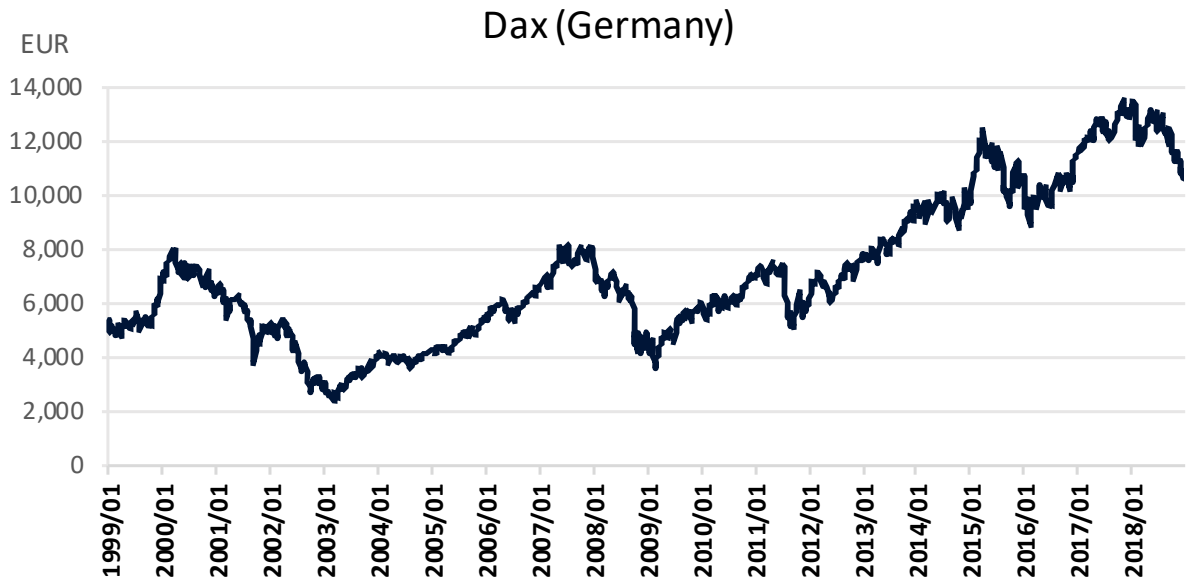
A.1 Development in European GDP growth from 1996-2016

Source: World Bank Data and own contribution

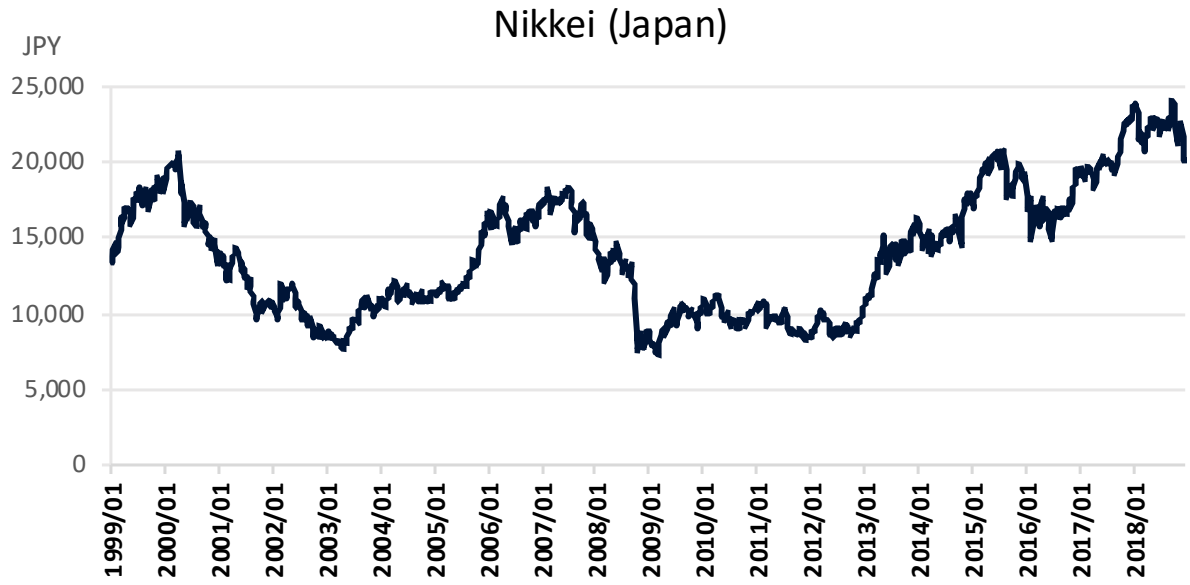
A.2 Weekly historical index movements between 1999-2011



Source: Yahoo Finance and own contribution



Source: Yahoo Finance and own contribution



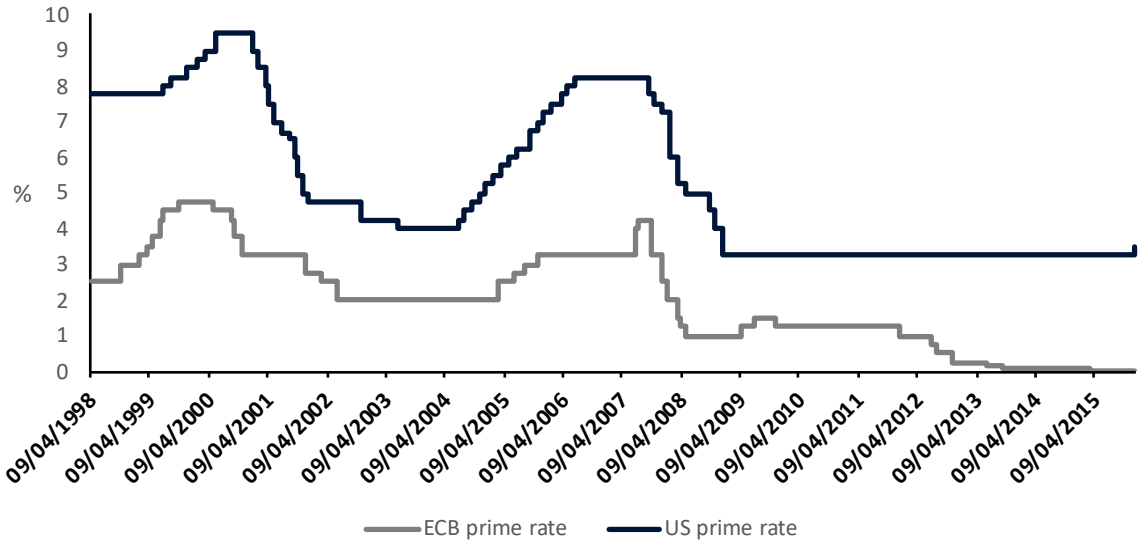
Source: Yahoo Finance and own contribution

A.3 Constituents of the Dax index in primo 2000

Company name	Industry code (NACE)	Primary Industry Classification
Adidas-Salmon	1520	Apparel, Accessories and Luxury Goods
Allianz	6500	Multi-line Insurance
BASF	2059	Diversified Chemicals
Bayer	2120	Pharmaceuticals
Bayer. Hypo.- und Wechsel Bank	6419	Financial Institution
BMW	2920	Automobile Manufacturers, Other services
Commerzbank	6419	Diversified Bank
DaimlerChrysler	2920	Automobile Manufacturers
Degussa	6419	Diversified Bank
Deutsche Bank	6419	Diversified Bank
Deutsche Lufthansa	5110	Airlines
Deutsche Telekom	6190	Integrated Telecommunication Services
Dresdner Bank	6419	Diversified Bank
Fresenius Medical Care	3250	Health Care Services
Henkel	2041	Household Products
Karstadt	4719	Department Stores
Linde	2011	Industrial gases and engineering
Man	2899	Construction Machinery and Heavy Trucks
Mannesmann	6420	Conglomerate
Metro	4652	Wholesale of electronic and telecommunications equipment and parts
Munchener Ruckverischerung	6500	Insurance, reinsurance and pension funding, except compulsory social security
Preussag	6420	Conglomerate
RWE	3511	Production of electricity
SAP	5829	Other software publishing
Schering	2120	Pharmaceuticals
Simens	2811	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
ThyssenKrupp	2410	Manufacture of basic iron and steel and of ferro-alloys
Veba	0610	Extraction of crude petroleum
Viag	2442	Aluminium production
Volkswagen	2920	Automobile Manufacturers

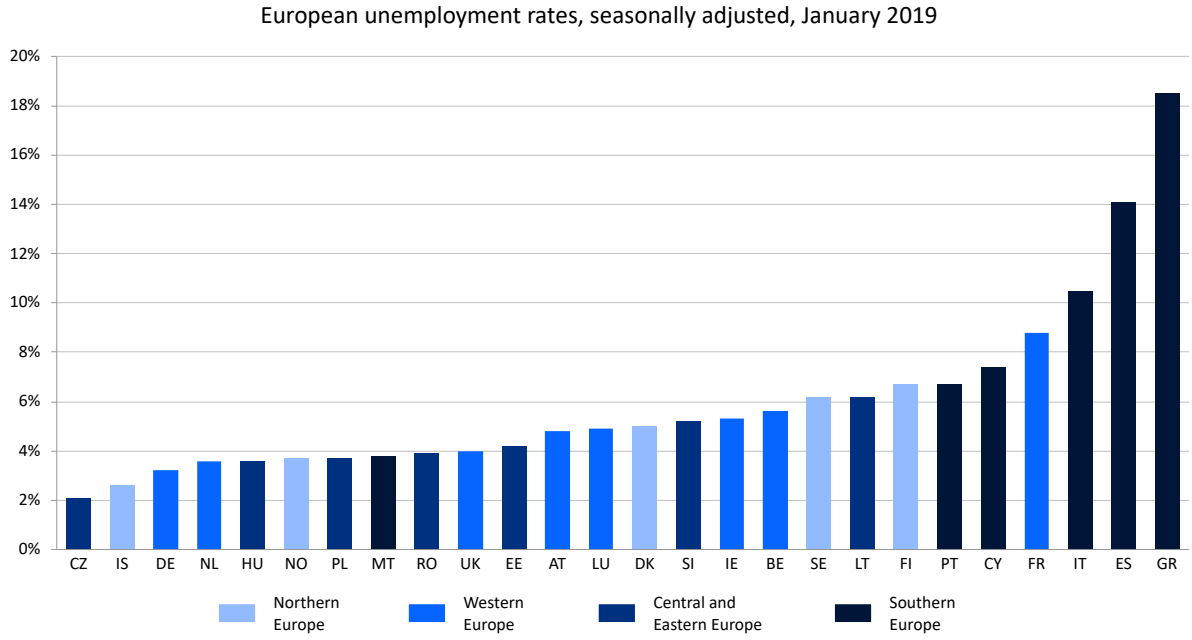
Source: Deutsche Börse, Orbis, and own contribution

A.4 Historical movements in the European and United States prime rates during 1998-2015

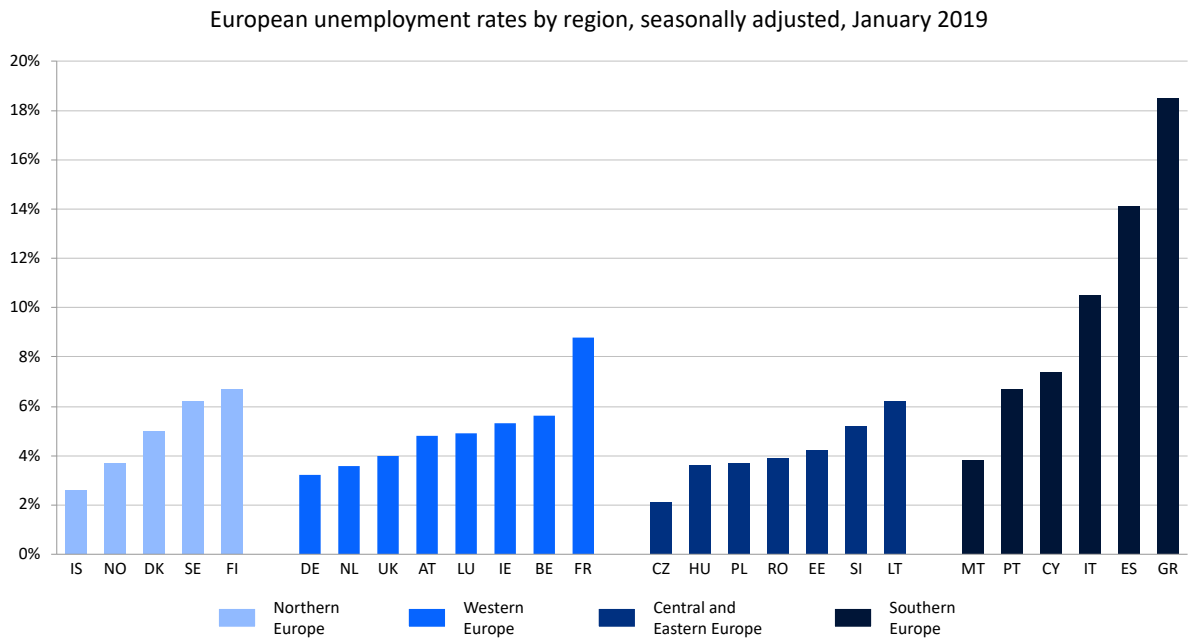


Source: https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html http://www.fedprimerate.com/wall_street_journal_prime_rate_history.htm (accessed March 5, 2019)

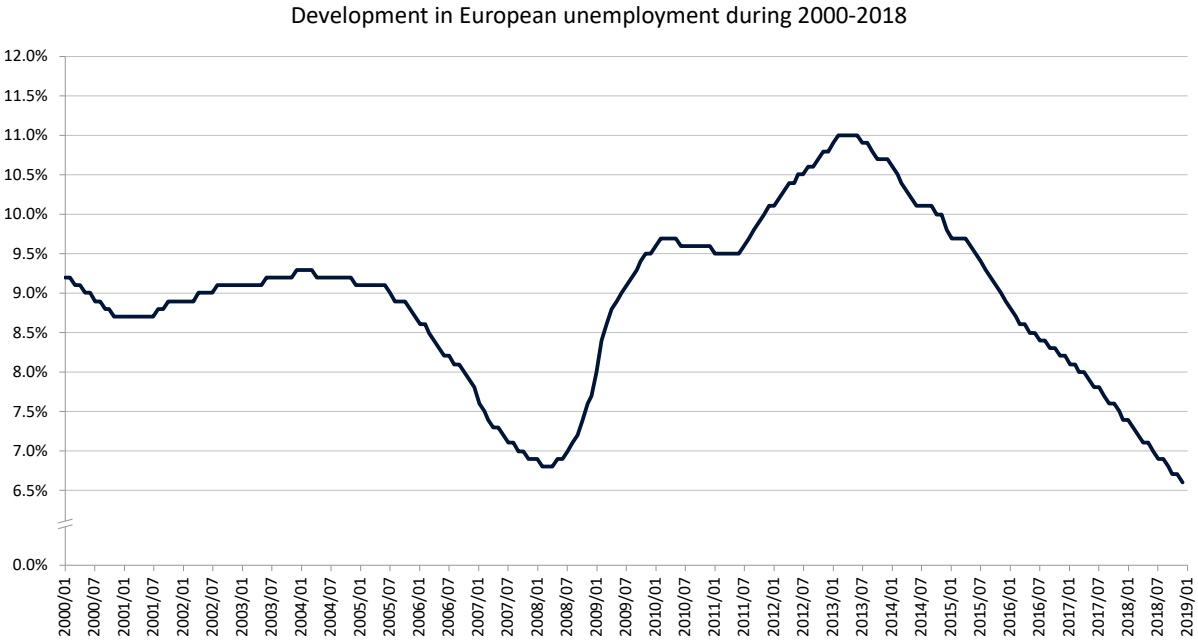
A.5 European unemployment rates



Source: Eurostat and own contribution



Source: Eurostat and own contribution



Source: Eurostat and own contribution

APPENDIX B

Description of test statistics

T_1 - t-test with cross-sectional independence (Bartholdy et al., 2007; Brown and Warner, 1985)

The cross-sectional average of abnormal returns is given by

$$\overline{A_t} = \frac{1}{N_t} \sum_{i=1}^{N_t} A_{it}$$

The variance of the average is the average of the individual variances, so the test statistic is

$$T_1 = \frac{\overline{A_0}}{S(A)} \sim N(0,1)$$

The degrees of freedom are large, so that the test statistic can be assumed to be unit normal, and the standard deviation is given by

$$S(A) = \frac{1}{N} \sqrt{\sum_{1}^{N} \frac{1}{T_i - 1} \sum_{t=1}^{T_i} [A_{it}]^2}$$

The variance of each security is calculated separately. As returns are assumed to be independently distributed, the standard deviation of cross-sectional average return on the event day is the square root of the average of the individual variances. T_i is the number of days in the estimation period.

When applied on the cumulative abnormal returns (CARs), the test statistic is

$$T_1^{CAR} = \frac{\sum_{t=-D}^{D} \overline{A_t}}{\sqrt{(2D+1)} S(A)} \sim N(0,1)$$

where D is the number of days on each side of the event day, for each event window, i.e. 1, 5, and 10.

T_2 - t-test with standardised abnormal return (Bartholdy et al., 2007; Brown and Warner, 1985)

Standardised (unit variance) abnormal returns for security i are given by:

$$A_{it}^s = \frac{A_{it}}{S(A_{it})}$$

where

$$S(A_{it}) = \sqrt{\frac{1}{T_i - 1} \sum_{t=1}^{T_i} (A_{it})^2}$$

The test statistic for the event day is

$$T_2 = \frac{1}{\sqrt{N_0}} \left(\sum_{i=1}^{N} (A_{i0}^s) \right) \sim N(0,1)$$

Assuming unit variance, the test statistic for the event windows are

$$T_2^{CAR} = \frac{\sum_{t=-D}^{D} \left(\sum_{i=1}^{N} A_{it}^s \right)}{\sqrt{(2D+1)N}}$$

T_3 - Rank Test (Bartholdy et al., 2007; Corrado and Zivney, 1992)

We denote K_{it} the rank of excess return, A_{it}, in security i's estimation and event period:

$$K_{it} = rank(A_{it}), \quad t = -200 - D, \ldots, 0, \ldots, D$$

The first 200 observations are used as an estimation period. Each rank will be standardised by the number of non-missing abnormal returns, T_i, as follows:

$$U_{it} = \frac{K_{it}}{(1 + T_i)}$$

Since the sum of T_i values of K_{it} is $(T_i/2)(T_i + 1)$, the average value of U_{it} is

$$\overline{U_i} = \frac{(T_i/2)(T_i + 1)/(1 + T_i)}{T_i} = \frac{1}{2}$$

The test statistic for the event day is given by:

$$T_3 = \frac{(1/\sqrt{N_0}) \sum_{i=1}^{N_0} (U_{i0} - (1/2))}{S(K)} \quad where \quad S(K) = \sqrt{\frac{1}{200 + 2D + 1} \sum_{t=-200-D}^{D} \left(\frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} \left(U_{it} - \frac{1}{2} \right) \right)^2}$$

and N_t represents the number of non-missing returns in a cross-section of N firms at time t. Corrado and Zivney (1992) suggest that the test statistic converges to a standard normal, because the rank of the abnormal return is drawn from the uniform distribution under the null hypothesis.

The test statistic for CARs using ranks is given by:

$$T_3^{CAR} = \sum_{t=-D}^{D} \frac{(1/\sqrt{N_t}) \sum_{i=1}^{N} (U_{it} - (1/2))}{\sqrt{(2D+1)} S(K)}$$

T_4 ***- Sign Test (Bartholdy et al., 2007; Corrado and Zivney, 1992)***

Let the median abnormal return in security i's time series of abnormal returns be denoted by median (A_i). For each day in the sample period, the sign of each excess return is calculated as:

$$G_{it} = sign(A_{it} - median(A_i)), \quad t = -200 - D, \ldots, 0, \ldots, D$$

where $sign(x)$ is +1, -1 or zero depending on whether x is positive, negative or zero, respectively. The expected value of G_{it} under the null hypothesis is zero and the test statistic is given by:

$$T_4 = \frac{(1/\sqrt{N_0}) \sum_{i=1}^{N_0} G_{i0}}{S(G)} \quad where \quad S(G) = \sqrt{\frac{1}{200 + 2D + 1} \sum_{t=-200-D}^{D} \left(\frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} G_{it} \right)^2}$$

and N_t is the number of non-missing returns on day t.

The test statistic for the event windows are:

$$T_4^{CAR} = \sum_{t=-D}^{D} \frac{(1/\sqrt{N_t}) \sum_{i=1}^{N} G_{it}}{\sqrt{(2D+1)} S(G)}$$

T_5 ***- Generalised Sign Test (Bartholdy et al., 2007; Cowan, 1992; Cowan and Sergeant, 1996)***

In this generalised sign test the expected number of positive abnormal returns is estimated from the estimation period across time and stocks. The fraction of positive abnormal returns under the null hypothesis is given by:

$$\hat{p} = \frac{1}{N} \sum_{i=1}^{N} \left(\frac{1}{T_i} \sum_{t=1}^{T_i} \varphi_{it} \right)$$

where $\varphi_{it} = 1$ if $A_{it} > 0$, and $\varphi_{it} = 0$ otherwise. The generalised sign test statistic is:

$$T_5 = \frac{\omega_0 - N \cdot \hat{p}}{\sqrt{N \cdot \hat{p} \cdot (1 - \hat{p})}}$$

where

$$\omega_t = Number\, of\, firms\, where\, AR\, is\, positive\, for\, day\, t$$

The test statistic for CARs:

$$T_5^{CAR} = \frac{\sum_{t=-D}^{D} \left(\frac{\omega_t - N \cdot \hat{p}}{\sqrt{N \cdot \hat{p} \cdot (1 - \hat{p})}} \right)}{\sqrt{(2D+1)}}$$

T_6 ***- Variance-adjusted standardised abnormal returns (Bartholdy et al., 2007; Boehmer et al., 1991)***

To adjust for increased variance during the event period, this test first standardise the residuals and then the variance of the standardised abnormal returns is estimated during the event window. The test statistic is given by:

$$T_6 = \frac{(1/N)\sum_{i=1}^{N} A_{it}^s}{\sqrt{\frac{1}{N(N-1)}\sum_{t=-D}^{D}\left[A_{it}^s - \frac{1}{N}\sum_{i=1}^{N} A_{it}^s\right]^2}}$$

where A_{it}^s are calculated in the same way as in T_2.

The CAR version is the sum of the individual test statistics during the event window divided by the square root of the number of days in the event window, as for T_2.

T_7 - Rank test of adjusted standardised abnormal returns (Bartholdy et al., 2007; Corrado and Zivney, 1992; Maynes and Rumsey, 1993)

This test is equivalent to T_3 except that it makes a cross-sectional variance adjustment. The standardised returns are given by

$$A_{it}^s = \frac{A_{it}}{S(A_i)}$$

where $S(A_i)$ is given by

$$S(A_i) = \sqrt{\frac{1}{T_i - 1}\sum_{t=1}^{T_i}(A_{it})^2} \quad for\, the\, estimation\, period$$

$$S(A_i) = \sqrt{\frac{1}{T_i - 1}\sum_{t=1}^{T_i}[A_{it}]^2\left(1 + \frac{1}{T_i} + \frac{\left(R_{m,0} - \overline{R}_m\right)^2}{\sum_t^{T_i}\left(R_{m,t} - \overline{R}_m\right)^2}\right)} \quad in\, the\, event\, window$$

Patell's adjustment is ignored in this paper, why the standard deviation, $S(A_i)$, is the same in the estimation period and the event window.

The cross-sectional variance adjustment is then applied:

$$X_{it} = \begin{cases} A_{it}^s & t \neq -D, ..., 0, ..., D \\ A_{it}^s / S(A_t^s) & t = -D, ..., 0, ..., D \end{cases}$$

where

$$S(A_t^s) = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}\left(A_{it}^s - \overline{A_t^s}\right)^2}$$

The test statistic is then derived in the same manner as T_3.

APPENDIX C

Regression assumptions

C.1 Variance-inflation factors

	VIF	1/VIF
Explanatory variables		
Crisis	3.78	0.2643
Crisis # Data Missing	3.14	0.3186
Domestic	1.79	0.5600
Higher Order	1.73	0.5767
Crisis # Distressed	1.67	0.5980
Infrequent Acquirer	1.65	0.6079
Cultural Distance	1.60	0.6247
Crisis # Higher Order	1.52	0.6586
Data missing	1.44	0.6935
Distressed	1.33	0.7495
Public	1.15	0.8689
Control variables		
Western Europe	9.91	0.1009
Northern Europe	6.93	0.1443
Southern Europe	5.53	0.1808
Sector 5	2.94	0.3398
Sector 4	2.09	0.4791
Mixed Payment	1.67	0.5987
Sector 7	1.66	0.6014
Unknown Payment	1.52	0.6565
Sector 2	1.45	0.6905
Shares	1.39	0.7206
Sector 9	1.35	0.7428
Sector 3	1.29	0.7729
Other	1.25	0.7996
Relative Size	1.19	0.8408
Sector 8	1.11	0.9014
Sector 1	1.05	0.9485
Related	1.04	0.9583
Sector 6	1.03	0.9726
Male	1.03	0.9710

Source: STATA and own contribution

C.2 Correlation matrix

$|Correlation| > 0.50$
$|Correlation| > 0.75$

	Crisis	Not Crisis	Data Missing	Distressed Target	Healthy Target	Frequent Acquirer	Infrequent Acquirer	First Order Deal	Higher Order Deal	Cultural Distance	Cross-country	Domestic	Private Target	Public Target	Cash	Shares	Other Payment	Mixed Payment	Unknown Payment
Crisis	1.0000																		
Not Crisis	-1.0000	1.0000																	
Data Missing	0.0772	-0.0772	1.0000																
Distressed	0.0290	-0.0290	-0.3261	1.0000															
Healthy	-0.0961	0.0961	-0.8079	-0.2937	1.0000														
Frequent Acquirer	0.0036	-0.0036	0.0087	0.0438	-0.0361	1.0000													
Infrequent Acquirer	-0.0036	0.0036	-0.0087	-0.0438	0.0361	-1.0000	1.0000												
First Deal	0.0388	-0.0388	0.0048	-0.0466	0.0242	-0.5992	0.5992	1.0000											
Higher Order	-0.0388	0.0388	-0.0048	0.0466	-0.0242	0.5992	-0.5992	-1.0000	1.0000										
Cultural Distance	-0.0252	0.0252	0.0380	-0.0443	-0.0108	0.0434	-0.0434	-0.0603	0.0603	1.0000									
Cross-country	-0.0353	0.0353	0.2100	-0.0705	-0.1683	0.1341	-0.1341	-0.1298	0.1298	0.5725	1.0000								
Domestic	0.0353	-0.0353	-0.2100	0.0705	0.1683	-0.1341	0.1341	0.1298	-0.1298	-0.5725	-1.0000	1.0000							
Private	0.0409	-0.0409	0.2179	0.0349	-0.2421	-0.0082	0.0082	0.0730	-0.0730	-0.0029	-0.0030	0.0030	1.0000						
Public	-0.0409	0.0409	-0.2179	-0.0349	0.2421	0.0082	-0.0082	-0.0730	0.0730	0.0029	0.0030	-0.0030	-1.0000	1.0000					
Cash	0.0073	-0.0073	-0.0007	0.0151	-0.0086	0.0980	-0.0980	-0.0699	0.0699	0.0075	0.0628	-0.0628	-0.0782	0.0782	1.0000				
Shares	-0.0514	0.0514	-0.0086	0.0236	-0.0060	-0.0547	0.0547	0.0402	-0.0402	-0.0450	-0.0246	0.0246	-0.0416	0.0416	-0.5038	1.0000			
Other Payment	-0.0144	0.0144	0.0145	-0.0196	-0.0024	-0.0155	0.0155	-0.0052	0.0052	0.0556	0.0908	-0.0908	0.1244	-0.1244	-0.1473	-0.2420	1.0000		
Mixed Payment	0.1149	-0.1149	-0.0669	-0.0053	0.0709	-0.1316	0.1316	0.1194	-0.1194	-0.1064	-0.1879	0.1879	-0.1122	0.1122	-0.1505	-0.2473	-0.0723	1.0000	
Unknown Payment	-0.0079	0.0079	0.0469	-0.0313	-0.0280	0.0597	-0.0597	-0.0506	0.0506	0.0846	0.0279	-0.0279	0.1343	-0.1343	-0.2573	-0.4227	-0.1236	-0.1263	1.0000
Unrelated	0.0655	-0.0655	-0.0003	-0.0168	0.0108	0.0020	-0.0020	-0.0254	0.0254	-0.0589	-0.0371	0.0371	0.0027	-0.0027	0.0134	-0.0072	0.0071	-0.0250	0.0065
Related	-0.0655	0.0655	0.0003	0.0168	-0.0108	-0.0020	0.0020	0.0254	-0.0254	0.0589	0.0371	-0.0371	-0.0027	0.0027	-0.0134	0.0072	-0.0071	0.0250	-0.0065
Relative Size	-0.0172	0.0172	-0.1176	0.0137	0.1104	-0.2162	0.2162	0.1547	-0.1547	-0.1251	-0.2109	0.2109	-0.0714	0.0714	-0.1249	0.1293	-0.0690	0.2019	-0.1188
Sector 1	0.0140	-0.0140	0.0150	-0.0202	-0.0025	-0.0663	0.0663	0.0397	-0.0397	-0.0436	-0.0554	0.0554	-0.0006	0.0006	-0.0048	-0.0062	-0.0156	0.0304	0.0035
Sector 2	0.0243	-0.0243	-0.0714	0.0583	0.0359	-0.0338	0.0338	0.0206	-0.0206	-0.0869	-0.1582	0.1582	-0.0265	0.0265	-0.0639	0.0278	-0.0210	0.0785	-0.0036
Sector 3	-0.0113	0.0113	0.0140	-0.0272	0.0028	-0.0649	0.0649	0.0524	-0.0524	-0.0792	-0.1265	0.1265	0.0155	-0.0155	-0.0405	0.0292	-0.0036	0.0546	-0.0269
Sector 4	-0.0216	0.0216	0.0133	0.0299	-0.0321	0.0787	-0.0787	-0.0716	0.0716	-0.0272	-0.0052	0.0052	0.0046	-0.0046	0.0527	-0.0084	-0.0424	-0.0005	-0.0196
Sector 5	0.0245	-0.0245	0.0505	-0.0810	-0.0006	0.0540	-0.0540	-0.0384	0.0384	0.1663	0.2253	-0.2253	-0.0588	0.0588	0.0438	-0.0151	0.0525	-0.0961	0.0006
Sector 6	-0.0169	0.0169	-0.0431	0.0336	0.0226	-0.0513	0.0513	0.0308	-0.0308	0.0121	-0.0302	0.0302	0.0225	-0.0225	0.0464	-0.0109	-0.0121	-0.0124	-0.0211
Sector 7	0.0115	-0.0115	0.0288	-0.0213	-0.0159	-0.0236	0.0236	0.0289	-0.0289	-0.0176	0.0457	-0.0457	0.0780	-0.0780	-0.0114	-0.0095	0.0418	0.0080	-0.0074
Sector 8	0.0414	-0.0414	-0.0075	0.0494	-0.0232	0.0005	-0.0005	0.0145	-0.0145	0.0040	-0.0193	0.0193	0.0189	-0.0189	0.0038	-0.0563	0.0516	0.0495	0.0027
Sector 9	-0.0472	0.0472	-0.0275	-0.0037	0.0301	-0.0685	0.0685	0.0463	-0.0463	-0.1147	-0.1700	0.1700	-0.0208	0.0208	-0.0689	-0.0125	-0.0198	0.0829	0.0506
Sector 10	-0.0212	0.0212	-0.0588	0.0746	0.0129	-0.0355	0.0355	0.0300	-0.0300	-0.0421	-0.0929	0.0929	0.0324	-0.0324	-0.0201	0.0352	-0.0569	-0.0071	0.0181
Female	0.0184	-0.0184	0.0217	0.0417	-0.0479	-0.0337	0.0337	0.0096	-0.0096	-0.0290	-0.0686	0.0686	-0.0017	0.0017	-0.0240	-0.0030	0.0164	0.0456	-0.0103
Male	-0.0184	0.0184	-0.0217	-0.0417	0.0479	0.0337	-0.0337	-0.0096	0.0096	0.0290	0.0686	-0.0686	0.0017	-0.0017	0.0240	0.0030	-0.0164	-0.0456	0.0103
Central and Eastern Europe	-0.0113	0.0113	-0.0349	0.0111	0.0284	-0.0323	0.0323	0.0280	-0.0280	-0.0181	-0.0613	0.0613	-0.0110	0.0110	-0.0480	-0.0291	-0.0201	0.0163	0.0934
Northern Europe	-0.0347	0.0347	-0.0868	0.0097	0.0818	-0.0816	0.0816	0.0569	-0.0569	0.1913	0.0460	-0.0460	0.0127	-0.0127	0.0103	-0.0353	0.0313	-0.0045	0.0171
Southern Europe	0.0000	0.0000	-0.0568	0.0250	0.0418	-0.0734	0.0734	0.0621	-0.0621	-0.0673	-0.0948	0.0948	0.0257	-0.0257	-0.0557	-0.0252	-0.0206	0.1428	0.0134
Western Europe	0.0311	-0.0311	0.1194	-0.0286	-0.1029	0.1259	-0.1259	-0.0971	0.0971	-0.0988	0.0492	-0.0492	-0.0243	0.0243	0.0460	0.0548	-0.0040	-0.1007	-0.0531

Continued on next page

$|Correlation| > 0.50$
$|Correlation| > 0.75$

	Unrelated	Related	Relative Size	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5	Sector 6	Sector 7	Sector 8	Sector 9	Sector 10	Female	Male	Central and Eastern Europe	Northern Europe	Southern Europe	Western Europe
Crisis																			
Not Crisis																			
Data Missing																			
Distressed																			
Healthy																			
Frequent Acquirer																			
Infrequent Acquirer																			
First Deal																			
Higher Order																			
Cultural Distance																			
Cross-country																			
Domestic																			
Private																			
Public																			
Cash																			
Shares																			
Other Payment																			
Mixed Payment																			
Unknown Payment																			
Unrelated	1.0000																		
Related	-1.0000	1.0000																	
Relative Size	-0.0476	0.0476	1.0000																
Sector 1	0.0629	-0.0629	0.0375	1.0000															
Sector 2	0.0927	-0.0927	0.0665	-0.0132	1.0000														
Sector 3	0.0242	-0.0242	0.0164	-0.0110	-0.0420	1.0000													
Sector 4	-0.0194	0.0194	-0.0232	-0.0248	-0.0948	-0.0787	1.0000												
Sector 5	0.0264	-0.0264	-0.0798	-0.0620	-0.2372	-0.1970	-0.4442	1.0000											
Sector 6	0.0183	-0.0183	0.0111	-0.0027	-0.0102	-0.0085	-0.0192	-0.0480	1.0000										
Sector 7	0.0179	-0.0179	0.0024	-0.0176	-0.0672	-0.0558	-0.1258	-0.3149	-0.0136	1.0000									
Sector 8	-0.0325	0.0325	-0.0028	-0.0062	-0.0237	-0.0197	-0.0445	-0.1113	-0.0048	-0.0315	1.0000								
Sector 9	-0.0477	0.0477	0.1847	-0.0111	-0.0425	-0.0353	-0.0795	-0.1991	-0.0086	-0.0564	-0.0199	1.0000							
Sector 10	-0.0896	0.0896	-0.0186	-0.0205	-0.0783	-0.0650	-0.1466	-0.3670	-0.0158	-0.1040	-0.0367	-0.0657	1.0000						
Female	0.0321	-0.0321	-0.0153	-0.0105	-0.0217	0.0326	-0.0198	-0.0532	-0.0081	0.0190	0.0573	0.0098	0.0657	1.0000					
Male	-0.0321	0.0321	0.0153	0.0105	0.0217	-0.0326	0.0198	0.0532	0.0081	-0.0190	-0.0573	-0.0098	-0.0657	-1.0000	1.0000				
Central and Eastern Europe	-0.0233	0.0233	0.0128	-0.0087	-0.0332	-0.0012	0.0310	0.0065	-0.0067	-0.0267	-0.0156	-0.0279	0.0253	0.0286	-0.0286	1.0000			
Northern Europe	0.0048	-0.0048	0.0314	0.0756	-0.0566	0.0200	-0.0324	0.0327	0.0242	-0.0310	-0.0249	0.0717	-0.0120	-0.0289	0.0289	-0.0610	1.0000		
Southern Europe	0.0014	-0.0014	0.0287	-0.0204	0.1400	-0.0278	0.0341	-0.0273	-0.0158	-0.0468	-0.0153	0.0077	-0.0276	-0.0492	0.0492	-0.0512	-0.1433	1.0000	
Western Europe	0.0028	-0.0028	-0.0489	-0.0428	-0.0416	0.0039	-0.0080	-0.0090	-0.0060	0.0657	0.0354	-0.0530	0.0204	0.0477	-0.0477	-0.2400	-0.6718	-0.5637	1.0000

Source: STATA and own contribution

APPENDIX D

Regression results

D.1 Benchmark: Regional index

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Constant	0.0095**	-0.0050	0.0122**	-0.0025	0.0175***	-0.0028
	(0.0039)	(0.0128)	(0.0053)	(0.0175)	(0.0064)	(0.0245)
Explanatory variables						
Not Crisis	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Crisis	-0.0240***	-0.0213***	-0.0311*	-0.0246	-0.0666***	-0.0563***
	(0.0073)	(0.0079)	(0.0188)	(0.0171)	(0.0199)	(0.0181)
Healthy	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Distressed	-0.0041	-0.0067	-0.0050	-0.0074	-0.0071	-0.0099
	(0.0049)	(0.0050)	(0.0066)	(0.0067)	(0.0085)	(0.0085)
Missing Data	0.0046	0.0041	0.0018	0.0005	0.0002	-0.0013
	(0.0030)	(0.0030)	(0.0040)	(0.0041)	(0.0049)	(0.0052)
Crisis # Distressed	0.0197*	0.0203*	0.0311	0.0278	0.0879***	0.0845***
	(0.0116)	(0.0122)	(0.0245)	(0.0238)	(0.0303)	(0.0293)
Crisis # Missing Data	0.0103	0.0071	0.0216	0.0149	0.0493**	0.0407**
	(0.0088)	(0.0091)	(0.0191)	(0.0178)	(0.0212)	(0.0197)
Frequent acquirer	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Infrequent acquirer	-0.0020	-0.0029	-0.0010	0.0002	-0.0102*	-0.0089
	(0.0035)	(0.0036)	(0.0048)	(0.0050)	(0.0061)	(0.0063)
First order deal	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Higher order deal	-0.0078**	-0.0056*	-0.0108**	-0.0086*	-0.0201***	-0.0185***
	(0.0033)	(0.0033)	(0.0046)	(0.0046)	(0.0056)	(0.0057)
Crisis # Higher order deal	0.0146**	0.0131*	0.0178	0.0150	0.0194	0.0146
	(0.0072)	(0.0076)	(0.0130)	(0.0131)	(0.0158)	(0.0157)
Cultural Distance	0.0005	0.0000	0.0016	0.0011	0.0016	0.0010
	(0.0012)	(0.0013)	(0.0017)	(0.0017)	(0.0022)	(0.0023)
Cross-country	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Domestic	0.0073**	0.0068*	0.0055	0.0077	0.0084	0.0116*
	(0.0036)	(0.0037)	(0.0049)	(0.0050)	(0.0060)	(0.0062)
Control variables						
Private target		(Base)		(Base)		(Base)
Public target		-0.0145***		-0.0159***		-0.0163***
		(0.0036)		(0.0048)		(0.0061)
Cash		(Base)		(Base)		(Base)
Shares		-0.0087		-0.0220**		-0.0458***
		(0.0071)		(0.0106)		(0.0126)

Appendix D. Regression results

Mixed Payment		-0.0047		-0.0039		-0.0050
		(0.0032)		(0.0046)		(0.0055)
Other Payment		-0.0074*		-0.0121*		-0.0110
		(0.0044)		(0.0073)		(0.0096)
Unknown Payment		-0.0129***		-0.0092*		-0.0105
		(0.0036)		(0.0051)		(0.0064)
Unrelated		(Base)		(Base)		(Base)
Related		0.0005		-0.0002		0.0022
		(0.0027)		(0.0038)		(0.0046)
Relative Size		0.0075**		0.0030		0.0069
		(0.0035)		(0.0043)		(0.0054)
Sector 1		-0.0722***		-0.1054***		-0.0528**
		(0.0210)		(0.0404)		(0.0228)
Sector 2		-0.0047		-0.0068		0.0058
		(0.0071)		(0.0098)		(0.0137)
Sector 3		0.0044		-0.0010		-0.0057
		(0.0088)		(0.0112)		(0.0145)
Sector 4		-0.0042		-0.0118		-0.0041
		(0.0053)		(0.0076)		(0.0099)
Sector 5		-0.0053		-0.0073		0.0013
		(0.0045)		(0.0062)		(0.0083)
Sector 6		0.0499*		0.0402		0.0419
		(0.0265)		(0.0293)		(0.0390)
Sector 7		0.0014		0.0070		0.0035
		(0.0067)		(0.0096)		(0.0116)
Sector 8		-0.0088		-0.0210		-0.0177
		(0.0110)		(0.0163)		(0.0199)
Sector 9		-0.0217***		-0.0253**		-0.0075
		(0.0072)		(0.0103)		(0.0119)
Sector 10		(Base)		(Base)		(Base)
Female		(Base)		(Base)		(Base)
Male		0.0146*		0.0225**		0.0164
		(0.0078)		(0.0112)		(0.0162)
Central and Eastern Europe		(Base)		(Base)		(Base)
Northern Europe		0.0204**		0.0157		0.0204
		(0.0097)		(0.0124)		(0.0168)
Southern Europe		0.0101		0.0024		0.0018
		(0.0097)		(0.0126)		(0.0168)
Western Europe		0.0098		0.0060		0.0111
		(0.0091)		(0.0116)		(0.0157)
Observations	1,453	1,453	1,453	1,453	1,453	1,453
R-squared	0.0170	0.0660	0.0108	0.0468	0.0266	0.0570
R-squared adjusted	0.0102	0.0463	0.0039	0.0267	0.0199	0.0371

Note: Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: STATA and own contribution

D.2 Benchmark: European index

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Constant	0.0092**	-0.0060	0.0108**	-0.0195	0.0159**	-0.0187
	(0.0039)	(0.0129)	(0.0053)	(0.0182)	(0.0064)	(0.0236)
Explanatory variables						
Not Crisis	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Crisis	-0.0198***	-0.0173**	-0.0252	-0.0194	-0.0587***	-0.0492***
	(0.0073)	(0.0078)	(0.0176)	(0.0159)	(0.0199)	(0.0179)
Healthy	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Distressed	-0.0033	-0.0062	-0.0044	-0.0071	-0.0066	-0.0099
	(0.0050)	(0.0050)	(0.0066)	(0.0067)	(0.0086)	(0.0086)
Missing Data	0.0052*	0.0046	0.0032	0.0013	0.0017	-0.0012
	(0.0031)	(0.0031)	(0.0040)	(0.0041)	(0.0049)	(0.0052)
Crisis # Distressed	0.0162	0.0172	0.0250	0.0233	0.0755**	0.0736***
	(0.0115)	(0.0120)	(0.0245)	(0.0235)	(0.0299)	(0.0285)
Crisis # Missing Data	0.0065	0.0033	0.0138	0.0075	0.0416*	0.0335*
	(0.0088)	(0.0090)	(0.0181)	(0.0169)	(0.0214)	(0.0199)
Frequent acquirer	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Infrequent acquirer	-0.0028	-0.0035	-0.0004	0.0012	-0.0096	-0.0075
	(0.0035)	(0.0036)	(0.0048)	(0.0049)	(0.0061)	(0.0063)
First order deal	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Higher order deal	-0.0083**	-0.0059*	-0.0108**	-0.0085*	-0.0206***	-0.0187***
	(0.0033)	(0.0033)	(0.0046)	(0.0046)	(0.0057)	(0.0058)
Crisis # Higher order deal	0.0136*	0.0122	0.0193	0.0160	0.0179	0.0121
	(0.0072)	(0.0075)	(0.0130)	(0.0130)	(0.0164)	(0.0163)
Cultural Distance	0.0007	0.0002	0.0019	0.0016	0.0015	0.0013
	(0.0012)	(0.0012)	(0.0016)	(0.0017)	(0.0022)	(0.0023)
Cross-country	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Domestic	0.0083**	0.0078**	0.0053	0.0080	0.0089	0.0128**
	(0.0036)	(0.0037)	(0.0048)	(0.0050)	(0.0061)	(0.0062)
Control variables						
Private target		(Base)		(Base)		(Base)
Public target		-0.0153***		-0.0176***		-0.0210***
		(0.0036)		(0.0048)		(0.0062)
Cash		(Base)		(Base)		(Base)
Shares		-0.0072		-0.0201**		-0.0426***
		(0.0071)		(0.0100)		(0.0124)
Mixed Payment		-0.0048		-0.0031		-0.0044
		(0.0033)		(0.0046)		(0.0057)
Other Payment		-0.0087**		-0.0113		-0.0088
		(0.0043)		(0.0072)		(0.0094)
Unknown Payment		-0.0146***		-0.0107**		-0.0133**

		(0.0037)		(0.0051)		(0.0065)
Unrelated		(Base)		(Base)		(Base)
Related		0.0007		-0.0005		0.0013
		(0.0027)		(0.0037)		(0.0046)
Relative Size		0.0069**		0.0024		0.0060
		(0.0035)		(0.0044)		(0.0053)
Sector 1		-0.0755***		-0.1039***		-0.0539*
		(0.0152)		(0.0381)		(0.0290)
Sector 2		-0.0049		-0.0059		0.0065
		(0.0071)		(0.0096)		(0.0136)
Sector 3		0.0038		0.0000		-0.0028
		(0.0087)		(0.0110)		(0.0141)
Sector 4		-0.0048		-0.0115		-0.0031
		(0.0054)		(0.0074)		(0.0099)
Sector 5		-0.0050		-0.0065		0.0029
		(0.0045)		(0.0061)		(0.0083)
Sector 6		0.0502*		0.0338		0.0341
		(0.0274)		(0.0283)		(0.0373)
Sector 7		0.0012		0.0058		0.0022
		(0.0067)		(0.0095)		(0.0117)
Sector 8		-0.0086		-0.0195		-0.0170
		(0.0108)		(0.0154)		(0.0186)
Sector 9		-0.0210***		-0.0231**		-0.0057
		(0.0073)		(0.0100)		(0.0119)
Sector 10		(Base)		(Base)		(Base)
Female		(Base)		(Base)		(Base)
Male		0.0158**		0.0262**		0.0212
		(0.0077)		(0.0112)		(0.0160)
Central and Eastern Europe		(Base)		(Base)		(Base)
Northern Europe		0.0206**		0.0258*		0.0266
		(0.0098)		(0.0135)		(0.0162)
Southern Europe		0.0093		0.0120		0.0079
		(0.0098)		(0.0136)		(0.0162)
Western Europe		0.0098		0.0188		0.0226
		(0.0092)		(0.0127)		(0.0150)
Observations	1,453	1,453	1,453	1,453	1,453	1,453
R-squared	0.0157	0.0665	0.0099	0.0490	0.0232	0.0575
R-squared adjusted	0.0089	0.0468	0.0031	0.0289	0.0164	0.0377

Note: Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: STATA and own contribution

D.3 Benchmark: Constant-mean return

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-5;5]	CAR [-5;5]	CAR [-10;10]	CAR [-10;10]
Constant	0.0107***	-0.0020	0.0135**	-0.0176	0.0164**	-0.0145
	(0.0041)	(0.0133)	(0.0058)	(0.0196)	(0.0072)	(0.0281)
Explanatory variables						
Not Crisis	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Crisis	-0.0188**	-0.0173**	-0.0294	-0.0218	-0.0704***	-0.0575***
	(0.0077)	(0.0083)	(0.0185)	(0.0169)	(0.0227)	(0.0204)
Healthy	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Distressed	-0.0039	-0.0068	-0.0056	-0.0086	-0.0028	-0.0071
	(0.0052)	(0.0052)	(0.0070)	(0.0072)	(0.0095)	(0.0096)
Missing Data	0.0026	0.0015	-0.0002	-0.0017	0.0018	-0.0006
	(0.0032)	(0.0032)	(0.0043)	(0.0044)	(0.0056)	(0.0059)
Crisis # Distressed	0.0229*	0.0247**	0.0375	0.0351	0.0964***	0.0927***
	(0.0121)	(0.0125)	(0.0279)	(0.0270)	(0.0363)	(0.0351)
Crisis # Missing Data	0.0076	0.0052	0.0223	0.0154	0.0482*	0.0384*
	(0.0093)	(0.0096)	(0.0194)	(0.0182)	(0.0248)	(0.0232)
Frequent acquirer	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Infrequent acquirer	-0.0016	-0.0024	-0.0028	-0.0020	-0.0106	-0.0091
	(0.0036)	(0.0037)	(0.0052)	(0.0053)	(0.0068)	(0.0070)
First order deal	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Higher order deal	-0.0084**	-0.0060*	-0.0113**	-0.0088*	-0.0200***	-0.0181***
	(0.0035)	(0.0035)	(0.0050)	(0.0051)	(0.0066)	(0.0068)
Crisis # Higher order deal	0.0144*	0.0130	0.0054	0.0013	0.0214	0.0136
	(0.0076)	(0.0079)	(0.0148)	(0.0150)	(0.0199)	(0.0201)
Cultural Distance	0.0003	-0.0001	0.0019	0.0014	0.0013	0.0008
	(0.0013)	(0.0013)	(0.0018)	(0.0019)	(0.0025)	(0.0026)
Cross-country	(Base)	(Base)	(Base)	(Base)	(Base)	(Base)
Domestic	0.0070*	0.0064	0.0038	0.0055	0.0067	0.0092
	(0.0038)	(0.0039)	(0.0052)	(0.0053)	(0.0069)	(0.0071)
Control variables						
Private target		(Base)		(Base)		(Base)
Public target		-0.0162***		-0.0171***		-0.0188***
		(0.0038)		(0.0051)		(0.0070)
Cash		(Base)		(Base)		(Base)
Shares		-0.0028		-0.0207**		-0.0482***
		(0.0072)		(0.0103)		(0.0145)
Mixed Payment		-0.0035		0.0005		0.0011
		(0.0034)		(0.0050)		(0.0064)
Other Payment		-0.0077*		-0.0055		-0.0062
		(0.0045)		(0.0082)		(0.0109)
Unknown Payment		-0.0133***		-0.0074		-0.0110

		(0.0039)		(0.0056)		(0.0078)
Unrelated		(Base)		(Base)		(Base)
Related		0.0008		0.0016		0.0057
		(0.0028)		(0.0040)		(0.0053)
Relative Size		0.0065*		0.0039		0.0074
		(0.0034)		(0.0043)		(0.0058)
Sector 1		-0.0684***		-0.1147**		-0.0713
		(0.0212)		(0.0445)		(0.0511)
Sector 2		-0.0044		-0.0040		0.0183
		(0.0073)		(0.0106)		(0.0148)
Sector 3		0.0058		0.0025		0.0021
		(0.0098)		(0.0122)		(0.0158)
Sector 4		-0.0046		-0.0075		0.0042
		(0.0055)		(0.0079)		(0.0108)
Sector 5		-0.0037		-0.0075		0.0015
		(0.0046)		(0.0065)		(0.0092)
Sector 6		0.0502*		0.0412		0.0379
		(0.0286)		(0.0317)		(0.0412)
Sector 7		0.0022		0.0085		0.0027
		(0.0069)		(0.0100)		(0.0131)
Sector 8		-0.0075		-0.0194		-0.0101
		(0.0115)		(0.0155)		(0.0198)
Sector 9		-0.0209***		-0.0184*		-0.0052
		(0.0074)		(0.0109)		(0.0130)
Sector 10		(Base)		(Base)		(Base)
Female		(Base)		(Base)		(Base)
Male		0.0121		0.0238**		0.0108
		(0.0078)		(0.0118)		(0.0185)
Central and Eastern Europe		(Base)		(Base)		(Base)
Northern Europe		0.0198*		0.0280*		0.0308
		(0.0103)		(0.0146)		(0.0201)
Southern Europe		0.0069		0.0121		0.0067
		(0.0103)		(0.0147)		(0.0201)
Western Europe		0.0097		0.0166		0.0218
		(0.0097)		(0.0137)		(0.0189)
Observations	1,453	1,453	1,453	1,453	1,453	1,453
R-squared	0.0123	0.0565	0.0092	0.0452	0.0231	0.0550
R-squared adjusted	0.0055	0.0366	0.0023	0.0251	0.0163	0.0350

Note: Robust standard errors in parentheses.

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: STATA and own contribution

D.4 Robustness regressions

	(1)	(2)	(3)
VARIABLES	CAR [-1;1]	CAR [-1;1]	CAR [-1;1]
Constant	-0.0060	0.0021	0.0035
	(0.0129)	(0.0092)	(0.0111)
Explanatory variables			
Not Crisis	(Base)	(Base)	(Base)
Crisis	-0.0173**	-0.0110*	-0.0115*
	(0.0078)	(0.0058)	(0.0065)
Healthy	(Base)	(Base)	(Base)
Distressed	-0.0062	-0.0050	-0.0036
	(0.0050)	(0.0038)	(0.0041)
Missing Data	0.0046	0.0044*	0.0040
	(0.0031)	(0.0026)	(0.0026)
Crisis # Distressed	0.0172	0.0198**	0.0126
	(0.0120)	(0.0089)	(0.0113)
Crisis # Missing Data	0.0033	-0.0000	-0.0004
	(0.0090)	(0.0067)	(0.0076)
Frequent acquirer	(Base)	(Base)	(Base)
Infrequent acquirer	-0.0035	0.0013	0.0032
	(0.0036)	(0.0030)	(0.0028)
First order deal	(Base)	(Base)	(Base)
Higher order deal	-0.0059*	-0.0025	-0.0019
	(0.0033)	(0.0028)	(0.0031)
Crisis # Higher order deal	0.0122	0.0062	0.0086
	(0.0075)	(0.0059)	(0.0076)
Cultural Distance	0.0002	0.0000	0.0005
	(0.0012)	(0.0010)	(0.0011)
Cross-country	(Base)	(Base)	(Base)
Domestic	0.0078**	0.0049	0.0044
	(0.0037)	(0.0030)	(0.0031)
Control variables			
Private target	(Base)	(Base)	(Base)
Public target	-0.0153***	-0.0147***	-0.0121***
	(0.0036)	(0.0031)	(0.0030)
Cash	(Base)	(Base)	(Base)
Shares	-0.0072	-0.0120**	-0.0060
	(0.0071)	(0.0051)	(0.0051)
Mixed Payment	-0.0048	-0.0051*	-0.0036
	(0.0033)	(0.0027)	(0.0028)
Other Payment	-0.0087**	-0.0098**	-0.0067
	(0.0043)	(0.0040)	(0.0049)
Unknown Payment	-0.0146***	-0.0145***	-0.0115***

Appendix D. Regression results

	(0.0037)	(0.0030)	(0.0035)
Unrelated	(Base)	(Base)	(Base)
Related	0.0007	-0.0003	0.0005
	(0.0027)	(0.0022)	(0.0022)
Relative Size	0.0069**	0.0091***	0.0057***
	(0.0035)	(0.0022)	(0.0018)
Sector 1	-0.0755***		-0.0749***
	(0.0152)		(0.0192)
Sector 2	-0.0049	-0.0022	-0.0046
	(0.0071)	(0.0057)	(0.0062)
Sector 3	0.0038	-0.0038	-0.0033
	(0.0087)	(0.0060)	(0.0069)
Sector 4	-0.0048	-0.0030	-0.0040
	(0.0054)	(0.0040)	(0.0044)
Sector 5	-0.0050	-0.0059*	-0.0058
	(0.0045)	(0.0034)	(0.0038)
Sector 6	0.0502*		0.0502**
	(0.0274)		(0.0244)
Sector 7	0.0012	0.0014	0.0012
	(0.0067)	(0.0050)	(0.0051)
Sector 8	-0.0086	-0.0158*	-0.0119
	(0.0108)	(0.0082)	(0.0110)
Sector 9	-0.0210***	-0.0221***	-0.0179**
	(0.0073)	(0.0052)	(0.0070)
Sector 10	(Base)	(Base)	(Base)
Female	(Base)	(Base)	(Base)
Male	0.0158**	0.0084	0.0069
	(0.0077)	(0.0058)	(0.0064)
Central and Eastern Europe	(Base)	(Base)	(Base)
Northern Europe	0.0206**	0.0185***	0.0125
	(0.0098)	(0.0068)	(0.0082)
Southern Europe	0.0093	0.0059	0.0016
	(0.0098)	(0.0068)	(0.0083)
Western Europe	0.0098	0.0071	0.0039
	(0.0092)	(0.0061)	(0.0077)
Observations	1,453	1,372	1,453
R-squared	0.0665	0.0765	0.0635
R-squared adjusted	0.0468	0.0572	0.0438

Notes: All models are with the European Index. Model 1 is the base model. Model 2 is excluding outliers and Model 3 is a robust regression.

Robust standard errors in parentheses. *Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: STATA and own contribution

List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
01/01/1999	THALES SA	ADI LTD	01/01/1999	TRAVIS PERKINS PLC	KEYLINE BUILDERS MERCHANTS LTD
02/02/1999	OBRASCON HUARTE LAIN SA	CONSTRUCCIONES LAIN SA	04/02/1999	ADECCO SA	DELPHI GROUP PLC
23/02/1999	RWE AG	VEW AG	01/03/1999	SAGE GROUP PLC, THE	TETRA PLC
11/03/1999	PENAUILLE POLY SERVICES SA	SERVISAIR PLC	22/03/1999	VIVENDI SA (OLD)	US FILTER CORPORATION
30/03/1999	ENTERPRISE INNS PLC	CENTURY INNS PLC	01/04/1999	BP AMOCO PLC	ATLANTIC RICHFIELD COMPANY
12/04/1999	CSM NV	LEAF OY	14/04/1999	IMI PLC	POLYPIPE LTD
23/04/1999	GECINA SA	SEFIMEG - SOCIETE FRANCAISE D'INVESTISSEMENTS IMMOBILIERS ET DE GESTION	19/05/1999	BRITISH AMERICAN TOBACCO PLC	ROTHMANS HOLDINGS LTD
08/06/1999	ELECTRO- COMPONENTS PLC	ALLIED ELECTRONICS INC.	14/06/1999	STAGECOACH HOLDINGS PLC	COACH USA INC.
22/06/1999	GREENE KING PLC	MORLAND PLC	06/07/1999	WOLTERS KLUWER NV	BANKERS SYSTEMS INC.
30/07/1999	TRINITY PLC	MIRROR GROUP PLC	30/08/1999	CARREFOUR SA	PROMODES SA
25/10/1999	TRAVIS PERKINS PLC	SHARPE & FISHER PLC	01/11/1999	MORGAN CRUCIBLE COMPANY PLC, THE	VACUUMSCHMELZE GMBH & CO KG
16/11/1999	SAAB AB	CELSIUS AB	22/11/1999	WHITBREAD PLC	SWALLOW GROUP PLC
03/01/2000	HUFVUDSTADEN AB	VASATERMINALEN AB	11/01/2000	PUBLICIS GROUPE SA	FRANKEL & COMPANY
12/01/2000	SAGE GROUP PLC, THE	BEST SOFTWARE INC.	14/01/2000	TELEFONICA SA	TELEFONICA DEL PERU SAA
18/02/2000	RADIOTRONICA SA	TELEVISION Y SONIDO TELSON SA	28/02/2000	MERKANTILDATA ASA	AVENIR ASA
07/03/2000	KONINKLIJKE AHOLD NV	US FOODSERVICE INC.	10/03/2000	PEARSON PLC	DORLING KINDERSLEY HOLDINGS LTD
14/03/2000	BP AMOCO PLC	BURMAH CASTROL PLC	15/03/2000	SBS BROADCASTING SA	STRATEUROP INTERNATIONAL BV
22/03/2000	ABENGOA SA	BEFESA MEDIO AMBIENTE SA	24/03/2000	RENAULT SA	BENETTON FORMULA LTD
03/04/2000	NH HOTELES SA	KRASNAPOLSKY HOTELS & RESTAURANTS NV	05/04/2000	PIERRE ET VACANCES SA	GRAN DORADO LEISURE NV
06/04/2000	COMPAGNIE DE SAINT-GOBAIN SA	RAAB KARCHER BAUSTOFFE GMBH	12/04/2000	CAPITA GROUP PLC, THE	IRG PLC
13/04/2000	SKANSKA AB	SELMER AS	17/04/2000	INAPA - INVESTIMENTOS PARTICIPACOES E GESTAO SA	PAPIER UNION GMBH
18/04/2000	GRUPO PICKING PACK SA	OLA INTERNET SA	02/05/2000	SIEMENS AG	SHARED MEDICAL SYSTEMS CORPORATION
08/05/2000	UNAXIS HOLDING AG	ESEC HOLDING SA	10/05/2000	SCHRODERS PLC	LIBERTY INTERNATIONAL PENSIONS LTD

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
11/05/2000	ENDESA SA	SMARTCOM SA	15/05/2000	PREUSSAG AG	THOMSON TRAVEL GROUP PLC
16/05/2000	BRITISH SKY BROADCASTING GROUP PLC	SPORTS INTERNET GROUP PLC	22/05/2000	VOLKSWAGEN AG	SKODA AUTO AS
30/05/2000	FRANCE TÉLÉCOM SA	ORANGE PLC	05/06/2000	SEVERN TRENT PLC	UK WASTE MANAGEMENT LTD
13/06/2000	QIAGEN NV	OPERON TECHNOLOGIES INC.	15/06/2000	VODAFONE AIRTOUCH PLC	AIRTEL MOVIL SA
21/06/2000	METSO OYJ	SVEDALA INDUSTRI AB	06/07/2000	CENTRICA PLC	DIRECT ENERGY MARKETING LTD
07/07/2000	KONINKLIJKE WESSANEN NV	DISTRIBORG GROUPE SA	10/07/2000	DEUTSCHE TELEKOM AG	VOICESTREAM WIRELESS CORPORATION
12/07/2000	VINCI SA	GROUPE GTM SA	13/07/2000	NESTLE SA	ALCON INC.
18/07/2000	NATIONAL EXPRESS GROUP PLC	PRISM RAIL PLC	20/07/2000	DAIMLERCHRYSLER AG	DETROIT DIESEL CORPORATION
28/07/2000	BUNZL PLC	GREENHAM TRADING LTD	02/08/2000	KONINKLIJKE DSM NV	CATALYTICA PHARMACEUTICALS
03/08/2000	RIO TINTO PLC	NORTH LTD	29/08/2000	UPM-KYMMENE OYJ	REPAP ENTERPRISES INC.
29/08/2000	SCHNEIDER ELECTRIC SA	CROUZET AUTOMATISMES SAS	18/09/2000	DSV DE SAMMENSLUTTEDE VOGNMAEND AF 13-7 1976 A/S	DFDS DAN TRANSPORT
18/09/2000	TNT POST GROUP NV	TAYLOR BARNARD LTD	25/09/2000	RWE AG	RWE THAMES WATER PLC
29/09/2000	RANDSTAD HOLDING NV	UNIDAD DE MANTENIMIENTO OCUPACIONAL UMANO EMPRESA DE TRABAJO TEMPORAL SA	02/10/2000	ASML HOLDING NV	SILICON VALLEY GROUP INC.
05/10/2000	OUTOKUMPU OYJ	NORZINK AS	23/10/2000	EBRO AGRÍCOLAS SA	PULEVA SA
24/10/2000	SABATÉ SA	DIOSOS	03/11/2000	CARLSBERG A/S	FELDSCHLÖSSCHEN GETRÄNKE HOLDING AG
07/11/2000	KEMIRA OYJ	ALCRO-BECKERS AB	09/11/2000	CRH PLC	JURA-HOLDING
10/11/2000	GREENCORE GROUP PLC	HAZLEWOOD FOODS PLC	10/11/2000	KONINKLIJKE VOPAK NV	ELLIS & EVERARD PLC
13/11/2000	KONINKLIJKE PHILIPS ELECTRONICS NV	ADAC LABORATORIES INC.	11/12/2000	THOMSON MULTIMÉDIA SA	TECHNICOLOR HOLDINGS INC.
18/12/2000	AUTOGRILL SPA	PASSAGGIO HOLDING AG	19/12/2000	WOLTERS KLUWER NV	LOISLAW.COM INC.
21/12/2000	ENI SPA	LASMO PLC	22/12/2000	KABA HOLDING AG	UNICAN SECURITY SYSTEMS LTD
11/01/2001	GO-AHEAD GROUP PLC, THE	MIDLAND AIRPORT SERVICES (HOLDINGS) LTD	16/01/2001	PERSIMMON PLC	BEAZER GROUP PLC
31/01/2001	TELEVISION FRANCAISE 1 SA	EUROSPORT SAS	28/03/2001	SAGE GROUP PLC, THE	INTERACT COMMERCE CORPORATION
30/03/2001	SAP AG	TOPTIER SOFTWARE INC.	02/04/2001	CONTINENTAL AG	TEMIC TELEFUNKEN MICROELECTRONIC GMBH
02/04/2001	LVMH MOET HENNESSY LOUIS VUITTON SA	DONNA KARAN INTERNATIONAL INC.	09/04/2001	E.ON AG	POWERGEN PLC
11/04/2001	CSM NV	SOCALBE	30/04/2001	INFINEON TECHNOLOGIES AG	CATAMARAN COMMUNICATIONS INC.
09/05/2001	VODAFONE GROUP PLC	MOBILE COMMUNICATIONS HOLDINGS LTD	15/05/2001	ENEL SPA	ERRE GAS

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
21/05/2001	VIVENDI UNIVERSAL SA	MP3.COM INC.	29/05/2001	FINMECCANICA SPA	TELESPAZIO SPA
12/06/2001	KERRY GROUP PLC	GOLDEN VALE PLC	21/06/2001	JOHNSON MATTHEY PLC	MECONIC PLC
25/06/2001	SOGEFI SPA	FILTRAUTO SA	06/07/2001	BP PLC	CAIRNS LTD
07/09/2001	GREENE KING PLC	OLD ENGLISH INNS PLC	10/09/2001	VINCI SA	WORLDWIDE FLIGHT SERVICES INC.
17/09/2001	RWE AG	AMERICAN WATER WORKS COMPANY INC.	02/10/2001	BAYER AG	AVENTIS CROPSCIENCE SA
16/11/2001	GROUPE CRIT SA	EURISTT SAS	20/11/2001	FUGRO NV	JASON INFORMATION SYSTEMS
21/11/2001	SVENSKA CELLULOSA AB	ENCORE PAPER COMPANY INC	30/11/2001	DEUTSCHE BORSE AG	ENTORY AG
14/12/2001	THOMSON MULTIMÉDIA SA	GRASS VALLEY GROUP INC.	07/01/2002	NORSK HYDRO ASA	VAW ALUMINIUM AG
01/02/2002	HEINEKEN NV	BRAVO INTERNATIONAL	14/02/2002	SMITH & NEPHEW PLC	ORATEC INTERVENTIONS INC
21/02/2002	NESTLE SA	CHOCOLATES GAROTO SA	07/03/2002	PUBLICIS GROUPE SA	BCOM3 GROUP INC.
12/03/2002	VIVENDI UNIVERSAL SA	CEGETEL GROUPE SA	12/03/2002	JOHNSTON PRESS PLC	REGIONAL INDEPENDENT MEDIA HOLDINGS LTD
11/04/2002	JOT AUTOMATION GROUP OYJ	ELEKTROBIT OYJ	15/04/2002	STMICRO- ELECTRONICS NV	ALCATEL MICROELECTRONICS NV
16/04/2002	FOMENTO DE CONSTRUCCIONES Y CONTRATAS SA	PORTLAND VALDERRIVAS SA	17/04/2002	CENTRICA PLC	CENTRAL POWER AND LIGHT COMPANY
29/04/2002	ASSA ABLOY AB	BESAM AB	02/05/2002	ANGLO AMERICAN PLC	COMPANIA MINERA DISPUTADA DE LAS CONDES LIMITADA
02/05/2002	CRH PLC	EHL AG	02/05/2002	ELECTROLUX AB	DIAMANT BOART INTERNATIONAL SA
15/05/2002	ENSCO INTERNATIONAL LTD	CHILES OFFSHORE INC.	20/05/2002	E.ON AG	E.ON RUHRGAS AG
05/06/2002	ATOS ORIGIN SA	KPMG CONSULTING LTD	11/06/2002	KONINKLIJKE BAM NBM NV	HOLLANDSCHE BETON GROEP NV
17/06/2002	NATIONAL EXPRESS GROUP PLC	STOCK TRANSPORTATION LTD	18/06/2002	GREENE KING PLC	MORRELLS of OXFORD LTD
18/06/2002	SANDVIK AB	VALENITE INC.	15/07/2002	VOSSLOH AG	COGIFER SA
19/07/2002	GURIT-HEBERLEIN AG	STRUCTURAL POLYMER GROUP LTD	22/07/2002	AALBERTS INDUSTRIES NV	IMI WOESTE SL
30/07/2002	ACCIONA SA	TRASMEDITERRÁNEA SA	31/07/2002	GECINA SA	SIMCO SA
02/08/2002	FINMECCANICA SPA	MARCONI MOBILE SPA	29/08/2002	NOVARTIS AG	LEK FARMACEVTSKA DRUZBA DD
09/09/2002	SCHNEIDER ELECTRIC SA	DIGITAL ELECTRONIC CORPORATION	09/09/2002	HAMMERSON PLC	GRANTCHESTER HOLDINGS PLC
16/09/2002	ACKERMANS & VAN HAAREN NV	GIB GROUP SA	19/09/2002	TELEFONICA SA	DTS DISTRIBUIDORA DE TELEVISION DIGITAL SA
23/09/2002	JOHNSON MATTHEY PLC	SYNETIX LTD	30/09/2002	SCOTTISH & SOUTHERN ENERGY PLC	DYNEGY HORNSEA LTD
01/10/2002	SMITHS GROUP PLC	HEIMANN SYSTEMS GMBH	04/10/2002	AMER-YHTYMÄ OYJ	PRECOR INC.
10/10/2002	GROUPE DANONE SA	CHATEAU D'EAU SA	23/10/2002	LAGARDERE SCA	EDITIS SA
30/10/2002	TESCO PLC	T&S STORES PLC	01/11/2002	HELLENIC TELECOMMUNICATIONS ORGANIZATION SA	ROMTELECOM SA
04/11/2002	INTERBREW SA	BRAUERGILDE HANNOVER AG	06/11/2002	NORSK HYDRO ASA	VAW ALUMINIUM-TECHNIKA KFT

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
11/11/2002	LIBERTY INTERNATIONAL PLC	VICTORIA CENTRE PARTNERSHIP, THE	13/11/2002	KONINKLIJKE PHILIPS ELECTRONICS NV	INTERTRUST TECHNOLOGIES CORPORATION
20/11/2002	ENI SPA	FORTUM PETROLEUM AS	21/11/2002	H LUNDBECK A/S	SYNAPTIC PHARMACEUTICAL CORPORATION
25/11/2002	MOL MAGYAR OLAJES GAZIPARI NYRT	SLOVNAFT AS	28/11/2002	COMPUTACENTER PLC	GE COMPUNET (GERMANY) AG
03/12/2002	DEUTSCHE POST AG	DHL INTERNATIONAL BV	09/12/2002	WINCANTON PLC	P&O TRANS EUROPEAN LTD
13/12/2002	RWE AG	TURBOGAS - PRODUTORA ENERGETICA SA	18/12/2002	PROVIDENT FINANCIAL PLC	YES CAR CREDIT LTD
18/12/2002	MEDIASET SPA	GESTEVISIÓN TELECINCO SA	10/02/2003	ROCHE HOLDING AG	DISETRONIC HOLDING AG
16/04/2003	RISANAMENTO SPA	IPI SPA	21/04/2003	PUBLICIS GROUPE SA	SOMAREL SA
30/04/2003	LUXOTTICA GROUP SPA	OPSM GROUP LTD	04/06/2003	GAMESA CORPORACION TECNOLOGICA SA	MADE TECNOLOGIAS RENOVABLES SA
05/06/2003	BUZZI UNICEM SPA	DYCKERHOFF AG	12/06/2003	SCHNEIDER ELECTRIC SA	TAC AB
16/06/2003	ENEL SPA	UNIÓN FENOSA ENERGÍAS ESPECIALES SA	03/07/2003	ACS ACTIVIDADES DE CONSTRUCCION Y SERVICIOS SA	GRUPO DRAGADOS SA
21/07/2003	TRELLEBORG AB	POLYMER SEALING SOLUTIONS LTD	05/08/2003	VODAFONE GROUP PLC	PROJECT TELECOM PLC
06/08/2003	PININFARINA SPA	MATRA MANUFACTURING & SERVICE SAS	09/09/2003	BRIME TECHNOLOGIES SA	ASSYSTEM SA
06/10/2003	SCOTTISH & SOUTHERN ENERGY PLC	MEDWAY POWER LTD	20/10/2003	CAP GEMINI ERNST & YOUNG SA	TRANSICIEL SA
23/10/2003	BILFINGER BERGER AG	ABIGROUP LTD	31/10/2003	COMPAGNIE DE SAINT-GOBAIN SA	PUM PLASTIQUES SA
10/11/2003	DAVIDE CAMPARI-MILANO SPA	BARBERO 1891 SPA	13/11/2003	LUNDIN PETROLEUM AB	ISLAND PETROLEUM DEVELOPMENTS LTD
10/12/2003	ANGLO AMERICAN PLC	ROMAN BAUERNFEIND HOLDING AG	12/12/2003	GEBERIT AG	MAPRESS HOLDING GMBH
12/12/2003	VESTAS WIND SYSTEMS A/S	NEG MICON A/S	12/12/2003	SACYR VALLEHERMOSO SA	SOMAGUE SGPS SA
15/12/2003	HENKEL KGAA	DIAL CORPORATION	15/12/2003	WM MORRISON SUPERMARKETS PLC	SAFEWAY PLC
19/12/2003	FINMECCANICA SPA	ALENIA AERMACCHI SPA	15/01/2004	DAIMLERCHRYSLER AG	MITSUBISHI FUSO TRUCK AND BUS CORPORATION
15/01/2004	PENDRAGON PLC	CD BRAMALL PLC	20/01/2004	CARLSBERG A/S	HOLSTEN-BRAUEREI AG
22/01/2004	METRO AG	ADLER MODEMARKTE AG	09/02/2004	NOKIA OYJ	SYMBIAN LTD
02/03/2004	KERRY GROUP PLC	QUEST INTERNATIONAL BV	03/03/2004	DS SMITH PLC	LINPAC CONTAINERS LTD
12/03/2004	SMITH & NEPHEW PLC	MIDLAND MEDICAL TECHNOLOGIES LTD	22/03/2004	BABCOCK INTERNATIONAL GROUP PLC	PETERHOUSE GROUP PLC
29/03/2004	CONTINENTAL AG	PHOENIX AG	30/03/2004	ENTERPRISE INNS PLC	UNIQUE PUB COMPANY PLC
05/04/2004	PSP SWISS PROPERTY AG	REG REAL ESTATE GROUP AG	21/04/2004	VOLKSWAGEN AG	LEASEPLAN CORPORATION NV
22/04/2004	CENTRICA PLC	BASTROP ENERGY PARTNERS LP	26/04/2004	POLSKI KONCERN NAFTOWY ORLEN SA	UNIPETROL AS
28/04/2004	SIEMENS AG	TRENCH ELECTRIC HOLDINGS BV	04/05/2004	TULLOW OIL PLC	ENERGY AFRICA LTD
06/05/2004	SECURITAS AB	BELL GROUP PLC	18/05/2004	UCB SA	CELLTECH GROUP PLC

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
02/06/2004	SEB SA	ALL-CLAD METAL-CRAFTERS LLC	03/06/2004	BAE SYSTEMS PLC	ALVIS PLC
11/06/2004	TNT NV	WILSON LOGISTICS GROUP	14/06/2004	WOLVERHAMPTON & DUDLEY BREWERIES PLC	WIZARD INNS LTD
25/06/2004	NATIONAL GRID TRANSCO PLC	CROWN CASTLE UK LTD	02/07/2004	AIXTRON AG	GENUS INC.
06/07/2004	SEMAPA - SOCIEDADE DE INVESTIMENTO E GESTAO SGPS SA	PORTUCEL - EMPRESA INDUSTRIAL DE PASTA E PAPEL SA	08/07/2004	TELIASONERA AB	ORANGE A/S
15/07/2004	EVN AG	ELEKTRORAZ-PREDELENIE PLOVDIV EAD	22/07/2004	ASSOCIATED BRITISH FOODS PLC	TONE BROTHERS INC.
23/07/2004	EBRO PULEVA SA	RIVIANA FOODS INC.	23/07/2004	WHITBREAD PLC	PREMIER LODGE LTD
29/07/2004	ELECTRICIDADE DE PORTUGAL SA	HIDROELÉCTRICA DE CANTÁBRICO SA	02/09/2004	INBEV SA	COMPANHIA DE BEBIDAS DAS AMERICAS - AMBEV
30/09/2004	AIR FRANCE SA	KONINKLIJKE LUCHTVAART MAATSCHAPPIJ NV	06/10/2004	ENEL SPA	SLOVENSKE ELEKTRARNE AS
06/10/2004	EADS NV	RACAL INSTRUMENTS INC.	07/10/2004	HENKEL KGAA	SOVEREIGN SPECIALTY CHEMICALS INC.
07/10/2004	EIFFAGE SA	EPOLIS SAS	08/10/2004	REPSOL-YPF SA	BOREALIS POLIMEROS LDA
14/10/2004	TELE2 AB	UTA TELEKOM AG	15/10/2004	ARCELOR SA	COMPANHIA SIDERÚRGICA DE TUBARÃO
20/10/2004	CRANSWICK PLC	PERKINS CHILLED FOODS LTD	29/10/2004	STORA ENSO OYJ	INTERCELL SA
29/10/2004	SAGEM SA	SOCIETE NATIONALE D'ETUDE ET DE CONSTRUCTION DE MOTEURS D'AVIATION SA	08/11/2004	IMERYS SA	LAFARGE RÉFRACTAIRES MONOLITHIQUES SAS
08/11/2004	BT GROUP PLC	INFONET SERVICES CORPORATION	08/11/2004	ORKLA ASA	CHIPS OYJ ABP
19/11/2004	DIAGEO PLC	URSUS VODKA HOLDING NV	23/11/2004	AGFA GEVAERT NV	GWI AG
29/11/2004	TELEKOM AUSTRIA AG	MOBILTEL EAD	29/11/2004	TRAVIS PERKINS PLC	WICKES BUILDING SUPPLIES LTD
30/11/2004	KINGSTON COMMUNICATIONS (HULL) PLC	OMNETICA LTD	06/12/2004	SMITHS GROUP PLC	MEDEX INC.
16/12/2004	VEOLIA ENVIRONNEMENT SA	BRAUNSCHWEIGER VERSORGUNGS-AG & CO. KG	16/12/2004	SERCO GROUP PLC	ITNET PLC
22/12/2004	GRUPPO EDITORIALE L'ESPRESSO SPA	RETE A SPA	10/01/2005	VALEO SA	JOHNSON CONTROLS AUTOMOTIVE ELECTRONICS SAS
18/01/2005	ELEKTA AB	IMPAC MEDICAL SYSTEMS INC.	07/02/2005	NOVARTIS AG	HEXAL AG
07/02/2005	KEMIRA OYJ	FINNISH CHEMICALS OY	14/02/2005	TELEFONICA SA	TERRA NETWORKS SA
16/02/2005	MITTEL SPA	PEPPER INDUSTRIES SPA	03/03/2005	HUNTSWORTH PLC	INCEPTA GROUP PLC
09/03/2005	BILFINGER BERGER AG	BABCOCK BORSIG SERVICE GMBH	11/03/2005	CARREFOUR SA	PAROMA SA
22/03/2005	PROSIEBENSAT1 MEDIA AG	EUVIA MEDIA AG & CO. KG	22/03/2005	LONMIN PLC	SOUTHERN PLATINUM CORPORATION
24/03/2005	SOLVAY SA	LABORATOIRES FOURNIER SA	25/03/2005	TELIASONERA AB	TURKCELL ILETISIM HIZMETLERI AS

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
30/03/2005	SIEMENS AG	FLENDER HOLDING GMBH	20/04/2005	COCA-COLA HELLENIC BOTTLING COMPANY SA	MULTON ZAO
21/04/2005	SACYR VALLEHERMOSO SA	SUFI SA	27/04/2005	ITV PLC	SDN LTD
29/04/2005	GLAXOSMITHKLINE PLC	CORIXA CORPORATION	04/05/2005	FRESENIUS MEDICAL CARE AG	RENAL CARE GROUP INC.
04/05/2005	DOF ASA	GEOCONSULT AS	11/05/2005	AP MOLLER-MAERSK A/S	ROYAL P&O NEDLLOYD NV
12/05/2005	ENDESA SA	FINERGE - GESTAO DE PROJECTOS ENERGETICOS SA	17/05/2005	DASSAULT SYSTEMES SA	ABAQUS INC.
18/05/2005	CASINO GUICHARDPERRACHON SA	VINDÉMIA SA	20/05/2005	BRITISH LAND COMPANY PLC, THE	PILLAR PROPERTY PLC
23/05/2005	TELENOR ASA	BREDBANDSBOLAGET AB	26/05/2005	REED ELSEVIER PLC	EDITIONS MASSON SAS
26/05/2005	CRH PLC	STRADAL SAS	31/05/2005	HEIDELBERGCEMENT AG	INDOCEMENT TUNGGAL PRAKARSA TBK, PT
06/06/2005	CENTRICA PLC	OXXIO NEDERLAND BV	06/06/2005	PREMIER FOODS PLC	MARLOW FOODS LTD
08/06/2005	SCHNEIDER ELECTRIC SA	SATCHWELL CONTROL SYSTEMS LTD	13/06/2005	LAND SECURITIES GROUP PLC	LXB PROPERTIES LTD
13/06/2005	HEXAGON AB	LEICA GEOSYSTEMS HOLDING AG	21/06/2005	JOHNSTON PRESS PLC	SCORE PRESS LTD
23/06/2005	PEARSON PLC	AMERICAN GUIDANCE SERVICE INC.	24/06/2005	HERA SPA	META SPA
28/06/2005	KONINKLIJKE KPN NV	TELFORT NV	29/06/2005	TELECOM ITALIA SPA	LIBERTY SURF GROUP SA
30/06/2005	HEINEKEN NV	KOMBINAT PIVOVARYONOI I BEZALKOGOLNOI PROMYSHLENOSTI IMENI STEPANA RAZINA	05/07/2005	AMDOCS LTD	DST INNOVIS INC.
05/07/2005	NORTHGATE PLC	RECORD RENT A CAR SA	06/07/2005	KONINKLIJKE PHILIPS ELECTRONICS NV	STENTOR INC.
07/07/2005	ELISA OYJ	SAUNALAHTI GROUP OYJ	11/07/2005	ASSOCIATED BRITISH FOODS PLC	LITTLEWOODS STORES HOLDINGS LTD
19/07/2005	ROCHE HOLDING AG	GLYCART BIOTECHNOLOGY AG	20/07/2005	COMPAGNIE DE SAINT-GOBAIN SA	BPB PLC
22/07/2005	PROMOTORA DE INFORMACIONES SA	VERTIX SGPS SA	26/07/2005	SOCIETA INIZIATIVE AUTOSTRADALI E SERVIZI SPA	SOCIEDAD CONCESIONARIA COSTANERA NORTE SA
27/07/2005	REAL GOOD FOOD COMPANY PLC, THE	NAPIER BROWN FOODS PLC	28/07/2005	FINMECCANICA SPA	DATAMAT SPA
01/08/2005	GROUPE PARTOUCHE SA	GROUPE DE DIVONNE SA	01/08/2005	RISANAMENTO SPA	SNC 50 MONTAIGNE
03/08/2005	ADIDAS-SALOMON AG	REEBOK INTERNATIONAL LTD	08/08/2005	KERRY GROUP PLC	NOON PRODUCTS LTD
15/08/2005	WEIR GROUP PLC, THE	POMPE GABBIONETA SPA	22/08/2005	TUI AG	CP SHIPS LTD
22/08/2005	GREENE KING PLC	BELHAVEN GROUP PLC, THE	29/08/2005	COMPAGNIE GÉNÉRALE DE GÉOPHYSIQUE SA	EXPLORATION RESOURCES ASA
12/09/2005	SIKA AG	SARNA KUNSTSTOFF HOLDING AG	19/09/2005	DEUTSCHE POST AG	EXEL PLC
19/09/2005	NORSK HYDRO ASA	SPINNAKER EXPLORATION COMPANY	26/09/2005	E.ON AG	CALEDONIA OIL & GAS LTD
29/09/2005	BELGACOM SA	TELINDUS GROUP SA/NV	29/09/2005	CEZ AS	SEVEROCESKE DOLY AS
05/10/2005	ACCIONA SA	URBANIZADORA EL COTO SA	06/10/2005	NATIONAL EXPRESS GROUP PLC	ALSA GRUPO SA

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10/10/2005	IPSOS SA	MORI GROUP LTD	12/10/2005	GENUS PLC	SYGEN INTERNATIONAL PLC
14/10/2005	FRESENIUS AG	HELIOS KLINIKEN GMBH	17/10/2005	KUHNE + NAGEL INTERNATIONAL AG	ACR LOGISTICS FRANCE SAS
19/10/2005	RAKENTAJAIN KONEVUOKRAAMO OYJ	CRAMO HOLDING BV	24/10/2005	DATALOGIC SPA	PSC INC.
27/10/2005	JCDECAUX SA	VVR-BEREK GMBH	08/11/2005	FULLER SMITH & TURNER PLC	GEORGE GALE AND COMPANY LTD
10/11/2005	SCHOUW & CO A/S	BIOMAR HOLDING A/S	10/11/2005	SAGE GROUP PLC, THE	ADONIX SA
11/11/2005	PERSIMMON PLC	WESTBURY PLC	16/11/2005	NOKIA OYJ	INTELLISYNC CORPORATION
17/11/2005	FOMENTO DE CONSTRUCCIONES Y CONTRATAS SA	ASA ABFALL SERVICE AG	23/11/2005	ARCELOR SA	DOFASCO INC.
25/11/2005	SOCIETE DE LA TOUR EIFFEL SA	LOCAFIMO SAS	01/12/2005	SPARKASSEN IMMOBILIEN AG	GERNGROSS KAUFHAUS AG
05/12/2005	PENDRAGON PLC	REG VARDY PLC	06/12/2005	GENERALE DE SANTE SA	HEXAGONE HOSPITALISATION SA
06/12/2005	TNT NV	HOAU LOGISTICS GROUP	07/12/2005	GEMALTO NV	GEMPLUS INTERNATIONAL SA
14/12/2005	VINCI SA	AUTOROUTES DU SUD DE LA FRANCE SA	15/12/2005	CARILLION PLC	MOWLEM PLC
16/12/2005	VIVENDI UNIVERSAL SA	TÉLÉVISION PAR SATELLITE SA	19/12/2005	RHON-KLINIKUM AG	UNIVERSITÄTSKLINIK GIEßEN UND MARBURG GMBH
21/12/2005	BELVEDERE SA	MARIE BRIZARD & ROGER INTERNATIONAL SA	21/12/2005	CARREFOUR SA	HYPARLO SA
21/12/2005	TRELLEBORG AB	CRP GROUP LTD	23/12/2005	ASTRAZENECA PLC	KUDOS PHARMACEUTICALS LTD
23/12/2005	FABEGE AB	LRT ACQUISITION AB	30/12/2005	THYSSENKRUPP AG	ATLAS ELEKTRONIK GMBH
03/01/2006	BASF AG	ENGELHARD CORPORATION	05/01/2006	DSV A/S	KONINKLIJKE FRANS MAAS GROEP NV
09/01/2006	ADECCO SA	DIS DEUTSCHER INDUSTRIE SERVICE AG	13/01/2006	COMPASS GROUP PLC	LEVY RESTAURANTS
17/01/2006	LONZA GROUP AG	UCB-BIOPRODUCTS	20/01/2006	BOIZEL CHANOINE CHAMPAGNE SA	LANSON INTERNATIONAL SA
23/01/2006	INBEV SA	FUJIAN SEDRIN BREWERY CO., LTD.	24/01/2006	RENTOKIL INITIAL PLC	JC EHRLICH CO INC.
25/01/2006	METSO OYJ	KVÆRNER PULPING AB	25/01/2006	AEM TORINO SPA	AMGA SPA
02/02/2006	FORTUM OYJ	E.ON FINLAND OYJ	14/02/2006	ANTOFAGASTA PLC	TETHYAN COPPER COMPANY LTD
14/02/2006	NOBIA AB	HYGENA CUISINES SASU	17/02/2006	NATIONAL GRID PLC	KEYSPAN CORPORATION
21/02/2006	SCHRODERS PLC	NEW FINANCE CAPITAL PARTNERS LTD	24/02/2006	SAIPEM SPA	SNAMPROGETTI SPA
02/03/2006	DASSAULT SYSTEMES SA	MATRIXONE INC.	06/03/2006	LINDE AG	BOC GROUP PLC
06/03/2006	IMI PLC	TRUFLO GROUP LTD	07/03/2006	MITIE GROUP PLC	INITIAL SECURITY LTD
09/03/2006	SIG PLC	WW FIXINGS LTD	13/03/2006	FLSMIDTH & CO A/S	POTAGUA FLS A/S
14/03/2006	ERCROS SA	DERIVADOS FORESTALES SA	15/03/2006	ERAMET SA	WEDA BAY MINERALS INC.
17/03/2006	L'OREAL SA	BODY SHOP INTERNATIONAL PLC, THE	20/03/2006	ALLIANCE TRUST PLC, THE	SECOND ALLIANCE TRUST PLC
22/03/2006	LEASINVEST REAL ESTATE SCA	DEXIA IMMO LUX	07/04/2006	PAN FISH ASA	FJORD SEAFOOD ASA

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
11/04/2006	ANDRITZ AG	VA TECH HYDRO AG	18/04/2006	AMDOCS LTD	QPASS INC.
24/04/2006	K+S AG	SOCIEDAD PUNTA LOBOS	02/05/2006	INTERSERVE PLC	MACLELLAN GROUP PLC
04/05/2006	INCHCAPE PLC	LIND AUTOMOTIVE GROUP HOLDINGS LTD	09/05/2006	RNB RETAIL AND BRANDS AB	JC AB
15/05/2006	SPEEDY HIRE PLC	LCH GENERATORS LTD	15/05/2006	ACEA SPA	TAD ENERGIA AMBIENTE SPA
16/05/2006	TELIASONERA AB	NEXTGENTEL HOLDING ASA	23/05/2006	ASSA ABLOY AB	FARGO ELECTRONICS INC.
26/05/2006	POLSKI KONCERN NAFTOWY ORLEN SA	MAZEIKIU NAFTA AB	29/05/2006	LUNDIN PETROLEUM AB	VALKYRIES PETROLEUM CORPORATION
31/05/2006	METRO AG	MARKTKAUF RUS OOO	01/06/2006	FONCIERE DES REGIONS SA	BAIL INVESTISSEMENT FONCIÈRE
07/06/2006	EBRO PULEVA SA	NEW WORLD PASTA COMPANY	08/06/2006	ALTRI SGPS SA	CELULOSE BEIRA INDUSTRIAL (CELBI) SA
12/06/2006	TENARIS SA	MAVERICK TUBE CORPORATION	12/06/2006	SAAB AB	ERICSSON MICROWAVE SYSTEMS AB
13/06/2006	VILMORIN CLAUSE ET CIE SA	BIOFINA SA	19/06/2006	NESTLE SA	JENNY CRAIG INC.
19/06/2006	ARNOLDO MONDADORI EDITORE SPA	EMAP FRANCE SAS	26/06/2006	CITYCON OYJ	BHM CENTRUMFASTIGHETER AB
27/06/2006	OBRASCON HUARTE LAIN SA	COMMUNITY ASPHALT CORPORATION	29/06/2006	CRODA INTERNATIONAL PLC	UNIQEMA
30/06/2006	SIEMENS AG	BAYER INDIA LTD	30/06/2006	COMPAGNIE DE SAINT-GOBAIN SA	JP CORRY GROUP LTD
07/07/2006	LOW & BONAR PLC	COLBOND INVESTMENTS BV	14/07/2006	STADA ARZNEIMITTEL AG	HEMOFARM AD
14/07/2006	HAMMERSON PLC	LXB HOLDINGS LTD	17/07/2006	EUROMONEY INSTITUTIONAL INVESTOR PLC	METAL BULLETIN PLC
17/07/2006	TESCO PLC	LEADER PRICE	26/07/2006	IMMOBILIARE GRANDE DISTRIBUZIONE SIIQ SPA	LARICE SRL
27/07/2006	INDRA SISTEMAS SA	AZERTIA TECNOLOGÍAS DE LA INFORMACIÓN SA	31/07/2006	TELENOR ASA	MOBI 63
17/08/2006	WIENERBERGER AG	BAGGERIDGE BRICK PLC	22/08/2006	STORA ENSO OYJ	VINSON INDÚSTRIA DE PAPEL ARAPOTI LTDA
05/09/2006	DEUTSCHE TELEKOM AG	POLSKA TELEFONIA CYFROWA SP ZOO	05/09/2006	COMPAGNIE GÉNÉRALE DE GÉOPHYSIQUE SA	VERITAS DGC INC.
15/09/2006	KONINKLIJKE KPN NV	TISCALI BV	21/09/2006	MERCK KGAA	SERONO SA
25/09/2006	UCB SA	SCHWARZ PHARMA AG	25/09/2006	TULLOW OIL PLC	HARDMAN RESOURCES LTD
26/09/2006	AGGREKO PLC	GE ENERGY RENTALS LTD	09/10/2006	GLAXOSMITHKLINE PLC	CNS INC.
17/10/2006	THEOLIA SA	NATURAL ENERGY CORPORATION GMBH	19/10/2006	POSLOVNI SISTEM MERCATOR DD	RODIC MB-CO DOO
26/10/2006	PROMOTORA DE INFORMACIONES SA	GRUPO MEDIA CAPITAL SGPS SA	30/10/2006	SCHNEIDER ELECTRIC SA	AMERICAN POWER CONVERSION CORPORATION
08/11/2006	NEXANS SA	OLEX CABLES PTY LTD	09/11/2006	DAIRY CREST GROUP PLC	ST HUBERT SAS
10/11/2006	HK RUOKATALO GROUP OYJ	SCAN AB	14/11/2006	DERWENT VALLEY HOLDINGS PLC	LONDON MERCHANT SECURITIES PLC

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
15/11/2006	LONMIN PLC	AFRIORE LTD	17/11/2006	VECTURA GROUP PLC	INNOVATA PLC
20/11/2006	LAGARDERE SCA	SPORTFIVE SAS	21/11/2006	TELENET GROUP HOLDING NV	UNITED PAN EUROPE COMMUNICATIONS BELGIUM SA
28/11/2006	IBERDROLA SA	SCOTTISH POWER PLC	30/11/2006	RENTOKIL INITIAL PLC	TARGET EXPRESS HOLDINGS LTD
04/12/2006	CARREFOUR SA	AHOLD POLSKA SP ZOO	04/12/2006	PREMIER FOODS PLC	RHM PLC
07/12/2006	BEFIMMO SCA	FEDIMMO SA	19/12/2006	TELEFONAKTIE-BOLAGET LM ERICSSON AB	REDBACK NETWORKS INC.
21/12/2006	KLEPIERRE SA	PROGEST SAS	22/12/2006	PUNCH INTERNATIONAL SA/NV	PUNCH GRAPHIX PLC
09/01/2007	DUFRY AG	ALLIANCE DUTY FREE INC.	10/01/2007	TNT NV	EXPRESSO MERCÚRIO SA
19/01/2007	STERLING ENERGY PLC	WHITTIER ENERGY COMPANY	25/01/2007	VINCI SA	SOLÉTANCHE SA
25/01/2007	MARSTON'S PLC	NOUVEAUSTAR LTD	01/02/2007	BALFOUR BEATTY PLC	CENTEX CONSTRUCTION GROUP INC
01/02/2007	ASTRAZENECA PLC	ARROW THERAPEUTICS LTD	01/02/2007	BT GROUP PLC	INTERNATIONAL NETWORK SERVICES INC.
01/02/2007	TELIASONERA AB	DEBITEL DANMARK A/S	05/02/2007	BARRATT DEVELOPMENTS PLC	WILSON BOWDEN PLC
05/02/2007	FIRSTGROUP PLC	LAIDLAW INTERNATIONAL INC.	06/02/2007	PIERRE ET VACANCES SA	SUNPARKS GROEP NV
07/02/2007	RCS MEDIAGROUP SPA	RECOLETOS GRUPO DE COMUNICACIÓN SA	08/02/2007	GALLIFORD TRY PLC	LINDEN HOLDINGS PLC
12/02/2007	VODAFONE GROUP PLC	HUTCHISON ESSAR TELECOM LTD	12/02/2007	MOL MAGYAR OLAJ-ES GAZIPARI NYRT	TISZAI VEGYI KOMBINAT NYRT
16/02/2007	COLAS SA	SPIE RAIL SA	22/02/2007	SARTORIUS AG	VL FINANCE SAS
26/02/2007	LEROY SEAFOOD GROUP ASA	VESTSTAR HOLDING AS	02/03/2007	CEGEDIM SA	DENDRITE INTERNATIONAL INC.
05/03/2007	CRH PLC	GÉTAZ ROMANG HOLDING SA	06/03/2007	ACCOR SA	KADÉOS SAS
08/03/2007	AIR LIQUIDE SA	LINDE GAS UK LTD	08/03/2007	ALSTOM SA	POWER SYSTEMS MANUFACTURING LLC
12/03/2007	SWISSCOM AG	FASTWEB SPA	12/03/2007	SMITH & NEPHEW PLC	PLUS ORTHOPEDICS HOLDING AG
20/03/2007	JUTRZENKA SA	ZIOLOPEX SP ZOO	27/03/2007	AIR BERLIN PLC	LTU LUFTTRANSPORT UNTERNEHMEN GMBH
27/03/2007	EDP ENERGIAS DE PORTUGAL SA	HORIZON WIND ENERGY LLC	29/03/2007	VOESTALPINE AG	BÖHLER-UDDEHOLM AG
29/03/2007	ROCHE HOLDING AG	454 LIFE SCIENCES CORPORATION	02/04/2007	E.ON AG	ELECTRA DE VIESGO SA
05/04/2007	SOFTWARE AG	WEBMETHODS INC.	12/04/2007	NESTLE SA	GERBER PRODUCTS COMPANY INC.
12/04/2007	NEW WAVE GROUP AB	CUTTER & BUCK INC.	23/04/2007	GENERAL DE ALQUILER DE MAQUINARIA SA	VILATEL SL
27/04/2007	VEOLIA ENVIRONNEMENT SA	SULO GMBH	27/04/2007	NATIONAL EXPRESS GROUP PLC	CONTINENTAL AUTO SL
30/04/2007	ALTAMIR ET COMPAGNIE SCA	AMBOISE INVESTISSEMENT SAS	30/04/2007	MOTHERCARE PLC	CHELSEA STORES HOLDINGS LTD
03/05/2007	CASINO GUICHARD-PERRACHON SA	ALMACENES EXITO SA	09/05/2007	TELENOR ASA	TELE2 A/S
10/05/2007	BABCOCK INTERNATIONAL GROUP PLC	DEVONPORT MANAGEMENT LTD	22/05/2007	PUBLIGROUPE SA	ZANOX.DE AG

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
24/05/2007	TAMEDIA AG	ESPACE MEDIA AG	28/05/2007	SOCIETA INIZIATIVE AUTOSTRADALI E SERVIZI SPA	SOCIETA AUTOSTRADA TORINO ALESSANDRIA PIACENZA SPA
29/05/2007	ASSOCIATED BRITISH FOODS PLC	PATAK'S FOOD LTD	30/05/2007	COFINIMMO SA	HOLDING VAN DEN BRANDE
30/05/2007	AUTOGRILL SPA	ALPHA AIRPORTS GROUP PLC	04/06/2007	QIAGEN NV	DIGENE CORPORATION
20/06/2007	LONDON STOCK EXCHANGE GROUP PLC	BORSA ITALIANA SPA	20/06/2007	LUXOTTICA GROUP SPA	OAKLEY INC.
20/06/2007	PETROLEUM GEOSERVICES ASA	MTEM LTD	25/06/2007	NORDDEUTSCHE AFFINERIE AG	CUMERIO NV/SA
26/06/2007	PINGUIN SA/NV	VAN DEN BROEKE - LUTOSA	27/06/2007	PROSIEBENSAT1 MEDIA AG	SBS BROADCASTING BV
28/06/2007	AXEL SPRINGER AG	PIN GROUP AG	29/06/2007	FISKARS OYJ ABP	IITTALA GROUP OY
02/07/2007	DEUTSCHE WOHNEN AG	GEHAG GMBH	03/07/2007	MEDIASET SPA	MEDUSA FILM SPA
09/07/2007	GROUPE DANONE SA	KONINKLIJKE NUMICO NV	09/07/2007	DIAGNOSTIC & THERAPEUTIC CENTER of ATHENS HYGEIA SA	MITERA OBSTETRICS & SURGICAL CLINIC SA
12/07/2007	LVMH MOET HENNESSY LOUIS VUITTON SA	LES ECHOS SAS	23/07/2007	TOMTOM NV	TELE ATLAS NV
24/07/2007	TUBOS REUNIDOS SA	LARREDER SL	25/07/2007	CONTINENTAL AG	SIEMENS VDO AUTOMOTIVE AG
26/07/2007	COMPAGNIE INDUSTRIELLE ET FINANCIERE D'INGENIERIE SA	SAGEM MONETEL SAS	01/08/2007	SCHNEIDER ELECTRIC SA	PELCO INC.
07/08/2007	COMPAGNIE DE SAINT-GOBAIN SA	MAXIT GROUP AB	14/08/2007	CITYCON OYJ	DH REAL ESTATE ISO SARL
15/08/2007	WESTBURY PROPERTY FUND LTD	EDDIE STOBART GROUP LTD	22/08/2007	SEVERFIELD-ROWEN PLC	ACTION MERCHANTS LTD
29/08/2007	LAGARDERE SCA	NEXTIDIA SASU	25/09/2007	HOCHTIEF AG	FLATIRON CONSTRUCTION CORPORATION
25/09/2007	GROUPE NORBERT DENTRESSANGLE SA	CHRISTIAN SALVESEN PLC	28/09/2007	RECORDATI - INDUSTRIA CHIMICA E FARMACEUTICA SPA	ORPHAN EUROPE SARL
01/10/2007	STOCKMANN OYJ ABP	LINDEX AB	01/10/2007	NOKIA OYJ	NAVTEQ CORPORATION
01/10/2007	ASSECO POLAND SA	PROKOM SOFTWARE SA	05/10/2007	HELLENIC DUTY FREE SHOPS SA	ELMEC SPORT SA
08/10/2007	SAP AG	BUSINESS OBJECTS SA	08/10/2007	HIKMA PHARMACEUTICALS PLC	ARAB PHARMACEUTICAL MANUFACTURING COMPANY LTD, THE
12/10/2007	BOVIS HOMES GROUP PLC	ELITE HOMES GROUP LTD	25/10/2007	EASYJET PLC	GB AIRWAYS LTD
02/11/2007	CARILLION PLC	ALFRED MCALPINE PLC	16/11/2007	JOHN WOOD GROUP PLC	IMV CORPORATION
19/11/2007	EXEL INDUSTRIES SA	HARDI INTERNATIONAL A/S	21/11/2007	GLAXOSMITHKLINE PLC	RELIANT PHARMACEUTICALS INC.
22/11/2007	ARCELORMITTAL SA	CHINA ORIENTAL GROUP CO., LTD	28/11/2007	MAREL HF	STORK FOOD SYSTEMS INTERNATIONAL BV
29/11/2007	FRESENIUS MEDICAL CARE AG & CO. KGAA	RENAL SOLUTIONS INC.	30/11/2007	G4S PLC	DE FACTO 1119 LTD
03/12/2007	RANDSTAD HOLDING NV	VEDIOR NV	04/12/2007	CA IMMOBILIEN ANLAGEN AG	VIVICO REAL ESTATE GMBH

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10/12/2007	RECKITT BENCKISER GROUP PLC	ADAMS RESPIRATORY THERAPEUTICS INC.	10/12/2007	JOHNSON MATTHEY PLC	ARGILLON GMBH
11/12/2007	FOMENTO DE CONSTRUCCIONES Y CONTRATAS SA	HYDROCARBON RECOVERY SERVICES INC.	13/12/2007	LANXESS AG	PETROFLEX INDUSTRIA E COMERCIO SA
14/12/2007	ASTROC MEDITERRANEO SA	RAYET PROMOCIÓN SL	24/12/2007	AIR FRANCE-KLM SA	VLM AIRLINES NV
04/01/2008	SCOTTISH & SOUTHERN ENERGY PLC	AIRTRICITY HOLDINGS LTD	16/01/2008	COBHAM PLC	SPARTA INC.
23/01/2008	L'OREAL SA	YSL BEAUTÉ SAS	29/01/2008	PZ CUSSONS PLC	SANCTUARY SPA HOLDINGS LTD, THE
31/01/2008	PRIMA INDUSTRIE SPA	FINN-POWER OY	15/02/2008	BELGACOM SA	SCARLET NV
21/02/2008	REED ELSEVIER PLC	CHOICEPOINT INC.	22/02/2008	HALDEX AB	CONCENTRIC PLC
28/02/2008	BRITISH AMERICAN TOBACCO PLC	HOUSE of PRINCE A/S	29/02/2008	FORTUM OYJ	TERRITORIALNAYA GENERIRUYUSHCHAYA KOMPANIYA N 10 OAO
10/03/2008	AUTOGRILL SPA	WORLD DUTY FREE EUROPE LTD	13/03/2008	CRH PLC	PAVESTONE COMPANY LP
13/03/2008	KERRY GROUP PLC	BREEO FOODS LTD	17/03/2008	ORIOLA-KD OYJ	VITIM I KO OOO
19/03/2008	DATWYLER HOLDING AG	ELFA AB	27/03/2008	IMMOBILIARE GRANDE DISTRIBUZIONE SIIQ SPA	WINMARKT MAGAZINE SA
31/03/2008	PERNOD RICARD SA	V&S VIN & SPRIT AB	10/04/2008	GALP ENERGIA SGPS SA	ESSO ESPAÑOLA SL
15/04/2008	ROCHE HOLDING AG	PIRAMED LTD	15/04/2008	ERAMET SA	TINFOS AS
23/04/2008	OUTOKUMPU OYJ	SOGEPAR SPA	24/04/2008	INCHCAPE PLC	MUSA MOTORS
28/04/2008	FREENET AG	DEBITEL AG	28/04/2008	KONINKLIJKE DSM NV	POLYMER TECHNOLOGY GROUP INC., THE
08/05/2008	FINMECCANICA SPA	DRS TECHNOLOGIES INC.	04/06/2008	NOVARTIS AG	PROTEZ PHARMACEUTICALS INC.
05/06/2008	POSLOVNI SISTEM MERCATOR DD	GETRO DD	09/06/2008	ILIAD SA	LIBERTY SURF GROUP SA
11/06/2008	INBEV SA	ANHEUSER-BUSCH COMPANIES INC.	11/06/2008	GORENJE DD	ATAG EUROPE BV
13/06/2008	SOL MELIÁ SA	ALTAVISTA HOTELERA SL	16/06/2008	ESSILOR INTERNATIONAL SA	SATISLOH HOLDING AG
24/06/2008	SAFRAN SA	SDU IDENTIFICATION BV	01/07/2008	FLUXYS	DISTRIGAS & CO
03/07/2008	WARTSILA OYJ	VIK-SANDVIK AS	14/07/2008	YARA INTERNATIONAL ASA	SASKFERCO PRODUCTS INC.
17/07/2008	ABB LTD	KUHLMAN ELECTRIC CORPORATION	22/07/2008	MILLICOM INTERNATIONAL CELLULAR SA	AMNET TELECOMMUNICATIONS HOLDING LTD
23/07/2008	SCHNEIDER ELECTRIC SA	XANTREX TECHNOLOGY INC.	25/07/2008	CAP GEMINI SA	GETRONICS PINKROCCADE BUSINESS APPLICATION SERVICES BV
28/07/2008	FORBO HOLDING AG	BONAR FLOORS LTD	28/07/2008	KLEPIERRE SA	STEEN & STRØM ASA
31/07/2008	MODERN TIMES GROUP MTG AB	NOVA TELEVIZIA-PARVI CHASTEN KANAL EAD	15/08/2008	GDF SUEZ SA	IZMIT GAZ DAGITIM SANAYI VE TICARET AS
25/08/2008	GLANBIA PLC	OPTIMUM NUTRITION INC.	29/08/2008	POLYTEC HOLDING AG	PEGUFORM GMBH
08/09/2008	DUFRY AG	HUDSON GROUP INC.	15/09/2008	GETINGE AB	DATASCOPE CORPORATION
18/09/2008	BTG PLC	PROTHERICS PLC	22/09/2008	DOF ASA	DOF SUBSEA ASA
25/09/2008	ENERGIEDIENST HOLDING AG	ENALPIN AG	26/09/2008	TELIASONERA AB	TELIASONERA ASIA HOLDING BV

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
13/10/2008	IRIDE SPA	ENÌA SPA	14/10/2008	CENTROTHERM PHOTOVOLTAICS AG	CENTROTHERM THERMAL SOLUTIONS GMBH & CO. KG
14/10/2008	AUSTEVOLL SEAFOOD ASA	LEROY SEAFOOD GROUP ASA	17/10/2008	SOLVAY SA	ALEXANDRIA SODIUM CARBONATE CO.
20/10/2008	KUHNE + NAGEL INTERNATIONAL AG	GROUPE ALLOIN	20/10/2008	EIFFAGE SA	CLEMESSY SA
10/11/2008	CGG VERITAS SA	WAVEFIELD INSEIS ASA	10/11/2008	PEAB AB	PEAB INDUSTRI AB
15/12/2008	MAN AG	VOLKSWAGEN CAMINHÕES E ÔNIBUS INDÚSTRIA E COMÉRCIO DE VEÍCULOS COMERCIAIS LTDA	15/12/2008	ASSOCIATED BRITISH FOODS PLC	AZUCARERA EBRO SL
19/12/2008	TERNA - RETE ELETTRICA NAZIONALE SPA	ENEL LINEE ALTA TENSIONE SRL	12/01/2009	RWE AG	ESSENT NV
26/01/2009	UNILEVER PLC	TIGI INTERNATIONAL LTD	03/03/2009	TAMEDIA AG	PRESSE PUBLICATIONS SR SA
03/03/2009	GALENICA AG	SUN STORE SA	25/03/2009	PREMIER OIL GROUP LTD	OILEXCO NORTH SEA LTD
30/03/2009	TELEKOM SLOVENIJE DD	GERMANOS TELECOM SKOPJE SA	01/04/2009	K+S AG	MORTON INTERNATIONAL INC.
09/04/2009	SANOFI-AVENTIS SA	MEDLEY SA INDUSTRIA FARMACEUTICA	15/04/2009	PEARSON PLC	GAMMA MASTER CHINA LTD
20/04/2009	GLAXOSMITHKLINE PLC	STIEFEL LABORATORIES INC.	23/04/2009	INVESTMENT AB KINNEVIK	EMESCO AB
11/05/2009	ELECTRICITE DE FRANCE SA	SPE SA	25/05/2009	KONINKLIJKE PHILIPS ELECTRONICS NV	SAECO INTERNATIONAL GROUP SPA
28/05/2009	TELEVISION FRANCAISE 1 SA	TELE MONTE CARLO	01/06/2009	CEZ AS	OSSH SHA
02/06/2009	SWISS PRIME SITE AG	JELMOLI HOLDING AG	17/06/2009	BRITISH AMERICAN TOBACCO PLC	BENTOEL INTERNASIONAL INVESTAMA TBK, PT
22/06/2009	SEGRO PLC	BRIXTON PLC	25/06/2009	ARCADIS NV	MALCOLM PIRNIE INC.
02/07/2009	UNIPAPEL SA	ADIMPO SA	07/07/2009	H LUNDBECK A/S	LIFEHEALTH LTD
16/07/2009	RANDGOLD RESOURCES LTD	MOTO GOLDMINES LTD	30/07/2009	CINTRA CONCESIONES DE INFRAESTRUCTURA DE TRANSPORTE SA	GRUPO FERROVIAL SA (OLD)
10/08/2009	VIVENDI SA	GVT HOLDING SA	10/08/2009	PUBLICIS GROUPE SA	RAZORFISH LLC
12/08/2009	MITIE GROUP PLC	DALKIA ENERGY & TECHNICAL SERVICES LTD	31/08/2009	VINCI SA	CEGELEC HOLDING SA
14/09/2009	AERCAP HOLDINGS NV	GENESIS LEASE LTD	17/09/2009	BALFOUR BEATTY PLC	PARSONS BRINCKERHOFF INC.
25/09/2009	COMPAGNIE INDUSTRIELLE ET FINANCIERE D'INGENIERIE SA	EASYCASH BETEILIGUNGEN GMBH	25/09/2009	UNILEVER NV	SARA LEE HOUSEHOLD AND BODYCARE INTERNATIONAL BV
06/10/2009	BILFINGER BERGER AG	MCE AG	20/10/2009	ADECCO SA	MPS GROUP INC.
02/11/2009	FAURECIA SA	EMCON TECHNOLOGIES LLC	05/11/2009	METSO OYJ	TAMFELT OYJ ABP
05/11/2009	BIOVITRUM AB	SWEDISH ORPHAN INTERNATIONAL AB	09/11/2009	SONOVA HOLDING AG	ADVANCED BIONICS CORPORATION
10/11/2009	LOGITECH INTERNATIONAL SA	LIFESIZE INC.	12/11/2009	KONINKLIJKE BOSKALIS WESTMINSTER NV	SMIT INTERNATIONALE NV

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
19/11/2009	NESTLE SA	VITALITY FOOD SERVICE INC.	19/11/2009	DEUTSCHE TELEKOM AG	STRATO AG
30/11/2009	SCHNEIDER ELECTRIC SA	AREVA T&D SA	09/12/2009	MEYER BURGER TECHNOLOGY AG	3S INDUSTRIES AG
14/12/2009	VOSSLOH AG	STAHLBERG ROENSCH GMBH & CO. KG	16/12/2009	ESSILOR INTERNATIONAL SA	FGX INTERNATIONAL HOLDINGS LTD
23/12/2009	NOVARTIS AG	CORTHERA INC.	23/12/2009	ICADE SA	COMPAGNIE LA LUCETTE SA
24/12/2009	ASTRAZENECA PLC	NOVEXEL SA	08/01/2010	BONDUELLE SA	FRANCE CHAMPIGNON HOLDING SA
11/01/2010	HEINEKEN NV	FEMSA CERVEZA SA DE CV	04/02/2010	CSM NV	BEST BRANDS CORPORATION
23/02/2010	MERCK KGAA	MILLIPORE CORPORATION	05/03/2010	PROMOTORA DE INFORMACIONES SA	LIBERTY ACQUISITION HOLDINGS CORPORATION
11/03/2010	BP PLC	DEVON ENERGY DO BRASIL LTDA	12/03/2010	ELIA SYSTEM OPERATOR SA/NV	50HERTZ TRANSMISSION GMBH
23/03/2010	BABCOCK INTERNATIONAL GROUP PLC	VT GROUP PLC	15/04/2010	OMV PETROM SA	WIND POWER PARK SRL
21/04/2010	VALLOUREC SA	SERIMAX HOLDINGS SASU	03/05/2010	NORSK HYDRO ASA	ALUNORTE - ALUMINA DO NORTE DO BRASIL SA
05/05/2010	ABB LTD	VENTYX INC.	11/05/2010	AMSTERDAM COMMODITIES NV	VAN REES GROUP BV
18/05/2010	BAE SYSTEMS PLC	ATLANTIC MARINE HOLDING COMPANY	18/05/2010	PEARSON PLC	MELORIO PLC
18/05/2010	BRITVIC PLC	FRUITÉ ENTREPRISES SA	28/05/2010	ROYAL DUTCH SHELL PLC	EAST RESOURCES INC.
28/05/2010	ACTELIOS SPA	FALCK RENEWABLES PLC	04/06/2010	BRITISH SKY BROADCASTING GROUP PLC	VIRGIN MEDIA TELEVISION LTD
07/06/2010	ARYZTA AG	FRESH START BAKERIES INC.	07/06/2010	GRIFOLS SA	TALECRIS BIOTHERAPEUTICS HOLDINGS CORPORATION
08/06/2010	INVESTMENT AB ORESUND	HQ FONDER SVERIGE AB	09/06/2010	DASSAULT SYSTEMES SA	EXALEAD SA
10/06/2010	GLAXOSMITHKLINE PLC	LABORATORIOS PHOENIX SAIC Y F	21/06/2010	ACERGY SA	SUBSEA 7 INC.
22/06/2010	BUREAU VERITAS SA	INSPECTORATE HOLDINGS PLC	23/06/2010	BASF SE	COGNIS GMBH
24/06/2010	CA IMMOBILIEN ANLAGEN AG	EUROPOLIS AG	29/06/2010	GEMALTO NV	CINTERION WIRELESS MODULES GMBH
30/06/2010	SANOFI-AVENTIS SA	TARGEGEN INC.	01/07/2010	ECONOCOM GROUP SA/NV	ECONOCOM SAS
01/07/2010	CIE AUTOMOTIVE SA	INSTITUTO SECTORIAL DE PROMOCIÓN Y GESTIÓN DE EMPRESAS SA	06/07/2010	HEXAGON AB	INTERGRAPH CORPORATION
07/07/2010	DS SMITH PLC	OTOR SA	08/07/2010	RATOS AB	STOFA A/S
23/07/2010	ORANJEWOUD NV	STRUKTON GROEP NV	20/09/2010	SAFRAN SA	L-1 IDENTITY SOLUTIONS INC.
27/09/2010	UNILEVER PLC	ALBERTO CULVER COMPANY	28/09/2010	AMPLIFON SPA	NHC GROUP PTY LTD
28/09/2010	LEROY SEAFOOD GROUP ASA	SJØTROLL HAVBRUK AS	07/10/2010	RICHTER GEDEON VEGYESZETI GYAR NYRT	PREGLEM SA
11/10/2010	ELECTROLUX AB	OLYMPIC GROUP FOR FINANCIAL INVESTMENTS SAE	11/10/2010	ASSA ABLOY AB	ACTIVIDENTITY CORPORATION

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
18/10/2010	HEXPOL AB	EXCEL POLYMERS LLC	19/10/2010	SKF AB	LINCOLN HOLDINGS ENTERPRISES INC.
20/10/2010	OMV AG	PETROL OFISI AS	25/10/2010	IMI PLC	ZIMMERMANN & JANSEN BETEILIGUNGSGESELLSCHAFT MBH
15/11/2010	CYFROWY POLSAT SA	TELEWIZJA POLSAT SA	18/11/2010	TRAKCJA-TILTRA SA	KAUNO TILTAI AB
19/11/2010	BTG PLC	BIOCOMPATIBLES INTERNATIONAL PLC	22/11/2010	PRYSMIAN SPA	DRAKA HOLDING NV
25/11/2010	CAPITAL SHOPPING CENTRES GROUP PLC	TRAFFORD CENTRE LTD, THE	29/11/2010	NORBERT DENTRESSANGLE SA	LAXEY LOGISTICS LTD
10/12/2010	DEUTSCHE TELEKOM AG	CARCOM WARSZAWA SP ZOO	13/12/2010	YULE CATTO & CO PLC	POLYMERLATEX DEUTSCHLAND BETEILIGUNGSGESELLSCHAFT MBH
13/12/2010	RECKITT BENCKISER GROUP PLC	PARAS PHARMACEUTICALS LTD	13/12/2010	JOHN WOOD GROUP PLC	PRODUCTION SERVICES NETWORK LTD
14/12/2010	LANXESS AG	DSM ELASTOMERS BV	14/12/2010	ATOS ORIGIN SA	SIEMENS IT SOLUTIONS AND SERVICES GMBH
15/12/2010	NOVARTIS AG	ALCON INC.	15/12/2010	FERREXPO PLC	HELOGISTICS HOLDING GMBH
21/12/2010	UPM-KYMMENE OYJ	MYLLYKOSKI OYJ	21/12/2010	KONINKLIJKE DSM NV	MARTEK BIOSCIENCES CORPORATION
21/12/2010	ALFA LAVAL AB	AALBORG INDUSTRIES HOLDING A/S	22/12/2010	ÖSTERREICHISCHE ELEKTRIZITÄTSWIRTSCHAFTS-AG	POWEO PRODUCTION SAS
23/12/2010	CAPITA GROUP PLC, THE	SUNGARD PUBLIC SECTOR HOLDINGS LTD	03/01/2011	FRESENIUS MEDICAL CARE AG & CO. KGAA	INTERNATIONAL DIALYSIS CENTERS BV
03/01/2011	EUROCASH SA	TRADIS SP ZOO	05/01/2011	PORTUGAL TELECOM SGPS SA	CTX PARTICIPAÇÕES SA
19/01/2011	GLANBIA PLC	BIO-ENGINEERED SUPPLEMENTS AND NUTRITION	03/02/2011	CARILLION PLC	EAGA PLC
07/02/2011	ENSCO PLC	PRIDE INTERNATIONAL INC.	09/02/2011	TELIASONERA AB	TEO LT AB
16/02/2011	CLARIANT AG	SÜD CHEMIE AG	21/02/2011	DIAGEO PLC	MEY IÇKI SAN VE TIC AS
23/02/2011	IMERYS SA	LUZENAC EUROPE SAS	23/02/2011	VALEO SA	NILES CO., LTD
24/02/2011	EUROFINS SCIENTIFIC SA	LANCASTER LABORATORIES INC.	28/02/2011	SIEMENS AG	SITECO BELEUCHTUNGSTECHNIK GMBH
07/03/2011	LVMH MOET HENNESSY LOUIS VUITTON SA	BULGARI SPA	07/03/2011	INTERTEK GROUP PLC	MOODY INTERNATIONAL LTD
14/03/2011	PINGUINLUTOSA SA/NV	SCANA NOLIKO SA	17/03/2011	INVESTMENT AB LATOUR	SÄKI AB
21/03/2011	GROUPE BRUXELLES LAMBERT SA	IMERYS SA	04/04/2011	SOLVAY SA	RHODIA SA
07/04/2011	SULZER AG	CARDO FLOW SOLUTIONS AB	11/04/2011	MEYER BURGER TECHNOLOGY AG	ROTH & RAU AG
11/04/2011	BAKKAFROST P/F	P/F HAVSBRÚN	11/04/2011	NIBE INDUSTRIER AB	SCHULTHESS GROUP AG
02/05/2011	RALLYE SA	CASINO GUICHARDPERRACHON SA	02/05/2011	PPR SA	VOLCOM INC.
03/05/2011	EXPERIAN PLC	COMPUTEC SA	09/05/2011	VOLKSWAGEN AG	MAN AG
09/05/2011	KONE OYJ	GIANT KONE ELEVATOR CO., LTD	09/05/2011	ALKERMES PLC	ELAN DRUG TECHNOLOGIES

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
17/05/2011	PUBLICIS GROUPE SA	ROSETTA MARKETING GROUP LLC	17/05/2011	SHIRE PLC	ADVANCED BIOHEALING INC.
19/05/2011	BIOMERIEUX SA	SKIVA SAS	23/05/2011	TULLOW OIL PLC	NUON EXPLORATION AND PRODUCTION BV
26/05/2011	BRITISH AMERICAN TOBACCO PLC	PRODUCTORA TABACALERA DE COLOMBIA SAS	30/05/2011	SCHNEIDER ELECTRIC SA	LUMINOUS POWER TECHNOLOGIES PVT LTD
31/05/2011	SERCO GROUP PLC	INTELENET GLOBAL SERVICES PVT LTD	02/06/2011	KONINKLIJKE VOPAK NV	ALTAMIRA S DE RL DE CV
14/06/2011	CAP GEMINI SA	PROSODIE SA	14/06/2011	TELEFONAKTIEBOLAGET LM ERICSSON AB	TELCORDIA TECHNOLOGIES INC.
15/06/2011	NYRSTAR NV	BREAKWATER RESOURCES LTD	15/06/2011	ZAKLADY AZOTOWE W TARNOWIE - MOSCICACH SA	ZAKLADY CHEMICZNE POLICE SA
16/06/2011	AUSTRIAMICROSYSTEMS AG	TEXAS ADVANCED OPTOELECTRONIC SOLUTIONS INC.	21/06/2011	SOGEFI SPA	MARK IV SYSTÈMES MOTEURS SAS
21/06/2011	ELEKTA AB	NUCLETRON BV	27/06/2011	KERNEL HOLDING SA	UKRAINSKAYA CHERNOMORSKAYA INDUSTRIYA OOO
29/06/2011	SAAB AB	SENSIS CORPORATION	04/07/2011	NESTLE SA	HSU FU CHI INTERNATIONAL LTD
04/07/2011	RECORDATI - INDUSTRIA CHIMICA E FARMACEUTICA SPA	DR F FRIK ILAÇ SAN VE TIC AS	06/07/2011	UNIPAPEL SA	SPICERS LTD
08/07/2011	AF GRUPPEN ASA	SG GRUPPEN KONGSVINGER AS	19/07/2011	ROCHE HOLDING AG	MTM LABORATORIES AG
19/07/2011	GREENE KING PLC	CAPITAL PUB COMPANY PLC, THE	25/07/2011	COMPAGNIE DE SAINT-GOBAIN SA	BROSSETTE SA
26/07/2011	ADECCO SA	DRAKE BEAM MORIN INC.	27/07/2011	IPSOS SA	SYNOVATE LTD
27/07/2011	ENI SPA	NUON BELGIUM NV	15/08/2011	SPECTRIS PLC	OMEGA ENGINEERING INC.
17/08/2011	ELECTROLUX AB	CTI COMPAÑÍA TECNO INDUSTRIAL SA	26/08/2011	SAN LEON ENERGY PLC	REALM ENERGY INTERNATIONAL CORPORATION
02/09/2011	BRENNTAG AG	MULTISOL GROUP LTD	13/09/2011	NATIONAL EXPRESS GROUP PLC	PETERMANN PARTNERS INC.
15/09/2011	COBHAM PLC	TRIVEC-AVANT CORPORATION	19/09/2011	IGAS ENERGY PLC	STAR ENERGY GROUP LTD
22/09/2011	KERRY GROUP PLC	CARGILL FLAVOR SYSTEMS (UK) LTD	22/09/2011	DIOS FASTIGHETER AB	NORRVIDDEN FASTIGHETER AB
26/09/2011	REED ELSEVIER PLC	ACCUITY HOLDINGS INC.	27/09/2011	ATRIUM EUROPEAN REAL ESTATE LTD	FLORA-SEN SRO
29/09/2011	NETIA SA	TELEFONIA DIALOG SA	03/10/2011	GETINGE AB	ATRIUM MEDICAL CORPORATION
05/10/2011	PREMIER OIL PLC	ENCORE OIL PLC	06/10/2011	ARISE WINDPOWER AB	JÄDRAÅS VINDKRAFT AB
12/10/2011	MEKONOMEN AB	MECA SCANDINAVIA AB	17/10/2011	STATOIL ASA	BRIGHAM EXPLORATION COMPANY
20/10/2011	FRANCE TÉLÉCOM SA	CONGO CHINE TELECOM SARL	04/11/2011	ANGLO AMERICAN PLC	DB INVESTMENTS SA
17/11/2011	WARTSILA OYJ	HAMWORTHY PLC	22/11/2011	DATALOGIC SPA	ACCU-SORT SYSTEMS INC.
23/11/2011	WEIR GROUP PLC, THE	SEABOARD HOLDINGS INC.	28/11/2011	MAN SE	MAN FERROSTAAL AG
29/11/2011	TE CONNECTIVITY LTD	DEUTSCH GROUP SAS	06/12/2011	KLOVERN AB	DAGON AB
07/12/2011	CARREFOUR SA	GUYENNE ET GASCOGNE SA	12/12/2011	ABB LTD	NEWAVE ENERGY HOLDING SA

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
14/12/2011	ANTENA 3 DE TELEVISIÓN SA	GESTORA DE INVERSIONES AUDIOVISUALES LA SEXTA SA	17/01/2012	DS SMITH PLC	SCA PACKAGING HOLDING BV
24/01/2012	RIO TINTO PLC	IVANHOE MINES LTD	31/01/2012	OUTOKUMPU OYJ	INOXUM GMBH
01/02/2012	YARA INTERNATIONAL ASA	BURRUP HOLDINGS LTD	13/02/2012	PATRIZIA IMMOBILIEN AG	LBBW IMMOBILIEN GMBH
13/02/2012	SKF AB	GENERAL BEARING CORPORATION	16/02/2012	IMI PLC	REMOSA SPA
27/02/2012	KONINKLIJKE AHOLD NV	BOL.COM BV	29/02/2012	BILFINGER BERGER SE	TEBODIN BV
08/03/2012	PROSEGUR COMPANIA DE SEGURIDAD SA	NORDESTE SEGURANÇA DE VALORES PARAÍBA LTDA	09/03/2012	LONDON STOCK EXCHANGE GROUP PLC	LCH CLEARNET GROUP LTD
15/03/2012	SHIRE PLC	FERROKIN BIOSCIENCES INC.	26/03/2012	AGGREKO PLC	COMPANHIA BRASILEIRA DE LOCAÇÕES
03/04/2012	TKH GROUP NV	AUGUSTA TECHNOLOGIE AG	05/04/2012	DECHRA PHARMACEUTICALS PLC	EUROVET ANIMAL HEALTH BV
19/04/2012	GLAXOSMITHKLINE PLC	HUMAN GENOME SCIENCES INC.	23/04/2012	ASTRAZENECA PLC	ARDEA BIOSCIENCES INC.
26/04/2012	L'OREAL SA	CADUM SA	26/04/2012	DASSAULT SYSTEMES SA	GEMCOM SOFTWARE INTERNATIONAL INC.
26/04/2012	JAZZ PHARMACEUTICALS PLC	EUSA PHARMA INC.	03/05/2012	KONINKLIJKE DSM NV	KENSEY NASH CORPORATION
14/05/2012	RANK GROUP PLC, THE	GALA CASINOS LTD	16/05/2012	REXEL SA	PLATT ELECTRIC SUPPLY INC.
16/05/2012	SEMAPA - SOCIEDADE DE INVESTIMENTO E GESTAO SGPS SA	SECIL - COMPANHIA GERAL DE CAL E CIMENTO SA	21/05/2012	EATON CORPORATION PLC	COOPER INDUSTRIES PLC
30/05/2012	PAN AFRICAN RESOURCES PLC	EVANDER GOLD MINES LTD	01/06/2012	MONEYSUPER- MARKET.COM GROUP PLC	MONEYSAVINGEXPERT LTD
04/06/2012	TAKKT AG	RATIOFORM HOLDING GMBH	08/06/2012	AIR LIQUIDE SA	LVL MÉDICAL GROUPE SA
20/06/2012	TOM TAILOR HOLDING AG	BONITA GMBH & CO.KG	22/06/2012	ORKLA ASA	JORDAN HOUSE CARE AS
27/06/2012	LINDE AG	LINCARE HOLDINGS INC.	27/06/2012	DANONE SA	SOCIETE CENTRALE LAITIERE SA
11/07/2012	MONDI PLC	NORDENIA INTERNATIONAL AG	03/08/2012	ZARDOYA OTIS SA	GRUPO ASCENSORES ENOR SA
14/08/2012	TELIASONERA AB	KAZNET MEDIA TOO	24/08/2012	TORNIER NV	ORTHOHELIX SURGICAL DESIGNS INC.
03/09/2012	DAVIDE CAMPARI-MILANO SPA	LASCELLES DEMERCADO & CO LTD	14/09/2012	HERA SPA	ACEGASAPS HOLDING SRL
20/09/2012	BASF SE	BECKER UNDERWOOD INC.	21/09/2012	JOHN WOOD GROUP PLC	MITCHELL'S OIL FIELD SERVICE INC.
27/09/2012	BAYWA AG	CEFETRA BV	09/10/2012	MITIE GROUP PLC	ENARA GROUP LTD
17/10/2012	ASML HOLDING NV	CYMER INC.	18/10/2012	AF AB	EPSILON HOLDING AB
23/10/2012	C&C GROUP PLC	VERMONT HARD CIDER COMPANY LLC	29/10/2012	TETRAGON FINANCIAL GROUP LTD	POLYGON MANAGEMENT LP
30/10/2012	RECKITT BENCKISER GROUP PLC	SCHIFF NUTRITION INTERNATIONAL INC.	06/11/2012	LONDON & STAMFORD PROPERTY PLC	METRIC PROPERTY INVESTMENTS PLC
16/11/2012	LAND SECURITIES GROUP PLC	X-LEISURE LTD	19/11/2012	TAG IMMOBILIEN AG	TLG WOHNEN GMBH
28/11/2012	SIEMENS AG	INVENSYS RAIL GROUP	11/12/2012	TULLOW OIL PLC	SPRING ENERGY NORWAY AS

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
12/12/2012	BARRY CALLEBAUT AG	DELFI COCOA INVESTMENTS 1 PTE LTD	17/12/2012	VIVALIS SAS	INTERCELL AG
20/12/2012	ELISA OYJ	TELEKARELIA OY	20/12/2012	WEIR GROUP PLC, THE	MATHENA INC.
27/12/2012	VINCI SA	ANA AEROPORTOS DE PORTUGAL SA	14/01/2013	SWATCH GROUP AG, THE	HW HOLDINGS INC.
21/01/2013	ZON MULTIMÉDIA - SERVIÇOS DE TELECOMUNICAÇÕES E MULTIMÉDIA SGPS SA	OPTIMUS - COMUNICAÇÕES SA	29/01/2013	COMPAGNIE INDUSTRIELLE ET FINANCIERE D'INGENIERIE SA	OGONE BVBA/SPRL
05/02/2013	LIBERTY GLOBAL PLC	VIRGIN MEDIA INC.	11/02/2013	HAKON INVEST AB	ICA AB
15/02/2013	OPERA SOFTWARE ASA	SKYFIRE LABS INC.	20/02/2013	ARYZTA AG	KLEMME AG
26/02/2013	ROYAL DUTCH SHELL PLC	REPSOL LNG PORT SPAIN BV	26/02/2013	PGE POLSKA GRUPA ENERGETYCZNA SA	IBERDROLA RENEWABLES POLSKA SP ZOO
01/03/2013	BRITISH SKY BROADCASTING GROUP PLC	BE UN LTD	22/03/2013	SCHRODERS PLC	CAZENOVE CAPITAL HOLDINGS LTD
28/03/2013	JOHNSON MATTHEY PLC	FORMOX AB	02/04/2013	EVRAZ PLC	GORNO-METALLURGICHESKAYA KOMPANIYA TIMIR OAO
05/04/2013	ELECTRICITE DE FRANCE SA	TRANSPORT ET INFRASTRUCTURES GAZ FRANCE SA	22/04/2013	ABB LTD	POWER-ONE INC.
24/04/2013	KIER GROUP PLC	MAY GURNEY INTEGRATED SERVICES PLC	26/04/2013	TELENOR ASA	KOSMO BULGARIA MOBAYL EAD
30/04/2013	UNILEVER PLC	HINDUSTAN UNILEVER LTD	01/05/2013	TYMAN PLC	TRUTH HARDWARE CORPORATION
06/05/2013	AGROGENERATION SA	HARMELIA INVESTMENTS LTD	10/05/2013	COBHAM PLC	AXELL WIRELESS LTD
10/05/2013	ACTAVIS LTD	WARNER CHILCOTT PLC	17/05/2013	ACCENTURE PLC	ACQUITY GROUP LTD
24/05/2013	NORBERT DENTRESSANGLE SA	FIEGE BORRUSO SPA	28/05/2013	ASTRAZENECA PLC	OMTHERA PHARMACEUTICALS INC.
29/05/2013	DASSAULT SYSTEMES SA	APRISO CORPORATION	29/05/2013	GLAXOSMITHKLINE PLC	OKAIROS AG
05/06/2013	SAP AG	HYBRIS AG	10/06/2013	SWISS PRIME SITE AG	TERTIANUM AG
13/06/2013	ID LOGISTICS SAS	COMPAGNIE EUROPÉENNE DE PRÉSTATIONS LOGISTIQUES SAS	19/06/2013	TYCO INTERNATIONAL LTD	EXACQ TECHNOLOGIES INC.
02/07/2013	ROCHE HOLDING AG	CONSTITUTION MEDICAL INVESTORS INC.	02/07/2013	DIALOG SEMICONDUCTOR PLC	IWATT INC.
04/07/2013	STATOIL ASA	DONG GENERATION NORGE AS	09/07/2013	LVMH MOET HENNESSY LOUIS VUITTON SA	LORO PIANA SPA
11/07/2013	ROYAL UNIBREW A/S	HARTWALL OY	16/07/2013	CARGOTEC OYJ	HATLAPA INTERNATIONAL HOLDING GMBH
18/07/2013	EUTELSAT COMMUNICATIONS SA	SATÉLITES MEXICANOS SA DE CV	29/07/2013	ESSILOR INTERNATIONAL SA	INTERCAST EUROPE SRL
29/07/2013	PERRIGO COMPANY PLC	ELAN CORPORATION PLC	08/08/2013	NEUCA SA	ACP PHARMA SA
15/08/2013	L'OREAL SA	MAGIC HOLDINGS INTERNATIONAL LTD	19/08/2013	ROCKWOOL INTERNATIONAL A/S	CHICAGO METALLIC CORPORATION
20/08/2013	DEUTSCHE WOHNEN AG	GSW IMMOBILIEN AG	20/08/2013	CATENA AB	BRINOVA LOGISTIK AB

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
03/09/2013	BIOMERIEUX SA	BIOFIRE DIAGNOSTICS INC.	05/09/2013	SKF AB	KAYDON CORPORATION
19/09/2013	ACKERMANS & VAN HAAREN NV	COMPAGNIE D'ENTREPRISES CFE SA	20/09/2013	FASTIGHETS BALDER AB	BOVISTA INVEST AB
01/10/2013	EXPERIAN PLC	41ST PARAMETER INC., THE	01/10/2013	HOCHSCHILD MINING PLC	INTERNATIONAL MINERALS CORPORATION
07/10/2013	SOLVAY SA	CHEMLOGICS INC.	14/10/2013	HEXAGON AB	VERIPOS INC.
05/11/2013	AMDOCS LTD	CELCITE MANAGEMENT SOLUTIONS LLC	05/11/2013	ENDO INTERNATIONAL PLC	PALADIN LABS INC.
11/11/2013	DEUTSCHE TELEKOM AG	GTS POLAND SP ZOO	11/11/2013	SHIRE PLC	VIROPHARMA INC.
14/11/2013	CYFROWY POLSAT SA	METELEM HOLDING COMPANY LTD	18/11/2013	KORIAN SA	MEDICA SA
20/11/2013	TELECOM PLUS PLC	ELECTRICITY PLUS SUPPLY LTD	29/11/2013	ARCELORMITTAL SA	THYSSENKRUPP STEEL USA LLC
03/12/2013	PEARSON PLC	GRUPO MULTI HOLDING LTDA	16/12/2013	RPC GROUP PLC	MAYNARD & HARRIS GROUP LTD
17/12/2013	ALMIRALL SA	AQUA PHARMACEUTICALS LLC	18/12/2013	AMADEUS IT HOLDING SA	NEWMARKET INTERNATIONAL INC.
19/12/2013	JAZZ PHARMACEUTICALS PLC	GENTIUM SPA	20/12/2013	BUREAU VERITAS SA	MAXXAM ANALYTICS INTERNATIONAL CORPORATION
30/12/2013	CARLSBERG A/S	CHONGQING BEER GROUP ASSETS MANAGEMENT CO., LTD	07/01/2014	SANDVIK AB	VAREL INTERNATIONAL ENERGY SERVICES INC.
10/01/2014	CINEWORLD GROUP PLC	CINEMA CITY HOLDING BV	20/01/2014	ANHEUSER-BUSCH INBEV SA/NV	ORIENTAL BREWERY CO., LTD
22/01/2014	SSAB AB	RAUTARUUKKI OYJ	23/01/2014	HERA SPA	AMGA - AZIENDA MULTISERVIZI SPA
03/02/2014	SMITH & NEPHEW PLC	ARTHROCARE CORPORATION	07/02/2014	BETSSON AB	CLASS ONE HOLDING LTD
10/02/2014	CONTINENTAL AG	VEYANCE TECHNOLOGIES INC.	18/02/2014	ACTAVIS PLC	FOREST LABORATORIES INC.
27/02/2014	BAYER AG	DIHON PHARMACEUTICAL GROUP CO., LTD	10/03/2014	ARYZTA AG	CLOVERHILL PASTRY-VEND LLC
11/03/2014	KONINKLIJKE AHOLD NV	SPAR CESKA OBCHODNI SPOLECNOST SRO	12/03/2014	DAVIDE CAMPARI-MILANO SPA	FORTY CREEK DISTILLERY LTD
13/03/2014	THALES SA	LIVETV LLC	13/03/2014	VECTURA GROUP PLC	ACTIVAERO GMBH
17/03/2014	KONINKLIJKE PHILIPS NV	GENERAL LIGHTING COMPANY JSC	25/03/2014	CENTRICA PLC	BORD GAIS ENERGY LTD
26/03/2014	KUDELSKI SA	CONAX AS	27/03/2014	BABCOCK INTERNATIONAL GROUP PLC	AVINCIS MISSION CRITICAL SERVICES LTD
31/03/2014	ICON PLC	APTIV SOLUTIONS INC.	01/04/2014	VISTAPRINT NV	PIXARTPRINTING SPA
02/04/2014	TE CONNECTIVITY LTD	SEACON GROUP LTD	04/04/2014	LOOMIS AB	VIA MAT HOLDING AG
07/04/2014	ALFA LAVAL AB	FRANK MOHN AS	08/04/2014	SOPRA GROUP SA	GROUPE STERIA SCA
10/04/2014	JASTRZEBSKA SPOLKA WEGLOWA SA	KOPALNIA WEGLA KAMIENNEGO KNUROWSZCZYGLOWICE	14/04/2014	SYMRISE AG	DIANA SAS
14/04/2014	GLENCORE PLC	CARACAL ENERGY INC.	15/04/2014	CAPITA PLC	AMT-SYBEX GROUP LTD
01/05/2014	SAVILLS PLC	STUDLEY INC.	06/05/2014	AXEL SPRINGER SE	CORAL-TELL LTD

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07/05/2014	TELEFONICA SA	DTS DISTRIBUIDORA DE TELEVISION DIGITAL SA	08/05/2014	H LUNDBECK A/S	CHELSEA THERAPEUTICS INTERNATIONAL LTD
09/05/2014	EUROFINS SCIENTIFIC SA	VIRACOR-IBT LABORATORIES INC.	09/05/2014	TULLETT PREBON PLC	PVM OIL ASSOCIATES LTD
09/05/2014	IGAS ENERGY PLC	DART ENERGY LTD	13/05/2014	BILFINGER SE	GVA GRIMLEY LTD
15/05/2014	ROCHE HOLDING AG	GENIA TECHNOLOGIES INC.	20/05/2014	HENKEL AG & CO. KGAA	SPOTLESS GROUP SAS
20/05/2014	COBHAM PLC	AEROFLEX HOLDING CORPORATION	22/05/2014	POLYMETAL INTERNATIONAL PLC	ALTYNALMAS GOLD LTD
26/05/2014	ATOS SE	BULL SA	02/06/2014	DET NORSKE OLJESELSKAP ASA	MARATHON OIL NORGE AS
04/06/2014	DUFRY AG	NUANCE GROUP AG, THE	09/06/2014	URBAS GRUPO FINANCIERO SA	ALZA RESIDENCIAL SL
11/06/2014	OPERA SOFTWARE ASA	ADCOLONY INC.	16/06/2014	MEDTRONIC HOLDINGS LTD	MEDTRONIC INC.
16/06/2014	YANDEX NV	AVTO.RU KHOLDING OOO	17/06/2014	SWISSCOM AG	PUBLIGROUPE SA
20/06/2014	CARREFOUR SA	DIA SAS	23/06/2014	NIBE INDUSTRIER AB	WATERFURNACE RENEWABLE ENERGY INC.
26/06/2014	NATRACEUTICAL SA	LABORATORIO REIG JOFRE SA	26/06/2014	LONDON STOCK EXCHANGE GROUP PLC	RUSSELL INVESTMENTS COMPANY
02/07/2014	COMPAGNIE INDUSTRIELLE ET FINANCIERE D'INGENIERIE SA	GLOBAL COLLECT SERVICES BV	02/07/2014	NICOX SA	ACIEX THERAPEUTICS INC.
07/07/2014	TELIASONERA AB	TELE2 NORGE AS	08/07/2014	HUHTAMAKI OYJ	POSITIVE PACKAGING INDUSTRIES LTD
14/07/2014	CHOCOLADEFABRIKEN LINDT & SPRUNGLI AG	RUSSELL STOVER CANDIES INC.	14/07/2014	JOHN WOOD GROUP PLC	AGILITY PROJECTS AS
14/07/2014	NEW MOON BV	MYLAN INC.	25/07/2014	BRITISH SKY BROADCASTING GROUP PLC	SKY DEUTSCHLAND AG
28/07/2014	INFORMA PLC	VIRGO HOLDINGS LLC	29/07/2014	KLEPIERRE SA	CORIO NV
30/07/2014	KERING SA	ULYSSE NARDIN SA	31/07/2014	NORBERT DENTRESSANGLE SA	JACOBSON COMPANIES INC.
08/08/2014	GEMALTO NV	SAFENET INC.	14/08/2014	PROVIDENT FINANCIAL PLC	DUNCTON GROUP LTD
20/08/2014	INFINEON TECHNOLOGIES AG	INTERNATIONAL RECTIFIER CORPORATION	21/08/2014	ARCADIS NV	CALLISON LLC
03/09/2014	UNITED INTERNET AG	VICTORIANFIBRE HOLDING BETEILIGUNGSGMBH	03/09/2014	REED ELSEVIER PLC	FIRCOSOFT SAS
12/09/2014	GLANBIA PLC	ISOPURE COMPANY LLC, THE	12/09/2014	SNAM SPA	TRANS AUSTRIA GASLEITUNG GMBH
15/09/2014	ORANGE SA	JAZZTEL PLC	15/09/2014	MICRO FOCUS INTERNATIONAL PLC	ATTACHMATE GROUP INC., THE
19/09/2014	ARKEMA SA	BOSTIK SA	22/09/2014	MERCK KGAA	SIGMA-ALDRICH CORPORATION
23/09/2014	GREENE KING PLC	SPIRIT PUB COMPANY PLC	24/09/2014	ARROW GLOBAL GROUP PLC	QUEST TOPCO LTD
25/09/2014	KUKA AG	SWISSLOG HOLDING AG	29/09/2014	VTG AG	AAE AHAUS ALSTATTER EISENBAHN HOLDING AG
30/09/2014	CONSORT MEDICAL PLC	AESICA HOLDCO LTD	30/09/2014	DELPHI AUTOMOTIVE PLC	UNWIRED HOLDINGS INC.

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03/10/2014	CONSTELLIUM NV	WISE METALS INTERMEDIATE HOLDINGS LLC	13/10/2014	NEW STERIS LTD	SYNERGY HEALTH PLC
14/10/2014	GEBERIT AG	SANITEC OYJ	17/10/2014	BOLLORE SA	HAVAS SA
21/10/2014	BAE SYSTEMS PLC	PERIMETER INTERNETWORKING CORPORATION	27/10/2014	OPHIR ENERGY PLC	SALAMANDER ENERGY PLC
30/10/2014	TARKETT SA	DESSO BV	31/10/2014	TECHNICAL OLYMPIC SA	MOCHLOS SA
31/10/2014	PERRIGO COMPANY PLC	OMEGA PHARMA SA/NV	03/11/2014	PUBLICIS GROUPE SA	SAPIENT CORPORATION
03/11/2014	RTL GROUP SA	STYLEHAUL INC.	05/11/2014	IMERYS SA	S&B INDUSTRIAL MINERALS SA
10/11/2014	VALORA HOLDING AG	LS DISTRIBUTION SUISSE SA	11/11/2014	KINGSPAN GROUP PLC	VICWEST INC.
12/11/2014	ICA GRUPPEN AB	APOTEK HJARTAT AB	14/11/2014	CLARKSON PLC	RS PLATOU ASA
14/11/2014	IMI PLC	B&R HOLDING GMBH	18/11/2014	COALFIELD RESOURCES PLC	HARWORTH ESTATES PROPERTY GROUP LTD
01/12/2014	DEUTSCHE ANNINGTON IMMOBILIEN SE	GAGFAH SA	08/12/2014	COMPAGNIE DE SAINT-GOBAIN SA	SCHENKER-WINKLER HOLDING AG
09/12/2014	INGERSOLL RAND PLC	FRIGOBLOCK GROSSKOPF GMBH	12/12/2014	TERNA - RETE ELETTRICA NAZIONALE SPA	SOCIETA ELETTRICA FERROVIARIA SRL
15/12/2014	BT GROUP PLC	EE LTD	16/12/2014	REPSOL SA	TALISMAN ENERGY INC.
17/12/2014	BABCOCK INTERNATIONAL GROUP PLC	DEFENCE SUPPORT GROUP, THE	17/12/2014	KONINKLIJKE PHILIPS NV	VOLCANO CORPORATION
19/12/2014	INTERPUMP GROUP SPA	WALVOIL SPA	22/12/2014	IMPLENIA AG	BILFINGER CONSTRUCTION GMBH
22/12/2014	GERRY WEBER INTERNATIONAL AG	HALLHUBER GMBH	24/12/2014	INTU PROPERTIES PLC	PUERTO VENECIA INVESTMENTS SOCIMI SA
31/12/2014	PKP CARGO SA	ADVANCED WORLD TRANSPORT BV	06/01/2015	CARDIO3 BIOSCIENCES SA	ONCYTE LLC
14/01/2015	VIDRALA SA	ENCIRC LTD	15/01/2015	ORKLA ASA	CEDERROTH AB
02/02/2015	SCHWEITER TECHNOLOGIES AG	POLYCASA NV	02/02/2015	CRH PLC	SICIM SA
02/02/2015	ICON PLC	MEDIMEDIA PHARMA SOLUTIONS	03/02/2015	CAPITA PLC	AVOCIS AG
10/02/2015	TAMEDIA AG	RICARDO.CH AG	11/02/2015	GLAXOSMITHKLINE PLC	GLYCOVAXYN AG
12/02/2015	NXP SEMICONDUCTORS NV	FREESCALE SEMICONDUCTOR LTD	16/02/2015	ADLER REAL ESTATE AG	WESTGRUND AG
23/02/2015	DS SMITH PLC	DUROPACK GMBH	24/02/2015	NMC HEALTH PLC	EUVITRO SL
27/02/2015	ITV PLC	TALPA MEDIA BV	04/03/2015	TEMENOS GROUP AG	IGEFI HOLDINGS SARL
23/03/2015	ENAGAS SA	SWEDEGAS AB	23/03/2015	RUBIS SCA	EUROPEAN RAILROAD ESTABLISHED SERVICES NV
30/03/2015	DUFRY AG	WORLD DUTY FREE SPA	01/04/2015	SENIOR PLC	LYMINGTON PRECISION ENGINEERING (LPE) LTD
02/04/2015	PLAYTECH PLC	TRADE FX LTD	07/04/2015	STRAUMANN HOLDING AG	NEODENT SA
08/04/2015	ROYAL DUTCH SHELL PLC	BG GROUP PLC	13/04/2015	GREENYARD FOODS NV	PEATINVEST NV

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
16/04/2015	PENNON GROUP PLC	SEMBCORP BOURNEMOUTH WATER INVESTMENTS LTD	20/04/2015	TELENET GROUP HOLDING NV	BASE COMPANY NV
24/04/2015	CLINIGEN GROUP PLC	IDIS GROUP HOLDINGS LTD	27/04/2015	CIRCASSIA PHARMACEUTICALS PLC	AEROCRINE AB
28/04/2015	KIER GROUP PLC	MRBL LTD	29/04/2015	VIOHALCO SA/NV	SIDENOR HOLDINGS SA
04/05/2015	JUST EAT PLC	MENULOG PTY LTD	12/05/2015	VIVENDI SA	SOCIETE D'EDITION DE CANAL PLUS SA
19/05/2015	CONTINENTAL AG	ELEKTROBIT AUTOMOTIVE GMBH	19/05/2015	GENERALE DE SANTE SA	RAMSAY SANTE SA
20/05/2015	ALTICE NV	CEQUEL COMMUNICATIONS HOLDINGS LLC	25/05/2015	CITYCON OYJ	SEKTOR GRUPPEN AS
01/06/2015	BRITISH AMERICAN TOBACCO PLC	TDR DOO	01/06/2015	ULTRA ELECTRONICS HOLDINGS PLC	HERLEY INDUSTRIES INC.
01/06/2015	SWECO AB	GRONTMIJ NV	16/06/2015	ALSTRIA OFFICE REIT-AG	DO DEUTSCHE OFFICE AG
22/06/2015	CALEDONIA INVESTMENTS PLC	7IM HOLDINGS LTD	24/06/2015	KONINKLIJKE AHOLD NV	DELHAIZE GROUP SA
29/06/2015	NOVARTIS AG	SPINIFEX PHARMACEUTICALS INC.	01/07/2015	GEBERIT AG	POZZI-GINORI SPA
09/07/2015	GVC HOLDINGS PLC	BWIN.PARTY DIGITAL ENTERTAINMENT PLC	13/07/2015	MEDTRONIC PLC	RF SURGICAL SYSTEMS INC.
20/07/2015	LAR ESPANA REAL ESTATE SOCIMI SA	ELISANDRA SPAIN VIII SL	23/07/2015	BRITVIC PLC	EMPRESA BRASILEIRA DE BEBIDAS E ALIMENTOS SA
23/07/2015	ALLEGION PLC	AXA STENMAN HOLDING BV	23/07/2015	SHIRE PLC	FORESIGHT BIOTHERAPEUTICS INC.
27/07/2015	DEUTSCHE BORSE AG	360T BETEILIGUNGS GMBH	28/07/2015	HIKMA PHARMACEUTICALS PLC	ROXANE LABORATORIES INC.
29/07/2015	SOLVAY SA	CYTEC INDUSTRIES INC.	30/07/2015	ELECTRICITE DE FRANCE SA	AREVA NP SASU
30/07/2015	DELPHI AUTOMOTIVE PLC	HELLERMANNTYTON GROUP PLC	05/08/2015	ADIDAS AG	RUNTASTIC GMBH
05/08/2015	POLYPIPE GROUP PLC	NU-OVAL ACQUISITIONS 1 LTD	06/08/2015	METRO AG (CECONOMY AG)	CLASSIC FINE FOODS GROUP LTD
13/08/2015	STROER MEDIA SE	DIGITAL MEDIA PRODUCTS GMBH	17/08/2015	PENTAIR PLC	ERICO INTERNATIONAL CORPORATION
18/08/2015	SEAGATE TECHNOLOGY PLC	DOT HILL SYSTEMS CORPORATION	27/08/2015	MAUREL & PROM SA	MPI SA
27/08/2015	HANSTEEN HOLDINGS PLC	ASHTENNE INDUSTRIAL FUND LTD PARTNERSHIP, THE	28/08/2015	ROTORK PLC	BIFOLD GROUP LTD
01/09/2015	RENTOKIL INITIAL PLC	STERITECH GROUP INC., THE	03/09/2015	LOOKERS PLC	ADDISON MOTORS LTD
10/09/2015	TELEFONAKTIEBOLAGET LM ERICSSON AB	ENVIVIO INC.	14/09/2015	ENEA SA	LUBELSKI WEGIEL BOGDANKA SA
15/09/2015	TECHNICOLOR SA	MILL (FACILITY) LTD, THE	21/09/2015	SYMRISE AG	PINOVA HOLDINGS INC.
23/09/2015	BBA AVIATION PLC	LANDMARK FBO HOLDINGS LLC	29/09/2015	AXEL SPRINGER SE	BUSINESS INSIDER INC., THE
05/10/2015	NORDEX SE	CORPORACION ACCIONA WINDPOWER SL	05/10/2015	ARNOLDO MONDADORI EDITORE SPA	RCS LIBRI SPA
06/10/2015	TEO LT AB	OMNITEL UAB	09/10/2015	DSV A/S	UTI WORLDWIDE INC.

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
14/10/2015	INTERTEK GROUP PLC	PROFESSIONAL SERVICE INDUSTRIES INC.	15/10/2015	KERRY GROUP PLC	RED ARROW PRODUCTS COMPANY LLC
19/10/2015	THALES SA	VORMETRIC INC.	20/10/2015	CATENA AB	TRIBONA AB
22/10/2015	TRELLEBORG AB	CGS HOLDING AS	28/10/2015	TRINITY MIRROR PLC	LOCAL WORLD HOLDINGS LTD
29/10/2015	SMITH & NEPHEW PLC	BLUE BELT TECHNOLOGIES INC.	29/10/2015	YARA INTERNATIONAL ASA	APACHE FERTILISERS PTY LTD
03/11/2015	ATOS SE	UNIFY GMBH & CO. KG	04/11/2015	BYGGMAX GROUP AB	SKANSKA BYGGVAROR AB
05/11/2015	ONTEX GROUP NV	GRUPO PI MABE SA DE CV	06/11/2015	FNAC SA	DARTY PLC
10/11/2015	KORIAN SA	CASA REHA HOLDING GMBH	12/11/2015	SALINI IMPREGILO SPA	LANE INDUSTRIES INC.
16/11/2015	LIBERTY GLOBAL PLC	CABLE & WIRELESS COMMUNICATIONS PLC	16/11/2015	GLANBIA PLC	THINKTHIN LLC
16/11/2015	DET NORSKE OLJESELSKAP ASA	PREMIER OIL NORGE AS	17/11/2015	AIR LIQUIDE SA	AIRGAS INC.
18/11/2015	BREEDON AGGREGATES LTD	HOPE CONSTRUCTION MATERIALS LTD	20/11/2015	AMS AG	CMOSIS NV
23/11/2015	MAREL HF	MPS HOLDING III BV	30/11/2015	ALMIRALL SA	POLI GROUP HOLDING SRL
01/12/2015	CRODA INTERNATIONAL PLC	INCOTEC GROUP BV	02/12/2015	IMMOBILIARE GRANDE DISTRIBUZIONE SIIQ SPA	PUNTA DI FERRO SRL
03/12/2015	JOHN WOOD GROUP PLC	INFINITY CONSTRUCTION SERVICES LP	08/12/2015	IMPELLAM GROUP PLC	BARTECH HOLDING CORPORATION
09/12/2015	ACCOR SA	FRHI HOLDINGS LTD	09/12/2015	TERNA - RETE ELETTRICA NAZIONALE SPA	SELF - SOCIETA ELETTRICA FERROVIARIA SRL
11/12/2015	HORIZON PHARMA PLC	CREALTA HOLDINGS LLC	11/12/2015	ORKLA ASA	HAME SRO
15/12/2015	FASTIGHETS BALDER AB	SATO OYJ	17/12/2015	HALMA PLC	VISIOMETRICS SL
17/12/2015	ASTRAZENECA PLC	ACERTA PHARMA BV	21/12/2015	ANHEUSER-BUSCH INBEV SA/NV	CAMDEN TOWN BREWERY LTD
21/12/2015	CIMPRESS NV	WIRMACHENDRUCK GMBH	23/12/2015	TYCO INTERNATIONAL PLC	SHOPPERTRAK CORPORATION
31/12/2015	SMURFIT KAPPA GROUP PLC	INPA INDUSTRIA DE EMBALAGENS SANTANA SA	12/01/2016	KESKO OYJ	ONNINEN OY
12/01/2016	A2A SPA	LINEA GROUP HOLDING SPA	13/01/2016	CHR HANSEN HOLDING A/S	NUTRITIONAL PHYSIOLOGY COMPANY LLC
25/01/2016	SIEMENS AG	ANALYSIS & DESIGN APPLICATION COMPANY LTD	01/02/2016	TELENOR ASA	TAPAD INC.
02/02/2016	TE CONNECTIVITY LTD	CREGANNA MEDICAL TECHNOLOGY UNLIMITED	03/02/2016	VEOLIA ENVIRONNEMENT SA	KURION INC.
08/02/2016	ORANGE SA	OASIS SPRL	10/02/2016	MYLAN NV	MEDA AB
18/02/2016	VIVENDI SA	GAMELOFT SE	02/03/2016	SAMSONITE INTERNATIONAL SA	TUMI HOLDINGS INC.
14/03/2016	ASTM SPA	ITINERA SPA	15/03/2016	DECHRA PHARMACEUTICALS PLC	PUTNEY INC.
16/03/2016	VECTURA GROUP PLC	SKYEPHARMA PLC	01/04/2016	ARROW GLOBAL GROUP PLC	INVESTING BV
04/04/2016	POLYMETAL INTERNATIONAL PLC	ORION MINERALS TOO	13/04/2016	CASTELLUM AB	FASTIGHETS-AKTIEBOLAGET NORRPORTEN AB

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
18/04/2016	RECIPHARM AB	KEMWELL BIO-PHARMA PVT LTD	19/04/2016	EXPERIAN PLC	CSIDENTITY CORPORATION
21/04/2016	CENTRICA PLC	NEAS ENERGY A/S	21/04/2016	SMITHS GROUP PLC	MORPHO DETECTION LLC
26/04/2016	NOKIA OYJ	WITHINGS SA	27/04/2016	CIE AUTOMOTIVE SA	GRUPO AMAYA TELLERIA SL
28/04/2016	PETROPAVLOVSK PLC	AMUR ZOLOTO OOO	29/04/2016	CAIRN HOMES PLC	ARGENTUM PROPERTY HOLDCO LTD
04/05/2016	SONOVA HOLDING AG	AUDIONOVA INTERNATIONAL BV	09/05/2016	TOTAL SA	SAFT GROUPE SA
12/05/2016	FABBRICA ITALIANA LAPIS ED AFFINI SPA	CANSON SAS	12/05/2016	NIBE INDUSTRIER AB	CLIMATE CONTROL GROUP INC., THE
13/05/2016	FORTUM OYJ	EKOKEM OYJ	18/05/2016	BAYER AG	MONSANTO COMPANY
19/05/2016	HUHTAMAKI OYJ	DELTA PRINT AND PACKAGING LTD	20/05/2016	RANDSTAD HOLDING NV	OBIETTIVO LAVORO FORMAZIONE SRL
25/05/2016	INMOBILIARIA COLONIAL SA	HOFINAC REAL ESTATE SL	26/05/2016	MARSHALL MOTOR HOLDINGS PLC	RIDGEWAY GARAGES (NEWBURY) LTD
30/05/2016	CELLNEX TELECOM SA	PROTELINDO NETHERLANDS BV	30/05/2016	ELISA OYJ	ANVIA HOSTING OY
31/05/2016	JAZZ PHARMACEUTICALS PLC	CELATOR PHARMACEUTICALS INC.	31/05/2016	RECORDATI - INDUSTRIA CHIMICA E FARMACEUTICA SPA	ITALCHIMICI SRL
02/06/2016	VALEO SA	FTE VERWALTUNGS GMBH	02/06/2016	LEROY SEAFOOD GROUP ASA	HAVFISK ASA
09/06/2016	RPC GROUP PLC	BRITISH POLYTHENE INDUSTRIES PLC	16/06/2016	ASML HOLDING NV	HERMES MICROVISION INC.
17/06/2016	BASF SE	CHEMETALL GMBH	17/06/2016	ELANDERS AB	LGI LOGISTICS GROUP INTERNATIONAL GMBH
20/06/2016	ORPEA SA	UNION SANYRES SL	21/06/2016	KION GROUP AG	DH SERVICES LUXEMBOURG HOLDING SARL
21/06/2016	TELE2 AB	TDC SVERIGE AB	29/06/2016	GAM HOLDING AG	CANTAB CAPITAL PARTNERS LLP
30/06/2016	RICHTER GEDEON VEGYESZETI GYAR NYRT	FINOX HOLDING AG	06/07/2016	MEDIASET SPA	MEDIASET ESPANA COMUNICACION SA
07/07/2016	DANONE SA	WHITEWAVE FOODS COMPANY, THE	08/07/2016	METRO AG	COLRUYT FRANCE SA
08/07/2016	LAR ESPANA REAL ESTATE SOCIMI SA	GRAN VIA CENTRUM HOLDINGS SA	08/07/2016	CAIRO COMMUNICATION SPA	RCS MEDIAGROUP SPA
08/07/2016	ITAB SHOP CONCEPT AB	FORTEZZA SPA, LA	11/07/2016	ROLLS-ROYCE HOLDINGS PLC	INDUSTRIA DE TURBO PROPULSORES SA
13/07/2016	PLAYTECH PLC	BEST GAMING TECHNOLOGY GMBH	19/07/2016	UNILEVER PLC	DOLLAR SHAVE CLUB INC.
19/07/2016	BCA MARKETPLACE PLC	PARAGON AUTOMOTIVE LTD	21/07/2016	GALENICA AG	RELYPSA INC.
21/07/2016	DASSAULT SYSTEMES SA	CST COMPUTER SIMULATION TECHNOLOGY AG	22/07/2016	L'OREAL SA	IT COSMETICS LLC
08/08/2016	STEINHOFF INTERNATIONAL HOLDINGS NV	MATTRESS FIRM HOLDING CORPORATION	15/08/2016	LONZA GROUP AG	INTERHEALTH NUTRACEUTICALS INC.
22/08/2016	TELEPERFORMANCE SA	LANGUAGE LINE SERVICES INC.	26/08/2016	SAP SE	ALTISCALE INC.
01/09/2016	SPECTRIS PLC	MILLBROOK GROUP LTD	05/09/2016	VONOVIA SE	CONWERT IMMOBILIEN INVEST SE
12/09/2016	ATOS SE	ANTHELIO HEALTHCARE SOLUTIONS INC.	14/09/2016	AMDOCS LTD	VINDICIA INC.
15/09/2016	ARBONIA AG	LOOSER HOLDING AG	15/09/2016	INFORMA PLC	PENTON MEDIA INC.

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Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
22/09/2016	ACCENTURE PLC	KURT SALMON ASSOCIATES INC.	28/09/2016	DEUTSCHE POST AG	UK MAIL GROUP PLC
03/10/2016	CARDTRONICS PLC	DIRECTCASH PAYMENTS INC.	04/10/2016	LVMH MOET HENNESSY - LOUIS VUITTON SE	RIMOWA GMBH
21/10/2016	BRITISH AMERICAN TOBACCO PLC	REYNOLDS AMERICAN INC.	24/10/2016	AMS AG	AMS SENSORS SINGAPORE PTE LTD
25/10/2016	HOCHDORF HOLDING AG	PHARMALYS LABORATORIES SA	07/11/2016	MUNKSJO OYJ	AHLSTROM OYJ
07/11/2016	TELIA COMPANY AB	PHONERO AS	08/11/2016	DORMAKABA HOLDING AG	MESKER OPENINGS GROUP
10/11/2016	ELECTROLUX AB	KWIKOT (PTY) LTD	10/11/2016	INTRUM JUSTITIA AB	1ST CREDIT LTD
11/11/2016	VBG GROUP AB	MOBILE CLIMATE CONTROL GROUP HOLDING AB	14/11/2016	SIEMENS AG	MENTOR GRAPHICS CORPORATION
14/11/2016	BURFORD CAPITAL LTD	GKC HOLDINGS LLC	14/11/2016	GREENCORE GROUP PLC	PEACOCK FOODS INC.
21/11/2016	NOVARTIS AG	SELEXYS PHARMACEUTICALS CORPORATION	21/11/2016	BIONOR PHARMA ASA	SOLON EIENDOM AS
22/11/2016	ALLERGAN PLC	CHASE PHARMACEUTICALS CORPORATION	28/11/2016	JD SPORTS FASHION PLC	GO OUTDOORS TOPCO LTD
29/11/2016	INDRA SISTEMAS SA	TECNOCOM TELECOMUNICACIONES Y ENERGIA SA	30/11/2016	COLOPLAST A/S	COMFORT MEDICAL LLC
30/11/2016	ABERDEEN DIVERSIFIED INCOME AND GROWTH TRUST PLC	ABERDEEN UK TRACKER TRUST PLC	30/11/2016	SANNE GROUP PLC	INTERNATIONAL FINANCIAL SERVICES LTD
02/12/2016	ICA GRUPPEN AB	PALINK UAB	06/12/2016	DRAX GROUP PLC	OPUS ENERGY GROUP LTD
09/12/2016	GEMALTO NV	3M COGENT INC.	12/12/2016	IMERYS SA	KERNEOS SA
12/12/2016	CHERRY AB	COMEON MALTA LTD	15/12/2016	UNITED INTERNET AG	STRATO AG
15/12/2016	JUST EAT PLC	HUNGRYHOUSE HOLDINGS LTD	19/12/2016	SVENSKA CELLULOSA AB	BSN MEDICAL LUXEMBOURG GROUP HOLDING SARL
21/12/2016	ELIS SA	LAVEBRAS GESTAO DE TEXTEIS SA	21/12/2016	ATLANTIA SPA	STALEXPORT AUTOSTRADY SA
22/12/2016	GENTICEL SA	GENKYOTEX SA	23/12/2016	SPIE SA	SAG VERMOGENSVERWALTUNG GMBH
23/12/2016	ENEA SA	ENGIE ENERGIA POLSKA SA	09/01/2017	ATLASSIAN CORPORATION PLC	TRELLO INC.
12/01/2017	HEXAGON AB	MSC SOFTWARE CORPORATION	16/01/2017	ESSILOR INTERNATIONAL SA	LUXOTTICA GROUP SPA
19/01/2017	SAFRAN SA	ZODIAC AEROSPACE SA	27/01/2017	TESCO PLC	BOOKER GROUP PLC
30/01/2017	LUXOTTICA GROUP SPA	OTICAS CAROL LTDA	01/02/2017	FINGERPRINT CARDS AB	DELTA ID INC.
06/02/2017	GLANBIA PLC	B&F VASTGOED BV	07/02/2017	ASCENTIAL PLC	MEDIALINK LLC
08/02/2017	SOPHOS GROUP PLC	INVINCEA INC.	10/02/2017	RECKITT BENCKISER GROUP PLC	MEAD JOHNSON NUTRITION COMPANY
16/02/2017	CAP GEMINI SA	IDEAN ENTERPRISES OY	17/02/2017	CLOETTA AB	CANDYKING HOLDING AB
21/02/2017	WALTER MEIER AG	TOBLER HAUSTECHNIK AG	22/02/2017	ARRIS INTERNATIONAL PLC	RUCKUS WIRELESS INC.
23/02/2017	KINDRED GROUP PLC	32RED PLC	03/03/2017	SARTORIUS AG	ESSEN BIOSCIENCE INC.
03/03/2017	EUROMONEY INSTITUTIONAL INVESTOR PLC	RISI INC.	13/03/2017	EVONIK INDUSTRIES AG	DR STRAETMANS GMBH
13/03/2017	INTU PROPERTIES PLC	MADRID XANADU 2003 SL	13/03/2017	JOHN WOOD GROUP PLC	AMEC FOSTER WHEELER PLC

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
14/03/2017	ENGIE SA	EV-BOX BV	20/03/2017	SCHOUW & CO A/S	BORG AUTOMOTIVE A/S
03/04/2017	SPIRAX-SARCO ENGINEERING PLC	GESTRA AG	04/04/2017	ABB LTD	B&R INDUSTRIAL AUTOMATION GMBH
26/04/2017	FORTUM OYJ	HAFSLUND VARME AS	26/04/2017	HAGAR HF	OLIUVERZLUN ISLANDS HF
12/05/2017	DRILLISCH AG	1&1 TELECOMMUNICATION SE	15/05/2017	WARTSILA OYJ	GREENSMITH ENERGY MANAGEMENT SYSTEMS INC.
16/05/2017	EUSKALTEL SA	PARSELAYA SL	23/05/2017	EURONEXT NV	FASTMATCH INC.
30/05/2017	ENSCO PLC	ATWOOD OCEANICS INC.	31/05/2017	ATTENDO AB	MI-HOIVA OY
06/06/2017	VIVENDI SA	HAVAS SA	16/06/2017	BUZZI UNICEM SPA	CEMENTIZILLO SPA
19/06/2017	YIT OYJ	LEMMINKAINEN OYJ	19/06/2017	EUROPCAR GROUPE SA	GOLDCAR SPAIN SL
20/06/2017	IP GROUP PLC	TOUCHSTONE INNOVATIONS PLC	21/06/2017	VIDRALA SA	SANTOS BAROSA - VIDROS SA
21/06/2017	GECINA SA	EUROSIC SA	21/06/2017	DIAGEO PLC	CASAMIGOS TEQUILA LLC
28/06/2017	LEGRAND SA	MILESTONE AV TECHNOLOGIES LLC	28/06/2017	KONINKLIJKE PHILIPS NV	SPECTRANETICS CORPORATION, THE
30/06/2017	RIETER HOLDING AG	SSM SCHARER SCHWEITER METTLER AG	03/07/2017	VTG AG	CIT RAIL HOLDINGS EUROPE SAS
07/07/2017	PROACTIS HOLDINGS PLC	PERFECT COMMERCE LLC	10/07/2017	EUROFINS SCIENTIFIC SE	AMATSIGROUP SAS
11/07/2017	SANOFI SA	PROTEIN SCIENCES CORPORATION	12/07/2017	EQUINITI GROUP PLC	WELLS FARGO SHAREOWNER SERVICES
19/07/2017	ASHTEAD GROUP PLC	CRS CONTRACTORS RENTAL SUPPLY LP	20/07/2017	INGENICO GROUP SA	BAMBORA TOP HOLDING AB
24/07/2017	ICADE SA	ANF IMMOBILIER SA	25/07/2017	SAGE GROUP PLC, THE	INTACCT CORPORATION
27/07/2017	SCHNEIDER ELECTRIC SE	ASCO POWER TECHNOLOGIES LP	31/07/2017	EVOTEC AG	APTUIT LLC
03/08/2017	DFS FURNITURE PLC	SOFOLOGY LTD	04/08/2017	MALLINCKRODT PLC	INFACARE PHARMACEUTICAL CORPORATION
04/08/2017	ANIMA HOLDING SPA	ALETTI GESTIELLE SGR SPA	08/08/2017	PANDORA A/S	CITY TIME SL
15/08/2017	TRANSOCEAN LTD	SONGA OFFSHORE SE	17/08/2017	STRAUMANN HOLDING AG	CLEARCORRECT LLC
21/08/2017	TOTAL SA	MAERSK OLIE OG GAS A/S	21/08/2017	ADIENT PLC	FUTURIS GLOBAL HOLDINGS LLC
22/08/2017	GREENCOAT UK WIND PLC	CORRIEGARTH WIND ENERGY LTD	24/08/2017	KARO PHARMA AB	WEIFA ASA
04/09/2017	CELLNEX TELECOM SA	ALTICOM HOLDING BV	13/09/2017	CLINIGEN GROUP PLC	QUANTUM PHARMA PLC
14/09/2017	NESTLE SA	BLUE BOTTLE COFFEE INC.	20/09/2017	CRH PLC	ASH GROVE CEMENT COMPANY
21/09/2017	BRAVOFLY RUMBO GROUP NV	LASTMINUTE.COM LTD	22/09/2017	CENTRAL ASIA METALS PLC	LYNX RESOURCES LTD
25/09/2017	SAP SE	GIGYA INC.	02/10/2017	ACCOR SA	GEKKO SAS
05/10/2017	DIALOG SEMICONDUCTOR PLC	SILEGO TECHNOLOGY INC.	09/10/2017	BPOST NV	RADIAL INC.
18/10/2017	DS SMITH PLC	ECOPACK SA	23/10/2017	IMPERIAL BRANDS PLC	NERUDIA LTD
23/10/2017	SMITH & NEPHEW PLC	ROTATION MEDICAL INC.	24/10/2017	DELPHI AUTOMOTIVE PLC	NUTONOMY INC.
24/10/2017	AKER BP ASA	HESS NORGE AS	25/10/2017	AMBU A/S	INVENDO MEDICAL GMBH
27/10/2017	HENKEL AG & CO. KGAA	ZOTOS INTERNATIONAL INC.	03/11/2017	CONTINENTAL AG	ARGUS CYBER SECURITY LTD

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
13/11/2017	INMOBILIARIA COLONIAL SOCIMI SA	AXIARE PATRIMONIO SOCIMI SA	15/11/2017	SODEXO SA	CENTERPLATE INC.
22/11/2017	DOMETIC GROUP AB	MARINE ACQUISITION CORPORATION	28/11/2017	CINEWORLD GROUP PLC	REGAL ENTERTAINMENT GROUP
04/12/2017	PRYSMIAN SPA	GENERAL CABLE CORPORATION	04/12/2017	CYFROWY POLSAT SA	NETIA SA
11/12/2017	TELEVISION FRANCAISE 1 SA	AUFEMININ SA	11/12/2017	ILIAD SA	EIR LTD
14/12/2017	H+H INTERNATIONAL A/S	HEIDELBERGER KALKSANDSTEIN GMBH	14/12/2017	IMI PLC	BIMBA MANUFACTURING COMPANY INC.
14/12/2017	PANDOX AB	JURYS INNS GROUP DESIGNATED ACTIVITY COMPANY	15/12/2017	KINGSPAN GROUP PLC	SYNTHESIA ESPANOLA SA
18/12/2017	VONOVIA SE	BUWOG AG	21/12/2017	EURONAV NV	GENER8 MARITIME INC.
21/12/2017	SULZER AG	JWC ENVIRONMENTAL LLC	21/12/2017	DEUTSCHE LUFTHANSA AG	LGW LUFTFAHRTGESELLSCHAFT WALTER GMBH
21/12/2017	HISPANIA ACTIVOS INMOBILIARIOS SOCIMI SA	MAR HISPANIA APARTAMENTOS SL	22/12/2017	MONDI PLC	POWERFLUTE GROUP HOLDINGS OY
22/12/2017	ASCENTIAL PLC	CLAVIS TECHNOLOGY LTD	22/12/2017	GVC HOLDINGS PLC	LADBROKES CORAL GROUP PLC
10/01/2018	TELE2 AB	COM HEM HOLDING AB	15/01/2018	BELL FOOD GROUP AG	HUGLI HOLDING AG
16/01/2018	INFORMA PLC	UBM PLC	17/01/2018	MELROSE INDUSTRIES PLC	GKN PLC
22/01/2018	L'OREAL SA	NANDA CO., LTD	25/01/2018	FONCIERE DES MURS SA	FDM MANAGEMENT SAS
25/01/2018	DECHRA PHARMACEUTICALS PLC	AST FARMA BV	26/01/2018	SPECTRIS PLC	CONCEPT LIFE SCIENCES LTD
30/01/2018	AMDOCS LTD	VUBIQUITY INC.	01/02/2018	QIAGEN NV	STAT-DX LIFE SL
05/02/2018	CAPGEMINI SE	LIQUIDHUB INC.	15/02/2018	ROCHE HOLDING AG	FLATIRON HEALTH INC.
15/02/2018	RELX PLC	RELX NV	23/02/2018	GFI INFORMATIQUE SA	REALDOLMEN NV
01/03/2018	PLASTIC OMNIUM SA	HBPO BETEILIGUNGSGESELLSCHAFT MBH	02/03/2018	ATLANTIA SPA	AERO 1 GLOBAL & INTERNATIONAL SARL
19/03/2018	WARTSILA OYJ	TRANSAS ZAO	19/03/2018	COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN SCA	FENNER PLC
20/03/2018	GRIFOLS SA	HAEMA AG	26/03/2018	GIVAUDAN SA	NATUREX SA
26/03/2018	RESTORE PLC	TNT BUSINESS SOLUTIONS	26/03/2018	JD SPORTS FASHION PLC	FINISH LINE INC., THE
29/03/2018	ITALMOBILIARE SPA	LA AROMATIKA SRL	05/04/2018	D CARNEGIE & CO AB	MITT ALBY AB
11/04/2018	APERAM SA	VDM METALS HOLDING GMBH	12/04/2018	COUNTRYSIDE PROPERTIES PLC	WESTLEIGH PARTNERSHIPS LTD
16/04/2018	ADECCO GROUP AG	GENERAL ASSEMBLY SPACE INC.	19/04/2018	WEIR GROUP PLC, THE	ESCO CORPORATION
24/04/2018	ASIAKASTIETO GROUP OYJ	UC AB	24/04/2018	LEARNING TECHNOLOGIES GROUP PLC	PEOPLEFLUENT HOLDINGS CORPORATION
27/04/2018	ERAMET SA	MINERAL DEPOSITS LTD	27/04/2018	SANDVIK AB	METROLOGIC GROUP SAS
30/04/2018	AMER SPORTS OYJ	PEAK PERFORMANCE PRODUCTION AB	15/05/2018	WORLDLINE SA	SIX PAYMENT SERVICES AG
15/05/2018	ITE GROUP PLC	ASCENTIAL EVENTS LTD	21/05/2018	NEWRIVER REIT PLC	HAWTHORN LEISURE HOLDINGS LTD

Appendix E. List of acquisitions

Event Date	Acquirer Name	Target Name	Event Date	Acquirer Name	Target Name
24/05/2018	ELECTROCOMPONENTS PLC	AGHOCO 1079 LTD	24/05/2018	SMURFIT KAPPA GROUP PLC	REPARENCO HOLDING BV
28/05/2018	UNIPER SE	UNIPRO PAO	07/06/2018	FABBRICA ITALIANA LAPIS ED AFFINI SPA	PACON CORPORATION
14/06/2018	TELEPERFORMANCE SE	INTELENET GLOBAL SERVICES PVT LTD	14/06/2018	RATHBONE BROTHERS PLC	SPEIRS & JEFFREY LTD
18/06/2018	MOBIMO HOLDING AG	IMMOBILIENGESELLSCHAFT FADMATT AG	18/06/2018	F-SECURE OYJ	MWR INFOSECURITY LTD
22/06/2018	ITALGAS SPA	FONTENERGIA SPA	25/06/2018	ANDRITZ AG	XERIUM TECHNOLOGIES INC.
26/06/2018	COLTENE HOLDING AG	SCICAN LTD	26/06/2018	CRAMO OYJ	NORDIC MODULAR GROUP HOLDING AB
29/06/2018	ELEMENTIS PLC	MONDO MINERALS BV	03/07/2018	CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES SA	SOLARIS BUS & COACH SA
06/07/2018	MEKONOMEN AB	FTZ AUTODELE & VAERKTOJ A/S	11/07/2018	BECHTLE AG	INMAC WSTORE SAS
11/07/2018	ENEL SPA	ENEL ROSSIYA PAO	13/07/2018	CALEDONIA INVESTMENTS PLC	COOKE OPTICS GROUP LTD
13/07/2018	DCC PLC	KONDOR LTD	17/07/2018	TELIA COMPANY AB	GET AS
20/07/2018	ATOS SE	SYNTEL INC.	23/07/2018	AHLSTROM-MUNKSJO OYJ	EXPERA SPECIALTY SOLUTIONS LLC
24/07/2018	AMPLIFON SPA	GABINETE DE AUDIOPROTESIS ELECTROMEDICINA Y SERVICIOS SA	30/07/2018	TAKEAWAY.COM NV	10BIS CO.IL LTD
31/07/2018	AMADEUS IT GROUP SA	TRAVELCLICK INC.	01/08/2018	SIEMENS AG	MENDIX INC.
01/08/2018	OPUS GLOBAL NYRT	KALL INGREDIENTS KERESKEDELMI KFT	09/08/2018	ORSTED A/S	LINCOLN CLEAN ENERGY LLC
13/08/2018	CONTINENTAL AG	TYRE AND AUTO PTY LTD	15/08/2018	LAGARDERE SCA	HOJEIJ BRANDED FOODS INC.
17/08/2018	NOVO NORDISK A/S	ZIYLO LTD	27/08/2018	WRIGHT MEDICAL GROUP NV	CARTIVA INC.
29/08/2018	DALATA HOTEL GROUP PLC	HINTERGARD LTD	30/08/2018	SEVERN TRENT PLC	AGRIVERT HOLDINGS LTD
04/09/2018	ATLASSIAN CORPORATION PLC	IFOUNTAIN LLC	06/09/2018	GRUPA AZOTY SA	GOAT TOPCO GMBH
07/09/2018	BTG PLC	NOVATE MEDICAL LTD	20/09/2018	TIKEHAU CAPITAL PARTNERS SAS	SOCIETE FINANCIERE DE DEVELOPPEMENT DE L'AGGLOMERATION D'EVRY SA
20/09/2018	MEDTRONIC PLC	MAZOR ROBOTICS LTD	28/09/2018	HEXPOL AB	MESGO SPA
01/10/2018	COMPUTACENTER PLC	FUSIONSTORM INC.	08/10/2018	MILLICOM INTERNATIONAL CELLULAR SA	CABLE ONDA SA
11/10/2018	GLANBIA PLC	SLIM-FAST FOODS COMPANY	16/10/2018	TKH GROUP NV	LAKESIGHT TECHNOLOGIES HOLDING SRL
25/10/2018	KERRY GROUP PLC	FLEISCHMANN'S VINEGAR COMPANY INC.	30/10/2018	RESTAURANT GROUP PLC, THE	MABEL TOPCO LTD
30/10/2018	WH SMITH PLC	INMOTION ENTERTAINMENT GROUP LLC	30/10/2018	WOLTERS KLUWER NV	EVISION INDUSTRY SOFTWARE BV
30/10/2018	MAGSEIS ASA	WGP GROUP LTD	01/11/2018	ASCENTIAL PLC	FLYWHEEL DIGITAL LLC
12/11/2018	INFINEON TECHNOLOGIES AG	SILTECTRA GMBH	14/11/2018	GRAINGER PLC	GRIP REIT PLC
14/12/2018	ATLANTICA YIELD PLC	ENEL GREEN POWER URUGUAY SA			

APPENDIX F

STATA code

```
capture log close
log using "Stata/eventstudy.smcl", replace

*********************************************************************************
* Description: Event study conducted in STATA for Master Thesis      *
* Authors: Anders Hess Christensen & Jonas Vendelbo Olesen       *
*********************************************************************************

*********************************************************
****              ****
****    INTRODUCTION      ****
****              ****
*********************************************************

{
**** clear content ****
clear
clear matrix

**** set memory and matrix size ****
set mem 500m
set matsize 800
set linesize 100
set maxvar 9000
set more off
cd "/Users/andershesschristensen/Dropbox/CBS/CBS - Thesis"
}

*********************************************************
****              ****
****    PREPARING DATA      ****
****              ****
*********************************************************

{
import excel using "Data/190305 Zephyr Export with CEOs.xlsx", sheet(Results) firstrow clear
sort StataID
drop if StataID==.|StataID==0
save "Stata/Stata temp files/firms.dta", replace

import excel using "Data/Stata Input/190204 Stock price data.xlsx", sheet(Stock price) firstrow
    clear
reshape long date price marketcap reg_index eu_index, i(obs) j(ID)
sort ID obs
drop obs
save "Stata/Stata temp files/stockdata.dta", replace

use "Stata/Stata temp files/stockdata.dta", clear
rename ID StataID
merge StataID using "Stata/Stata temp files/firms.dta"
drop ID
drop if Deselected=="x"
egen ID = group(StataID)
drop StataID Comments Deselected
sort ID date
tab _merge
drop _merge

save "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer.dta", replace
```

```
59 }

61 ************************************************************
62 ****                  ****
63 ****     CALCULATING RETURNS      ****
64 ****                  ****
65 ************************************************************

67 use "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer.dta", clear

69 global win_large window21
70 scalar win_largemin = -10
71 scalar win_largemax = 10
72 scalar win_largedays = win_largemax - win_largemin + 1
73 global win_largedays = win_largedays

75 global win_med window10
76 scalar win_medmin = -5
77 scalar win_medmax = 5
78 scalar win_meddays = win_medmax - win_medmin + 1
79 global win_meddays = win_meddays

81 global win_small window3
82 scalar win_smallmin = -1
83 scalar win_smallmax = 1
84 scalar win_smalldays = win_smallmax - win_smallmin + 1
85 global win_smalldays = win_smalldays

87 sum ID
88 scalar N = r(max)
89 global N = r(max)
90 global index reg eu mean
91 global window small med large

93 {
94 **** Calculate returns for the stocks and the market index ****

96 quietly foreach var in price reg_index eu_index{
97  bys ID: gen logreturn`var'=ln(`var'/`var'[_n-1])
98  }

100 drop if logreturnprice==.

102 **** Setting the event date and calculating the difference in days ****

104 sort ID date
105 by ID: gen datenum=_n
106 by ID: gen target=datenum if date==Eventdate
107 egen td=min(target), by(ID)
108 by ID: gen dow=dow(Eventdate) /* Finding the day of the week of the event date, to adjust for
      event dates in weekend */
109 replace Eventdate = Eventdate+1 if dow==0&td==. /* if it is sunday (0), then we add 1 day */
110 replace Eventdate = Eventdate+2 if dow==6&td==. /* if it is saturday (6), then we add 2 days */
111 by ID: replace target=datenum if date==Eventdate&td==.
112 egen td2=min(target), by(ID)
113 replace td=td2 if td==.

115 drop target td2 dow
116 gen dif=datenum-td

118 **** Creating event window -10 & +10 and the corresponding estimation window ****

120 by ID: gen event$win_large = 1 if dif >= win_largemin & dif <= win_largemax
121 egen count_event_obs=count(event$win_large ), by(ID)
122 by ID: gen est_$win_large =1 if dif < win_largemin & dif >= win_largemin-200
123 egen count_est_obs=count(est_$win_large ), by(ID)
124 replace event$win_large =0 if event$win_large ==.
125 replace est_$winlarge =0 if est_$win_large ==.

127 tab ID if count_event_obs< win_largemax - win_largemin + 1 // 21 days
```

```
tab ID if count_est_obs<200

drop if count_event_obs < win_largemax - win_largemin + 1 //* Dropping data with too small
    event window *//
drop if count_est_obs < 200 //* Dropping data with too small estimation period *//
drop count_est_obs
drop count_event_obs
drop if est_$win_large ==0 & event$win_large ==0 //* Dropping observations that are not used
    for estimation or event window */

**** Creating event window -5 & +5 ****

by ID: gen event$win_med =1 if dif >= win_medmin & dif <= win_medmax
egen count_event_obs=count(event$win_med ), by(ID)
replace event$win_med =0 if event$win_med ==.

tab ID if count_event_obs < win_medmax - win_medmin + 1
drop count_event_obs

**** Creating event window -1 & +1 ****

by ID: gen event$win_small =1 if dif >= win_smallmin & dif <= win_smallmax
egen count_event_obs=count(event$win_small ), by(ID)
replace event$win_small =0 if event$win_small ==.

tab ID if count_event_obs < win_smallmax - win_smallmin + 1

drop if count_event_obs < win_smallmax - win_smallmin + 1 //* //* Dropping data with too small
    event window *// *//
drop count_event_obs

**** Calculating predicted return (normal return) ****

gen normal_return_reg=.
gen R_MSE_reg=.
gen normal_return_eu=.
gen R_MSE_eu=.

forvalues i=1(1)$N {
 list ID AcquirorISINnumber Acquirorname if ID==`i' & dif==0
 quietly reg logreturnprice logreturnreg_index if ID==`i' & est_$win_large ==1
 quietly predict p if ID==`i'
 quietly replace normal_return_reg = p if ID==`i'
 quietly drop p
 quietly replace R_MSE_reg = e(rmse) if ID==`i'
}

forvalues i=1(1)$N {
 list ID AcquirorISINnumber Acquirorname if ID==`i' & dif==0
 quietly reg logreturnprice logreturneu_index if ID==`i' & est_$win_large ==1
 quietly predict p if ID==`i'
 quietly replace normal_return_eu = p if ID==`i'
 quietly drop p
 quietly replace R_MSE_eu = e(rmse) if ID==`i'
}

by ID: egen normal_return_mean = mean(logreturnprice) if est_${win_large}==1
by ID: egen tempo = max(normal_return_mean)
replace normal_return_mean = tempo
drop tempo

by ID: gen res = normal_return_mean - logreturnprice if est_${win_large}==1
gen ressq = res * res
by ID: egen ressq_sum = sum(ressq)
gen mse = (ressq_sum/198)^0.5
by ID: egen R_MSE_mean = max(mse)

**** Calculating AR (abnormal return) and CAR (cumulative abnormal return) ****

foreach index of global index{
```

```
 sort ID date
 gen AR_`index' = logreturnprice - normal_return_`index'
 gen AR_est_`index' = AR_`index'
 replace AR_est_`index' = . if est_$win_large != 1
 gen AR_${win_med}_`index' = AR_`index'
 replace AR_${win_med}_`index' = . if event$win_med !=1
 gen AR_${win_small}_`index' = AR_`index'
 replace AR_${win_small}_`index' = . if event$win_small != 1
 by ID: egen car${win_largedays}_midl = sum(AR_`index') if event$win_large ==1
 by ID: egen CAR${win_largedays}_`index' = max(car${win_largedays}_midl)
 by ID: egen car${win_meddays}_midl = sum(AR_`index') if event$win_med ==1
 by ID: egen CAR${win_meddays}_`index' = max(car${win_meddays}_midl)
 by ID: egen car${win_smalldays}_midl = sum(AR_`index') if event$win_small ==1
 by ID: egen CAR${win_smalldays}_`index' = max(car${win_smalldays}_midl)
 drop car${win_smalldays}_midl
 drop car${win_meddays}_midl
 drop car${win_largedays}_midl
}

save "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer_workingdoc.dta", replace
}

**********************************************************
****              ****
****    DESCRIPTIVE STATISTICS    ****
****              ****
**********************************************************

use "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer_workingdoc.dta", clear

global incl "if dif==0"

{
**** Calculating average AR return for each day in the -10 to 10 event window: ****

foreach index of global index{
egen avgAR_`index'=mean(AR_`index'), by(dif) /* Mean AR across N for each time period */
gen tstat_`index'=avgAR_`index'/AR_sd_avg_`index' /* Calculating the t-stat for the individual
    day */
bysort ID: gen cum_avgAR_`index' = sum(avgAR_`index') if event${win_large}==1
list dif avgAR_`index' tstat_`index' cum_avgAR_`index' if event${win_large}==1 & ID==1
}

line cum_avgAR_reg dif if ID==1&dif>=-10
line cum_avgAR_eu dif if ID==1&dif>=-10
line cum_avgAR_mean dif if ID==1&dif>=-10

export excel dif avgAR_reg tstat_reg cum_avgAR_reg avgAR_eu tstat_eu cum_avgAR_eu avgAR_mean
    tstat_mean cum_avgAR_mean using "Stata/Output/CAR development in event window2.xlsx" if ID
    ==1&dif>=-10, firstrow(variables) replace

**** Generating categorical variables from string variables: ****

foreach var in Relativesize Enterprisevalue Totalassets Liabanddebt Netdebt
    Marketcapitalisation Numberofemployees Revenue Profitmargin Solvencyratio Cashflow
    Totalshareholderfundsliab Shareholderfunds Cashcashequivalent{
destring `var', replace force
}
replace Relativesize = DealvaluethEUR/Marketcapitalisation

foreach var in Initialstake Acquiredstake Finalstake{
destring `var', replace force
}

replace Methodofpayment = "Cash" if Methodofpayment=="Cash assumed"
replace Methodofpayment = "Other" if Methodofpayment=="Deferred payment"|Methodofpayment=="Earn
    -out"|Methodofpayment=="Liabilities"
gen Financialcrisis = "Crisis" if (Eventdate >= mdy(3,10,2000) & Eventdate <= mdy(11,10,2001))
    | (Eventdate >= mdy(9,15,2008) & Eventdate <= mdy(9,15,2010))
replace Financialcrisis = "Not Crisis" if Financialcrisis==""
```

```
gen ITcrisis = "IT crisis" if (Eventdate >= mdy(3,10,2000) & Eventdate <= mdy(11,10,2001))
replace ITcrisis = "Not IT crisis" if ITcrisis==""
replace CEOGender = "M" if CEOGender == "M "
gen Dealorder = "1" if Dealorder5yrrolling==1
replace Dealorder = ">=2" if Dealorder == ""
gen Financialdistress = "Healthy" if TargetadjZscore>1.21
replace Financialdistress = "Distressed" if Financialdistress==""
replace Financialdistress = "Data missing" if TargetadjZscore==.

foreach var in Methodofpayment Crosscountry AcquirorNACEmajorsector Acquirormajorsector
    CEOGender Frequentacquirer Region ListedTarget AcquisitionType Financialcrisis ITcrisis
    Financialdistress Dealorder{
encode `var', generate(c`var')
}
}
{
tabstat CAR3_reg CAR11_reg CAR21_reg CAR3_eu CAR11_eu CAR21_eu CAR3_mean CAR11_mean CAR21_mean
    if dif==0, stat(n mean median min max sd skewness kurtosis) save
putexcel set "Stata/Output/CAR mean tables", sheet("Sheet1") modify
putexcel A1 = matrix(r(StatTotal)), names nformat(number_d4)
putexcel clear

foreach var in cFinancialcrisis cFinancialdistress cFrequentacquirer cDealorder cCrosscountry{
 putexcel set "Stata/Output/Descriptive Statistics2", sheet("`var'") modify
 putexcel A1=("`var'") B1=("Crisis") D1=("Not Crisis") F1=("Total") I1=("Data Missing") K1=("
     Distressed") M1=("Healthy") O1=("Total") ///
    R1=("Frequent") T1=("Infrequent") V1=("Total") Y1=("Dealorder1") AA1=("Dealorder2") AC1=("
        Total") AF1=("Cross-border") AH1=("Domestic") AJ1=("Total")
 tabulate `var' cFinancialcrisis, matcell(freq) matrow(names)
 local rows = rowsof(names)
 local row = 2
 forvalues i = 1/`rows' {
        local val = names[`i',1]
        local val_lab : label (`var') `val'
        local freq_val = freq[`i',1]
        local freq_val2 = freq[`i',2]
        local freq_val3 = `freq_val'+`freq_val2'
        putexcel A`row'=("`val_lab'") B`row'=(`freq_val') D`row'=(`freq_val2') F`row'=(`freq_
            val3')
        local row = `row' + 1
 }
 putexcel A`row'=("Total") F`row'=(r(N))

 tabulate `var' cFinancialdistress, matcell(freq) matrow(names)
 local rows = rowsof(names)
 local row = 2
 forvalues i = 1/`rows' {
        local val = names[`i',1]
        local val_lab : label (`var') `val'
        local freq_val = freq[`i',1]
        local freq_val2 = freq[`i',2]
        local freq_val3 = freq[`i',3]
        local freq_val4 = `freq_val'+`freq_val2'+`freq_val3'
        putexcel H`row'=("`val_lab'") I`row'=(`freq_val') K`row'=(`freq_val2') M`row'=(`freq_
            val3') O`row'=(`freq_val4')
        local row = `row' + 1
 }
 putexcel H`row'=("Total") O`row'=(r(N))

 tabulate `var' cFrequentacquirer, matcell(freq) matrow(names)
 local rows = rowsof(names)
 local row = 2
 forvalues i = 1/`rows' {
        local val = names[`i',1]
        local val_lab : label (`var') `val'
        local freq_val = freq[`i',1]
        local freq_val2 = freq[`i',2]
        local freq_val3 = `freq_val'+`freq_val2'
        putexcel Q`row'=("`val_lab'") R`row'=(`freq_val') T`row'=(`freq_val2') V`row'=(`freq_
            val3')
```

```
320         local row = `row' + 1
321  }
322  putexcel Q`row'=("Total") V`row'=(r(N))

324  tabulate `var' cDealorder, matcell(freq) matrow(names)
325  local rows = rowsof(names)
326  local row = 2
327  forvalues i = 1/`rows' {
328         local val = names[`i',1]
329         local val_lab : label (`var') `val'
330         local freq_val = freq[`i',1]
331         local freq_val2 = freq[`i',2]
332         local freq_val3 = `freq_val'+`freq_val2'
333         putexcel X`row'=("`val_lab'") Y`row'=(`freq_val') AA`row'=(`freq_val2') AC`row'=(`freq_
                val3')
334         local row = `row' + 1
335  }
336  putexcel X`row'=("Total") AC`row'=(r(N))

338  tabulate `var' cCrosscountry, matcell(freq) matrow(names)
339  local rows = rowsof(names)
340  local row = 2
341  forvalues i = 1/`rows' {
342         local val = names[`i',1]
343         local val_lab : label (`var') `val'
344         local freq_val = freq[`i',1]
345         local freq_val2 = freq[`i',2]
346         local freq_val3 = `freq_val'+`freq_val2'
347         putexcel AE`row'=("`val_lab'") AF`row'=(`freq_val') AH`row'=(`freq_val2') AJ`row'=(`
                freq_val3')
348         local row = `row' + 1
349  }
350  putexcel AE`row'=("Total") AJ`row'=(r(N))
351  putexcel clear
352 }

354 matrix years = J(20,2,.)
355 forvalues i=1/20 {
356 sum DealvaluethEUR if Year==`i'+1998
357 matrix years[`i',1]=r(N)
358 matrix years[`i',2]=r(mean)
359 }
360 matrix list years
361 }

363 ************************************************************
364 ****              ****
365 ****     T-TESTS        ****
366 ****              ****
367 ************************************************************

369 {
370 use "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer_workingdoc.dta", clear

372 ********** T1 (t-test with Cross-sectional Independence) **********

374 sum ID
375 scalar N=r(max)

377 foreach index of global index{
378  sort ID date
379  by ID: egen AR_sd_`index' = sd(AR_est_`index')
380  gen AR_var_`index' = AR_sd_`index' * AR_sd_`index'
381  bysort dif: egen AR_var_sum_`index' = sum(AR_var_`index')
382  gen AR_sd_avg_`index' = (AR_var_sum_`index'^0.5)/N
383  foreach w of global window{
384   scalar days = win_`w'days
385   local days = win_`w'days
386   sort ID date
387   egen CAR_avg_`index'_`w' = mean(CAR`days'_`index') ${incl}
```

```
388   gen T1_`index'_`w'=.
389   replace T1_`index'_`w' = CAR_avg_`index'_`w'/((days^0.5)*AR_sd_avg_`index')
390  }
391 }

393 ********** T2 (t-test with Standardized Abnormal Return) **********

395 foreach index of global index{
396  gen std_AR_`index' = AR_`index'/AR_sd_`index'
397  bysort dif: egen std_AR_sum_`index' = sum(std_AR_`index')
398  foreach w of global window{
399   scalar days = win_`w'days
400   local days = win_`w'days
401   sort ID date
402   by ID: egen std_CAR`days'_sum_`index' = sum(std_AR_sum_`index') if event${win_`w'}==1
403   gen T2_`index'_`w' = .
404   di N
405   replace T2_`index'_`w' = std_CAR`days'_sum_`index'/((days*N)^0.5)
406  }
407 }

409 ********** T3 (Rank Test) **********

411 foreach w of global window{
412  scalar days = win_`w'days
413  local days = win_`w'days
414  foreach index of global index{
415   by ID: egen rank_`index'_`w' = rank(AR_`index') if est_${win_large}==1 | event${win_`w'}==1
416   gen std_rank_`index'_`w' = rank_`index'_`w'/(200 + days +1)
417   gen std_rank05_`index'_`w' = std_rank_`index'_`w'-0.5
418   bysort dif: egen sum_std_rank05_`index'_`w' = sum(std_rank05_`index'_`w')
419   gen rank_obs_`index'_`w' = (1/N^0.5)*sum_std_rank05_`index'_`w'
420   gen rank_obs_sq_`index'_`w' = rank_obs_`index'_`w' * rank_obs_`index'_`w'
421   sort ID date
422   by ID: egen sum_rank_obs_sq_`index'_`w' = sum(rank_obs_sq_`index'_`w')
423   gen rank_sd_`index'_`w' = ((1/(200 + days))*sum_rank_obs_sq_`index'_`w')^0.5
424   by ID: egen CAR`days'_rank_`index' = sum(rank_obs_`index'_`w') if event${win_`w'}==1
425   gen T3_`index'_`w' = CAR`days'_rank_`index'/(rank_sd_`index'_`w'*(days^0.5))
426  }
427 }

429 ********** T4 (Sign Test) **********

431 foreach w of global window{
432  scalar days = win_`w'days
433  local days = win_`w'days
434  foreach index of global index{
435   by ID: egen median_`index'_`w' = median(AR_`index') if est_${win_large}==1|event${win_`w'}==1
436   gen median_diff_`index'_`w' = AR_reg-median_`index'_`w' if est_${win_large}==1|event${win_`w
        '}==1
437   gen sign_`index'_`w' = sign(median_diff_`index'_`w')
438   bysort dif: egen sign_sum_`index'_`w' = sum(sign_`index'_`w')
439   gen sign_obs_`index'_`w' = sign_sum_`index'_`w'*(1/(N^0.5))
440   sort ID date
441   gen sign_obs_sq_`index'_`w' = sign_obs_`index'_`w' * sign_obs_`index'_`w'
442   by ID: egen sum_sign_obs_sq_`index'_`w' = sum(sign_obs_sq_`index'_`w')
443   gen sign_sd_`index'_`w' = ((1/(200 + days))*sum_sign_obs_sq_`index'_`w')^0.5
444   by ID: egen CAR_sign_`index'_`w' = sum(sign_obs_`index'_`w') if event${win_`w'}==1
445   gen T4_`index'_`w' = CAR_sign_`index'_`w'/(sign_sd_`index'_`w'*(days^0.5))
446  }
447 }

449 ********** T5 (Generalised Sign Test) **********

451 foreach index of global index{
452  gen gensign_`index' = (AR_`index'>0)
453  by ID: egen prop_positive_`index' = mean(gensign_`index') if est_${win_large}==1
454  egen p_`index' = mean(prop_positive_`index') if est_${win_large}==1
455  egen p_hat_`index' = max(p_`index')
456  drop p_`index'
```

```
457  bysort dif: egen AR_pos_no_`index' = sum(gensign_`index')
458  sort ID date
459  gen gensign_obs_`index' = (AR_pos_no_`index'-N*p_hat_`index')/((N*p_hat_`index'*(1-p_hat_`
         index'))^0.5)
460  foreach w of global window{
461   scalar days = win_`w'days
462   local days = win_`w'days
463   by ID: egen sum_gensign_obs_`index'_`w' = sum(gensign_obs_`index') if event${win_`w'}==1
464   gen T5_`index'_`w' = sum_gensign_obs_`index'_`w'/(days^0.5)
465  }
466 }

468 ********** T6 (Variance-adjusted Standardized Abnormal Returns) **********

470 foreach index of global index{
471  foreach w of global window{
472   scalar days = win_`w'days
473   local days = win_`w'days
474   bysort dif: egen std_AR_avg_`index'_`w' = mean(std_AR_`index') if event${win_`w'}==1
475   bysort dif: egen std_AR_dev_sq_sum_`index'_`w' = sum((std_AR_`index'-std_AR_avg_`index'_`w')
         ^2) if event${win_`w'}==1
476   gen std_AR_var_`index'_`w' = (1/(N*(N-1)))*std_AR_dev_sq_sum_`index'_`w' if event${win_`w
         '}==1
477   gen std_AR_sd_`index'_`w' = std_AR_var_`index'_`w'^0.5 if event${win_`w'}==1
478   sort ID date
479   gen std_AR_obs_`index'_`w' = std_AR_avg_`index'_`w'/std_AR_sd_`index'_`w'
480   by ID: egen std_CAR_obs_`index'_`w' = sum(std_AR_obs_`index'_`w') if event${win_`w'}==1
481   gen T6_`index'_`w' = std_CAR_obs_`index'_`w'/(days^0.5)
482  }
483 }

485 ********** T7 (Rank Test of Adjusted Standardized Abnormal Returns) **********

487 foreach index of global index{
488  foreach w of global window{
489   scalar days = win_`w'days
490   local days = win_`w'days
491   bysort dif: egen std_AR_sd_adj_`index'_`w' = sd(std_AR_`index') if event${win_`w'}==1
492   sort ID date
493   gen x_it_`index'_`w' = .
494   replace x_it_`index'_`w' = std_AR_`index' if est_${win_large}==1
495   replace x_it_`index'_`w' = std_AR_`index'/std_AR_sd_adj_`index'_`w' if event${win_`w'}==1
496   by ID: egen rank_T7_`index'_`w' = rank(x_it_`index'_`w') if est_${win_large}==1|event${win_`w
         '}==1
497   gen std_rank_T7_`index'_`w' = rank_T7_`index'_`w'/(200+days+1)
498   gen std_rank05_T7_`index'_`w'= std_rank_T7_`index'_`w'-0.5
499   bysort dif: egen sum_std_rank05_T7_`index'_`w' = sum(std_rank05_T7_`index'_`w')
500   gen rank_obs_T7_`index'_`w' = (1/N^0.5)*sum_std_rank05_T7_`index'_`w'
501   gen rank_obs_sq_T7_`index'_`w' = rank_obs_T7_`index'_`w'*rank_obs_T7_`index'_`w'
502   sort ID date
503   by ID: egen sum_rank_obs_sq_T7_`index'_`w' = sum(rank_obs_sq_T7_`index'_`w')
504   gen rank_sd_T7_`index'_`w' = ((1/(200+days))*sum_rank_obs_sq_T7_`index'_`w')^0.5
505   by ID: egen CAR_rank_T7_`index'_`w' = sum(rank_obs_T7_`index'_`w') if event${win_`w'}==1
506   gen T7_`index'_`w' = CAR_rank_T7_`index'_`w'/(rank_sd_T7_`index'_`w'*(days^0.5))
507  }
508 }

510 ********** Overview and exporting T-Statistics **********

512 foreach w of global window{
513  matrix tstatistics_`w' = J(7,3,.)
514  matrix colnames tstatistics_`w' = Regional Europe Mean
515  matrix rownames tstatistics_`w' = T1 T2 T3 T4 T5 T6 T7
516  foreach index of global index{
517   if "`index'" == "reg" {
518    local j = 1
519   }
520   else if "`index'" == "eu" {
521    local j = 2
522   }
```

```
  else {
   local j = 3
  }
  forvalues i=1/7 {
   di `j'
   sum T`i'_`index'_`w' ${incl} & ID==1
   matrix tstatistics_`w'[`i',`j']=r(max)
  }
 }
}

matrix list tstatistics_small
matrix list tstatistics_med
matrix list tstatistics_large

putexcel set "Stata/Output/T-Statistics", sheet("T-stats") replace
putexcel B3=("T1") B4=("T2") B5=("T3") B6=("T4") B7=("T5") B8=("T6") B9=("T7")
putexcel C2=("Regional") D2=("Europe") E2=("Mean") G2=("Regional") H2=("Europe") I2=("Mean") K2
    =("Regional") L2=("Europe") M2=("Mean")
putexcel C3=matrix(tstatistics_small)
putexcel G3=matrix(tstatistics_med)
putexcel K3=matrix(tstatistics_large)
putexcel clear

save "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer_afterTstat.dta", replace
}

************************************************************
****                ****
****      REGRESSION        ****
****                ****
************************************************************

{
use "/Users/andershesschristensen/Documents/CBS/Thesis/acquirer_afterTstat.dta", clear

bysort ID: gen stockratio = price[_n]/price[_n-199] if _n==200
bysort ID: egen stockratio2 = max(stockratio)
replace stockratio=stockratio2

keep if dif==0
keep ID Acquirorname Targetname Eventdate R_MSE* AR_sd* AR_var* CAR3* CAR11* CAR21*
    DealvaluethEUR Methodofpayment Eventdate Year Crosscountry AcquirorNACEmajorsector
    AcquirorNACEsector Acquirormajorsector TargetNACEmajorsector TargetNACEsector
    Targetmajorsector Initialstake-Finalstake Relativesize-AcquirerCEO CEOGender
    Dealorderoverall Dealorder5yrrolling Frequentacquirer Region ListedTarget AcquisitionType
    AcquirerCountry TargetCountry KSCulturalDistance GenericCulturalDistance TargetadjZscore
    TargetZscore ID Financialcrisis Dealorder ITcrisis Financialdistress cMethodofpayment-
    cDealorder stockratio
drop CAR3_rank* CAR11_rank* CAR21_rank*
gen CARdif = CAR3_eu - CAR21_eu
gen absCARdif = abs(CARdif)
gen TobinsQ = (Totalassets-Shareholderfunds+Marketcapitalisation)/Totalassets

save "Stata/Stata temp files/acquirer_regression.dta", replace
use "Stata/Stata temp files/acquirer_regression.dta", clear

**** Checking assumptions ****

tab cFinancialcrisis, generate(fincrisis)
tab cFinancialdistress, generate(findistress)
tab cFrequentacquirer, generate(freqacq)
tab cDealorder, generate(dealord)
tab cCrosscountry, generate(crosscountry)
tab cListedTarget, generate(listedtarget)
tab cMethodofpayment, generate(methpay)
tab cAcquisitionType, generate(acqtype)
tab cAcquirorNACEmajorsector, generate(sector)
tab cCEOGender, generate(gender)
tab cRegion, generate(region)
```

```
586 **** Multicollinearity ****

588 correlate fincrisis* findistress* freqacq* dealord* KSCulturalDistance crosscountry*
        listedtarget* methpay* acqtype* Relativesize sector* gender* region*
589 putexcel set "Stata/Output/Correlation Matrix", replace
590 putexcel A1=matrix(r(C)), names
591 putexcel close

593 quietly reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, base
594 estat vif

596 **** RESET-test ****
597 quietly reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, base
598 estat ovtest

600 **** Homoskedasticity ****
601 quietly reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, base
602 rvfplot, yline(0)
603 estat hettest, rhs iid
604 imtest, white

606 **** Normality ****
607 quietly reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, base
608 predict res, res
609 kdensity res, normal
610 qnorm res
611 sktest res
612 sum res, detail
613 display "Jarque-Bera statistic = " (r(N)/6)*(r(skewness)*r(skewness)+(((r(kurtosis)-3)^2)/4))
614 display "Jarque-Bera p-value = " chi2tail(2,((r(N)/6)*(r(skewness)*r(skewness)+(((r(kurtosis)
        -3)^2)/4))))
615 drop res

617 **** Autocorrelation ****
618 gen id=_n
619 tsset id
620 quietly reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, base
621 estat dwatson
622 drop id

624 **** Robustness/outliers ****
625 quietly reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, base
626 predict cooksd, cooksd
627 predict res, res
628 predict sres, rstandard
629 gen abs_sres = abs(sres)
630 predict leverage, leverage
631 gen outlier=(cooksd>(4/e(N)))

633 lvr2plot, mlabel(outlier)
634 lvr2plot, mlabel(ID)
```

```
635 twoway scatter sres res, mlabel(ID)
636 replace outlier=1 if leverage>0.12|abs_sres>4
637 lvr2plot, mlabel(outlier)

639 gen ressq = res*res
640 egen sum_ressq = sum(ressq)
641 gen sum_ressq_sqrt = sum_ressq^0.5
642 gen norm_res = res/sum_ressq_sqrt
643 gen norm_sq_res = norm_res^2
644 twoway scatter leverage norm_sq_res
645 export excel ID leverage norm_sq_res using "Stata/Output/Lvr2plot.xlsx", firstrow(variables)
        replace

647 reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, vce(robust) base
648 outreg2 using "Stata/Output/Regression - Robustness.xls", dec(4) e(N r2 r2_a) adec(4)
649 reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion if outlier==0, vce(
        robust) base
650 outreg2 using "Stata/Output/Regression - Robustness.xls", dec(4) e(N r2 r2_a) adec(4)
651 rreg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, genwt(weight) base
652 outreg2 using "Stata/Output/Regression - Robustness.xls", dec(4) e(N r2 r2_a) adec(4)

654 **** Missing data comparison ****
655 reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, vce(robust) base
656 outreg2 using "Stata/Output/Missing data comparison.xls", dec(4) e(N r2 r2_a) adec(4)
657 reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion if Financialdistress!="
        Data missing", vce(robust) base
658 outreg2 using "Stata/Output/Missing data comparison.xls", dec(4) e(N r2 r2_a) adec(4)
659 reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion if Methodofpayment!="
        Unknown", vce(robust) base
660 outreg2 using "Stata/Output/Missing data comparison.xls", dec(4) e(N r2 r2_a) adec(4)
661 reg CAR3_eu ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
        cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
        KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType c
        .Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion if Methodofpayment!="
        Unknown"&Financialdistress!="Data missing", vce(robust) base
662 outreg2 using "Stata/Output/Missing data comparison.xls", dec(4) e(N r2 r2_a) adec(4)

664 **** Doing the regressions ****
665 foreach index of global index{
666  foreach w of global window{
667   scalar days = win_`w'days
668   local days = win_`w'days
669   reg CAR`days'_`index' ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
          cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
          KSCulturalDistance i.cCrosscountry, vce(robust) base
670   outreg2 using "Stata/Output/Regressions.xls", dec(4) e(N r2 r2_a) adec(4)
671   reg CAR`days'_`index' ib2.cFinancialcrisis ib3.cFinancialdistress ib2.cFinancialcrisis#ib3.
          cFinancialdistress i.cFrequentacquirer i.cDealorder ib2.cFinancialcrisis#i.cDealorder c.
          KSCulturalDistance i.cCrosscountry i.cListedTarget i.cMethodofpayment i.cAcquisitionType
           c.Relativesize ib10.cAcquirorNACEmajorsector i.cCEOGender i.cRegion, vce(robust) base
672   outreg2 using "Stata/Output/Regressions.xls", dec(4) e(N r2 r2_a) adec(4)
673  }
```

```
}

**** Extra for discussion ****
foreach index of global index{
 foreach w of global window{
  scalar days = win_`w'days
  local days = win_`w'days
  gen CAR`days'_`index'_money = Marketcapitalisation * CAR`days'_`index'
 }
}

export excel Eventdate CAR3_eu CAR11_eu CAR21_eu using "Stata/Output/CAR for eventdays.xlsx",
    firstrow(variables) replace
}

************************************************************
****                ****
****    DIFFERENCES IN MEANS    ****
****                ****
************************************************************

{
**** Testing differences in means for Crisis ****
{
matrix Crisisdif = J(7,6,.)
matrix rownames Crisisdif = NotCrisis Crisis ITcrisis Fincrisis . NotCrisisVSCrisis
    ITcrisisVSFincrisis
matrix colnames Crisisdif = N CAR Variance StdDev StdDevCAR Tstat
sum CAR3_eu if Financialcrisis=="Not Crisis"
matrix Crisisdif[1,1]=r(N)
matrix Crisisdif[1,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Not Crisis"
matrix Crisisdif[1,3]=r(sum)
matrix Crisisdif[1,4]=(Crisisdif[1,3]^0.5)/Crisisdif[1,1]
matrix Crisisdif[1,5]=Crisisdif[1,4]*(3^0.5)
matrix Crisisdif[1,6]=Crisisdif[1,2]/Crisisdif[1,5]

sum CAR3_eu if Financialcrisis=="Crisis"
matrix Crisisdif[2,1]=r(N)
matrix Crisisdif[2,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis"
matrix Crisisdif[2,3]=r(sum)
matrix Crisisdif[2,4]=(Crisisdif[2,3]^0.5)/Crisisdif[2,1]
matrix Crisisdif[2,5]=Crisisdif[2,4]*(3^0.5)
matrix Crisisdif[2,6]=Crisisdif[2,2]/Crisisdif[2,5]

sum CAR3_eu if ITcrisis=="IT crisis"
matrix Crisisdif[3,1]=r(N)
matrix Crisisdif[3,2]=r(mean)
sum AR_var_eu if ITcrisis=="IT crisis"
matrix Crisisdif[3,3]=r(sum)
matrix Crisisdif[3,4]=(Crisisdif[3,3]^0.5)/Crisisdif[3,1]
matrix Crisisdif[3,5]=Crisisdif[3,4]*(3^0.5)
matrix Crisisdif[3,6]=Crisisdif[3,2]/Crisisdif[3,5]

sum CAR3_eu if ITcrisis=="Not IT crisis"&Financialcrisis=="Crisis"
matrix Crisisdif[4,1]=r(N)
matrix Crisisdif[4,2]=r(mean)
sum AR_var_eu if ITcrisis=="Not IT crisis"&Financialcrisis=="Crisis"
matrix Crisisdif[4,3]=r(sum)
matrix Crisisdif[4,4]=(Crisisdif[4,3]^0.5)/Crisisdif[4,1]
matrix Crisisdif[4,5]=Crisisdif[4,4]*(3^0.5)
matrix Crisisdif[4,6]=Crisisdif[4,2]/Crisisdif[4,5]

matrix Crisisdif[6,2]=Crisisdif[1,2]-Crisisdif[2,2]
matrix Crisisdif[6,5]=(Crisisdif[1,5]^2+Crisisdif[2,5]^2)^0.5
matrix Crisisdif[6,6]=Crisisdif[6,2]/Crisisdif[6,5]

matrix Crisisdif[7,2]=Crisisdif[3,2]-Crisisdif[4,2]
matrix Crisisdif[7,5]=(Crisisdif[3,5]^2+Crisisdif[4,5]^2)^0.5
```

```
742 matrix Crisisdif[7,6]=Crisisdif[7,2]/Crisisdif[7,5]

744 matrix list Crisisdif

746 putexcel set "Stata/Output/CAR differences per group", sheet("Crisis") modify
747 putexcel A1=matrix(Crisisdif), names
748 putexcel close
749 }

751 **** Testing differences in means for Crisis & Industry ****
752 {
753 matrix Crisis_ind = J(10,6,.)
754 matrix rownames Crisis_ind = Information_and_communication Construction Fin_and_ins_act
        Manufacturing_etc Professional_scientific_etc Public_admin_etc Wholesale_and_retail Other_
        than_IT . ITvsOther
755 matrix colnames Crisis_ind = N CAR Variance StdDev StdDevCAR Tstat
756 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Information and communication"
757 matrix Crisis_ind[1,1]=r(N)
758 matrix Crisis_ind[1,2]=r(mean)
759 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Information and
        communication"
760 matrix Crisis_ind[1,3]=r(sum)
761 matrix Crisis_ind[1,4]=(Crisis_ind[1,3]^0.5)/Crisis_ind[1,1]
762 matrix Crisis_ind[1,5]=Crisis_ind[1,4]*(3^0.5)
763 matrix Crisis_ind[1,6]=Crisis_ind[1,2]/Crisis_ind[1,5]

765 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Construction"
766 matrix Crisis_ind[2,1]=r(N)
767 matrix Crisis_ind[2,2]=r(mean)
768 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Construction"
769 matrix Crisis_ind[2,3]=r(sum)
770 matrix Crisis_ind[2,4]=(Crisis_ind[2,3]^0.5)/Crisis_ind[2,1]
771 matrix Crisis_ind[2,5]=Crisis_ind[2,4]*(3^0.5)
772 matrix Crisis_ind[2,6]=Crisis_ind[2,2]/Crisis_ind[2,5]

774 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Financial and insurance
        activities"
775 matrix Crisis_ind[3,1]=r(N)
776 matrix Crisis_ind[3,2]=r(mean)
777 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Financial and insurance
        activities"
778 matrix Crisis_ind[3,3]=r(sum)
779 matrix Crisis_ind[3,4]=(Crisis_ind[3,3]^0.5)/Crisis_ind[3,1]
780 matrix Crisis_ind[3,5]=Crisis_ind[3,4]*(3^0.5)
781 matrix Crisis_ind[3,6]=Crisis_ind[3,2]/Crisis_ind[3,5]

783 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Manufacturing, mining and
        quarrying and other industry"
784 matrix Crisis_ind[4,1]=r(N)
785 matrix Crisis_ind[4,2]=r(mean)
786 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Manufacturing, mining and
        quarrying and other industry"
787 matrix Crisis_ind[4,3]=r(sum)
788 matrix Crisis_ind[4,4]=(Crisis_ind[4,3]^0.5)/Crisis_ind[4,1]
789 matrix Crisis_ind[4,5]=Crisis_ind[4,4]*(3^0.5)
790 matrix Crisis_ind[4,6]=Crisis_ind[4,2]/Crisis_ind[4,5]

792 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Professional, scientific,
        technical, administration and support service activities"
793 matrix Crisis_ind[5,1]=r(N)
794 matrix Crisis_ind[5,2]=r(mean)
795 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Professional, scientific,
        technical, administration and support service activities"
796 matrix Crisis_ind[5,3]=r(sum)
797 matrix Crisis_ind[5,4]=(Crisis_ind[5,3]^0.5)/Crisis_ind[5,1]
798 matrix Crisis_ind[5,5]=Crisis_ind[5,4]*(3^0.5)
799 matrix Crisis_ind[5,6]=Crisis_ind[5,2]/Crisis_ind[5,5]

801 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Public administration, defence
        , education, human health and social work activities"
```

```
802 matrix Crisis_ind[6,1]=r(N)
803 matrix Crisis_ind[6,2]=r(mean)
804 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Public administration,
        defence, education, human health and social work activities"
805 matrix Crisis_ind[6,3]=r(sum)
806 matrix Crisis_ind[6,4]=(Crisis_ind[6,3]^0.5)/Crisis_ind[6,1]
807 matrix Crisis_ind[6,5]=Crisis_ind[6,4]*(3^0.5)
808 matrix Crisis_ind[6,6]=Crisis_ind[6,2]/Crisis_ind[6,5]

810 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Wholesale and retail trade,
        transportation and storage, accormodation and food service activities"
811 matrix Crisis_ind[7,1]=r(N)
812 matrix Crisis_ind[7,2]=r(mean)
813 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector=="Wholesale and retail trade,
        transportation and storage, accormodation and food service activities"
814 matrix Crisis_ind[7,3]=r(sum)
815 matrix Crisis_ind[7,4]=(Crisis_ind[7,3]^0.5)/Crisis_ind[7,1]
816 matrix Crisis_ind[7,5]=Crisis_ind[7,4]*(3^0.5)
817 matrix Crisis_ind[7,6]=Crisis_ind[7,2]/Crisis_ind[7,5]

819 sum CAR3_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector!="Information and communication"
820 matrix Crisis_ind[8,1]=r(N)
821 matrix Crisis_ind[8,2]=r(mean)
822 sum AR_var_eu if ITcrisis=="IT crisis" & AcquirorNACEmajorsector!="Information and
        communication"
823 matrix Crisis_ind[8,3]=r(sum)
824 matrix Crisis_ind[8,4]=(Crisis_ind[8,3]^0.5)/Crisis_ind[8,1]
825 matrix Crisis_ind[8,5]=Crisis_ind[8,4]*(3^0.5)
826 matrix Crisis_ind[8,6]=Crisis_ind[8,2]/Crisis_ind[8,5]

828 matrix Crisis_ind[10,2]=Crisis_ind[1,2]-Crisis_ind[8,2]
829 matrix Crisis_ind[10,5]=(Crisis_ind[1,5]^2+Crisis_ind[8,5]^2)^0.5
830 matrix Crisis_ind[10,6]=Crisis_ind[10,2]/Crisis_ind[10,5]

832 matrix list Crisis_ind

834 putexcel set "Stata/Output/CAR differences per group", sheet("Crisis_industry") modify
835 putexcel A1=matrix(Crisis_ind), names
836 putexcel close
837 }

839 **** Testing differences in means for Crisis & Relatedness ****
840 {
841 matrix Crisis_related = J(9,6,.)
842 matrix rownames Crisis_related = NotCrisis Related Unrelated Crisis Related Unrelated .
        NotCrisisRelatedvsUnrelated CrisisRelatedvsUnrelated
843 matrix colnames Crisis_related = N CAR Variance StdDev StdDevCAR Tstat

845 sum CAR3_eu if Financialcrisis=="Not Crisis" & AcquisitionType == "Focused"
846 matrix Crisis_related[2,1]=r(N)
847 matrix Crisis_related[2,2]=r(mean)
848 sum AR_var_eu if Financialcrisis=="Not Crisis" & AcquisitionType == "Focused"
849 matrix Crisis_related[2,3]=r(sum)
850 matrix Crisis_related[2,4]=(Crisis_related[2,3]^0.5)/Crisis_related[2,1]
851 matrix Crisis_related[2,5]=Crisis_related[2,4]*(3^0.5)
852 matrix Crisis_related[2,6]=Crisis_related[2,2]/Crisis_related[2,5]

854 sum CAR3_eu if Financialcrisis=="Not Crisis" & AcquisitionType == "Diversification"
855 matrix Crisis_related[3,1]=r(N)
856 matrix Crisis_related[3,2]=r(mean)
857 sum AR_var_eu if Financialcrisis=="Not Crisis" & AcquisitionType == "Diversification"
858 matrix Crisis_related[3,3]=r(sum)
859 matrix Crisis_related[3,4]=(Crisis_related[3,3]^0.5)/Crisis_related[3,1]
860 matrix Crisis_related[3,5]=Crisis_related[3,4]*(3^0.5)
861 matrix Crisis_related[3,6]=Crisis_related[3,2]/Crisis_related[3,5]

863 sum CAR3_eu if Financialcrisis=="Crisis" & AcquisitionType == "Focused"
864 matrix Crisis_related[5,1]=r(N)
865 matrix Crisis_related[5,2]=r(mean)
866 sum AR_var_eu if Financialcrisis=="Crisis" & AcquisitionType == "Focused"
```

```
867 matrix Crisis_related[5,3]=r(sum)
868 matrix Crisis_related[5,4]=(Crisis_related[5,3]^0.5)/Crisis_related[5,1]
869 matrix Crisis_related[5,5]=Crisis_related[5,4]*(3^0.5)
870 matrix Crisis_related[5,6]=Crisis_related[5,2]/Crisis_related[5,5]

872 sum CAR3_eu if Financialcrisis=="Crisis" & AcquisitionType == "Diversification"
873 matrix Crisis_related[6,1]=r(N)
874 matrix Crisis_related[6,2]=r(mean)
875 sum AR_var_eu if Financialcrisis=="Crisis" & AcquisitionType == "Diversification"
876 matrix Crisis_related[6,3]=r(sum)
877 matrix Crisis_related[6,4]=(Crisis_related[6,3]^0.5)/Crisis_related[6,1]
878 matrix Crisis_related[6,5]=Crisis_related[6,4]*(3^0.5)
879 matrix Crisis_related[6,6]=Crisis_related[6,2]/Crisis_related[6,5]

881 matrix Crisis_related[8,2]=Crisis_related[2,2]-Crisis_related[3,2]
882 matrix Crisis_related[8,5]=(Crisis_related[2,5]^2+Crisis_related[3,5]^2)^0.5
883 matrix Crisis_related[8,6]=Crisis_related[8,2]/Crisis_related[8,5]

885 matrix Crisis_related[9,2]=Crisis_related[5,2]-Crisis_related[6,2]
886 matrix Crisis_related[9,5]=(Crisis_related[5,5]^2+Crisis_related[6,5]^2)^0.5
887 matrix Crisis_related[9,6]=Crisis_related[9,2]/Crisis_related[9,5]

889 matrix list Crisis_related

891 putexcel set "Stata/Output/CAR differences per group", sheet("Crisis_related") modify
892 putexcel A1=matrix(Crisis_related), names
893 putexcel close
894 }

896 **** Testing differences in means for Crisis & Method of payment ****
897 {
898 matrix Crisis_payment = J(15,6,.)
899 matrix rownames Crisis_payment = NotCrisis Cash Shares Mixed Other Unknown Crisis Cash Shares
        Mixed Other Unknown . CashVSSharesNotCrisis CashVSSharesCrisis
900 matrix colnames Crisis_payment = N CAR Variance StdDev StdDevCAR Tstat

902 sum CAR3_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Cash"
903 matrix Crisis_payment[2,1]=r(N)
904 matrix Crisis_payment[2,2]=r(mean)
905 sum AR_var_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Cash"
906 matrix Crisis_payment[2,3]=r(sum)
907 matrix Crisis_payment[2,4]=(Crisis_payment[2,3]^0.5)/Crisis_payment[2,1]
908 matrix Crisis_payment[2,5]=Crisis_payment[2,4]*(3^0.5)
909 matrix Crisis_payment[2,6]=Crisis_payment[2,2]/Crisis_payment[2,5]

911 sum CAR3_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Shares"
912 matrix Crisis_payment[3,1]=r(N)
913 matrix Crisis_payment[3,2]=r(mean)
914 sum AR_var_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Shares"
915 matrix Crisis_payment[3,3]=r(sum)
916 matrix Crisis_payment[3,4]=(Crisis_payment[3,3]^0.5)/Crisis_payment[3,1]
917 matrix Crisis_payment[3,5]=Crisis_payment[3,4]*(3^0.5)
918 matrix Crisis_payment[3,6]=Crisis_payment[3,2]/Crisis_payment[3,5]

920 sum CAR3_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Mixed"
921 matrix Crisis_payment[4,1]=r(N)
922 matrix Crisis_payment[4,2]=r(mean)
923 sum AR_var_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Mixed"
924 matrix Crisis_payment[4,3]=r(sum)
925 matrix Crisis_payment[4,4]=(Crisis_payment[4,3]^0.5)/Crisis_payment[4,1]
926 matrix Crisis_payment[4,5]=Crisis_payment[4,4]*(3^0.5)
927 matrix Crisis_payment[4,6]=Crisis_payment[4,2]/Crisis_payment[4,5]

929 sum CAR3_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Other"
930 matrix Crisis_payment[5,1]=r(N)
931 matrix Crisis_payment[5,2]=r(mean)
932 sum AR_var_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Other"
933 matrix Crisis_payment[5,3]=r(sum)
934 matrix Crisis_payment[5,4]=(Crisis_payment[5,3]^0.5)/Crisis_payment[5,1]
935 matrix Crisis_payment[5,5]=Crisis_payment[5,4]*(3^0.5)
```

```
936  matrix Crisis_payment[5,6]=Crisis_payment[5,2]/Crisis_payment[5,5]

938  sum CAR3_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Unknown"
939  matrix Crisis_payment[6,1]=r(N)
940  matrix Crisis_payment[6,2]=r(mean)
941  sum AR_var_eu if Financialcrisis=="Not Crisis" & Methodofpayment == "Unknown"
942  matrix Crisis_payment[6,3]=r(sum)
943  matrix Crisis_payment[6,4]=(Crisis_payment[6,3]^0.5)/Crisis_payment[6,1]
944  matrix Crisis_payment[6,5]=Crisis_payment[6,4]*(3^0.5)
945  matrix Crisis_payment[6,6]=Crisis_payment[6,2]/Crisis_payment[6,5]

947  sum CAR3_eu if Financialcrisis=="Crisis" & Methodofpayment == "Cash"
948  matrix Crisis_payment[8,1]=r(N)
949  matrix Crisis_payment[8,2]=r(mean)
950  sum AR_var_eu if Financialcrisis=="Crisis" & Methodofpayment == "Cash"
951  matrix Crisis_payment[8,3]=r(sum)
952  matrix Crisis_payment[8,4]=(Crisis_payment[8,3]^0.5)/Crisis_payment[8,1]
953  matrix Crisis_payment[8,5]=Crisis_payment[8,4]*(3^0.5)
954  matrix Crisis_payment[8,6]=Crisis_payment[8,2]/Crisis_payment[8,5]

956  sum CAR3_eu if Financialcrisis=="Crisis" & Methodofpayment == "Shares"
957  matrix Crisis_payment[9,1]=r(N)
958  matrix Crisis_payment[9,2]=r(mean)
959  sum AR_var_eu if Financialcrisis=="Crisis" & Methodofpayment == "Shares"
960  matrix Crisis_payment[9,3]=r(sum)
961  matrix Crisis_payment[9,4]=(Crisis_payment[9,3]^0.5)/Crisis_payment[9,1]
962  matrix Crisis_payment[9,5]=Crisis_payment[9,4]*(3^0.5)
963  matrix Crisis_payment[9,6]=Crisis_payment[9,2]/Crisis_payment[9,5]

965  sum CAR3_eu if Financialcrisis=="Crisis" & Methodofpayment == "Mixed"
966  matrix Crisis_payment[10,1]=r(N)
967  matrix Crisis_payment[10,2]=r(mean)
968  sum AR_var_eu if Financialcrisis=="Crisis" & Methodofpayment == "Mixed"
969  matrix Crisis_payment[10,3]=r(sum)
970  matrix Crisis_payment[10,4]=(Crisis_payment[10,3]^0.5)/Crisis_payment[10,1]
971  matrix Crisis_payment[10,5]=Crisis_payment[10,4]*(3^0.5)
972  matrix Crisis_payment[10,6]=Crisis_payment[10,2]/Crisis_payment[10,5]

974  sum CAR3_eu if Financialcrisis=="Crisis" & Methodofpayment == "Other"
975  matrix Crisis_payment[11,1]=r(N)
976  matrix Crisis_payment[11,2]=r(mean)
977  sum AR_var_eu if Financialcrisis=="Crisis" & Methodofpayment == "Other"
978  matrix Crisis_payment[11,3]=r(sum)
979  matrix Crisis_payment[11,4]=(Crisis_payment[11,3]^0.5)/Crisis_payment[11,1]
980  matrix Crisis_payment[11,5]=Crisis_payment[11,4]*(3^0.5)
981  matrix Crisis_payment[11,6]=Crisis_payment[11,2]/Crisis_payment[11,5]

983  sum CAR3_eu if Financialcrisis=="Crisis" & Methodofpayment == "Unknown"
984  matrix Crisis_payment[12,1]=r(N)
985  matrix Crisis_payment[12,2]=r(mean)
986  sum AR_var_eu if Financialcrisis=="Crisis" & Methodofpayment == "Unknown"
987  matrix Crisis_payment[12,3]=r(sum)
988  matrix Crisis_payment[12,4]=(Crisis_payment[12,3]^0.5)/Crisis_payment[12,1]
989  matrix Crisis_payment[12,5]=Crisis_payment[12,4]*(3^0.5)
990  matrix Crisis_payment[12,6]=Crisis_payment[12,2]/Crisis_payment[12,5]

992  matrix Crisis_payment[14,2]=Crisis_payment[2,2]-Crisis_payment[3,2]
993  matrix Crisis_payment[14,5]=(Crisis_payment[2,5]^2+Crisis_payment[3,5]^2)^0.5
994  matrix Crisis_payment[14,6]=Crisis_payment[14,2]/Crisis_payment[14,5]

996  matrix Crisis_payment[15,2]=Crisis_payment[8,2]-Crisis_payment[9,2]
997  matrix Crisis_payment[15,5]=(Crisis_payment[8,5]^2+Crisis_payment[9,5]^2)^0.5
998  matrix Crisis_payment[15,6]=Crisis_payment[15,2]/Crisis_payment[15,5]

1000 matrix list Crisis_payment

1002 putexcel set "Stata/Output/CAR differences per group", sheet("Crisis_payment") modify
1003 putexcel A1=matrix(Crisis_payment), names
1004 putexcel close
1005 }
```

```
**** Testing differences in means for Crisis & Real Estate ****
{
matrix Crisis_estate = J(9,6,.)
matrix rownames Crisis_estate = NotCrisis RealEstate Other Crisis RealEstate Other . Diff1 Diff2
matrix colnames Crisis_estate = N CAR Variance StdDev StdDevCAR Tstat

sum CAR3_eu if Financialcrisis=="Not Crisis" & AcquirorNACEmajorsector == "Real estate activities"
matrix Crisis_estate[2,1]=r(N)
matrix Crisis_estate[2,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Not Crisis" & AcquirorNACEmajorsector == "Real estate activities"
matrix Crisis_estate[2,3]=r(sum)
matrix Crisis_estate[2,4]=(Crisis_estate[2,3]^0.5)/Crisis_estate[2,1]
matrix Crisis_estate[2,5]=Crisis_estate[2,4]*(3^0.5)
matrix Crisis_estate[2,6]=Crisis_estate[2,2]/Crisis_estate[2,5]

sum CAR3_eu if Financialcrisis=="Not Crisis" & AcquirorNACEmajorsector != "Real estate activities"
matrix Crisis_estate[3,1]=r(N)
matrix Crisis_estate[3,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Not Crisis" & AcquirorNACEmajorsector != "Real estate activities"
matrix Crisis_estate[3,3]=r(sum)
matrix Crisis_estate[3,4]=(Crisis_estate[3,3]^0.5)/Crisis_estate[3,1]
matrix Crisis_estate[3,5]=Crisis_estate[3,4]*(3^0.5)
matrix Crisis_estate[3,6]=Crisis_estate[3,2]/Crisis_estate[3,5]

sum CAR3_eu if Financialcrisis=="Crisis" & AcquirorNACEmajorsector == "Real estate activities"
matrix Crisis_estate[5,1]=r(N)
matrix Crisis_estate[5,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis" & AcquirorNACEmajorsector == "Real estate activities"
matrix Crisis_estate[5,3]=r(sum)
matrix Crisis_estate[5,4]=(Crisis_estate[5,3]^0.5)/Crisis_estate[5,1]
matrix Crisis_estate[5,5]=Crisis_estate[5,4]*(3^0.5)
matrix Crisis_estate[5,6]=Crisis_estate[5,2]/Crisis_estate[5,5]

sum CAR3_eu if Financialcrisis=="Crisis" & AcquirorNACEmajorsector != "Real estate activities"
matrix Crisis_estate[6,1]=r(N)
matrix Crisis_estate[6,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis" & AcquirorNACEmajorsector != "Real estate activities"
matrix Crisis_estate[6,3]=r(sum)
matrix Crisis_estate[6,4]=(Crisis_estate[6,3]^0.5)/Crisis_estate[6,1]
matrix Crisis_estate[6,5]=Crisis_estate[6,4]*(3^0.5)
matrix Crisis_estate[6,6]=Crisis_estate[6,2]/Crisis_estate[6,5]

matrix Crisis_estate[8,2]=Crisis_estate[2,2]-Crisis_estate[3,2]
matrix Crisis_estate[8,5]=(Crisis_estate[2,5]^2+Crisis_estate[3,5]^2)^0.5
matrix Crisis_estate[8,6]=Crisis_estate[8,2]/Crisis_estate[8,5]

matrix Crisis_estate[9,2]=Crisis_estate[5,2]-Crisis_estate[6,2]
matrix Crisis_estate[9,5]=(Crisis_estate[5,5]^2+Crisis_estate[6,5]^2)^0.5
matrix Crisis_estate[9,6]=Crisis_estate[9,2]/Crisis_estate[9,5]

matrix list Crisis_estate

putexcel set "Stata/Output/CAR differences per group", sheet("Crisis_estate") modify
putexcel A1=matrix(Crisis_estate), names
putexcel close
}

gen adjZscore2 = "Healthy"
replace adjZscore2 = "Grey zone" if TargetadjZscore < 2.6
replace adjZscore2 = "Distressed" if TargetadjZscore < 1.21
replace adjZscore2 = "Very distressed" if TargetadjZscore < 0
replace adjZscore2 = "Data Missing" if TargetadjZscore == .
```

```
encode adjZscore2, generate(cadjZscore2)


**** Testing differences in means for Crisis & Financial Distress ****
{
matrix Crisis_zscore = J(11,6,.)
matrix rownames Crisis_zscore = DataMissing Healthy Greyzone Distressed VeryDistressed .
    HealthyVSGreyzone HealthyVSDistressed HealthyVSVeryDistressed DistressedVSGreyzone
    DistressedVSVeryDistressed
matrix colnames Crisis_zscore = N CAR Variance StdDev StdDevCAR Tstat

sum CAR3_eu if adjZscore2=="Data Missing"
matrix Crisis_zscore[1,1]=r(N)
matrix Crisis_zscore[1,2]=r(mean)
sum AR_var_eu if adjZscore2=="Data Missing"
matrix Crisis_zscore[1,3]=r(sum)
matrix Crisis_zscore[1,4]=(Crisis_zscore[1,3]^0.5)/Crisis_zscore[1,1]
matrix Crisis_zscore[1,5]=Crisis_zscore[1,4]*(3^0.5)
matrix Crisis_zscore[1,6]=Crisis_zscore[1,2]/Crisis_zscore[1,5]

sum CAR3_eu if adjZscore2=="Healthy"
matrix Crisis_zscore[2,1]=r(N)
matrix Crisis_zscore[2,2]=r(mean)
sum AR_var_eu if adjZscore2=="Healthy"
matrix Crisis_zscore[2,3]=r(sum)
matrix Crisis_zscore[2,4]=(Crisis_zscore[2,3]^0.5)/Crisis_zscore[2,1]
matrix Crisis_zscore[2,5]=Crisis_zscore[2,4]*(3^0.5)
matrix Crisis_zscore[2,6]=Crisis_zscore[2,2]/Crisis_zscore[2,5]

sum CAR3_eu if adjZscore2=="Grey zone"
matrix Crisis_zscore[3,1]=r(N)
matrix Crisis_zscore[3,2]=r(mean)
sum AR_var_eu if adjZscore2=="Grey zone"
matrix Crisis_zscore[3,3]=r(sum)
matrix Crisis_zscore[3,4]=(Crisis_zscore[3,3]^0.5)/Crisis_zscore[3,1]
matrix Crisis_zscore[3,5]=Crisis_zscore[3,4]*(3^0.5)
matrix Crisis_zscore[3,6]=Crisis_zscore[3,2]/Crisis_zscore[3,5]

sum CAR3_eu if adjZscore2=="Distressed"
matrix Crisis_zscore[4,1]=r(N)
matrix Crisis_zscore[4,2]=r(mean)
sum AR_var_eu if adjZscore2=="Distressed"
matrix Crisis_zscore[4,3]=r(sum)
matrix Crisis_zscore[4,4]=(Crisis_zscore[4,3]^0.5)/Crisis_zscore[4,1]
matrix Crisis_zscore[4,5]=Crisis_zscore[4,4]*(3^0.5)
matrix Crisis_zscore[4,6]=Crisis_zscore[4,2]/Crisis_zscore[4,5]

sum CAR3_eu if adjZscore2=="Very distressed"
matrix Crisis_zscore[5,1]=r(N)
matrix Crisis_zscore[5,2]=r(mean)
sum AR_var_eu if adjZscore2=="Very distressed"
matrix Crisis_zscore[5,3]=r(sum)
matrix Crisis_zscore[5,4]=(Crisis_zscore[5,3]^0.5)/Crisis_zscore[5,1]
matrix Crisis_zscore[5,5]=Crisis_zscore[5,4]*(3^0.5)
matrix Crisis_zscore[5,6]=Crisis_zscore[5,2]/Crisis_zscore[5,5]

matrix Crisis_zscore[7,2]=Crisis_zscore[2,2]-Crisis_zscore[3,2]
matrix Crisis_zscore[7,5]=(Crisis_zscore[2,5]^2+Crisis_zscore[3,5]^2)^0.5
matrix Crisis_zscore[7,6]=Crisis_zscore[7,2]/Crisis_zscore[7,5]

matrix Crisis_zscore[8,2]=Crisis_zscore[2,2]-Crisis_zscore[4,2]
matrix Crisis_zscore[8,5]=(Crisis_zscore[2,5]^2+Crisis_zscore[4,5]^2)^0.5
matrix Crisis_zscore[8,6]=Crisis_zscore[8,2]/Crisis_zscore[8,5]

matrix Crisis_zscore[9,2]=Crisis_zscore[2,2]-Crisis_zscore[5,2]
matrix Crisis_zscore[9,5]=(Crisis_zscore[2,5]^2+Crisis_zscore[5,5]^2)^0.5
matrix Crisis_zscore[9,6]=Crisis_zscore[9,2]/Crisis_zscore[9,5]

matrix Crisis_zscore[10,2]=Crisis_zscore[4,2]-Crisis_zscore[3,2]
matrix Crisis_zscore[10,5]=(Crisis_zscore[4,5]^2+Crisis_zscore[3,5]^2)^0.5
```

```
matrix Crisis_zscore[10,6]=Crisis_zscore[10,2]/Crisis_zscore[10,5]

matrix Crisis_zscore[11,2]=Crisis_zscore[4,2]-Crisis_zscore[5,2]
matrix Crisis_zscore[11,5]=(Crisis_zscore[4,5]^2+Crisis_zscore[5,5]^2)^0.5
matrix Crisis_zscore[11,6]=Crisis_zscore[11,2]/Crisis_zscore[11,5]

matrix list Crisis_zscore

putexcel set "Stata/Output/CAR differences per group", sheet("Crisis_zscore") modify
putexcel A1=matrix(Crisis_zscore), names
putexcel close
}

**** Testing differences in means for Deal Order ****
{
matrix Dealord = J(8,6,.)
matrix rownames Dealord = 1 2 3 4 5 >2 . 1stVS>=2nd
matrix colnames Dealord = N CAR Variance StdDev StdDevCAR Tstat
sum CAR3_eu if Dealorder5yrrolling==1
matrix Dealord[1,1]=r(N)
matrix Dealord[1,2]=r(mean)
sum AR_var_eu if Dealorder5yrrolling==1
matrix Dealord[1,3]=r(sum)
matrix Dealord[1,4]=(Dealord[1,3]^0.5)/Dealord[1,1]
matrix Dealord[1,5]=Dealord[1,4]*(3^0.5)
matrix Dealord[1,6]=Dealord[1,2]/Dealord[1,5]

sum CAR3_eu if Dealorder5yrrolling==2
matrix Dealord[2,1]=r(N)
matrix Dealord[2,2]=r(mean)
sum AR_var_eu if Dealorder5yrrolling==2
matrix Dealord[2,3]=r(sum)
matrix Dealord[2,4]=(Dealord[2,3]^0.5)/Dealord[2,1]
matrix Dealord[2,5]=Dealord[2,4]*(3^0.5)
matrix Dealord[2,6]=Dealord[2,2]/Dealord[2,5]

sum CAR3_eu if Dealorder5yrrolling==3
matrix Dealord[3,1]=r(N)
matrix Dealord[3,2]=r(mean)
sum AR_var_eu if Dealorder5yrrolling==3
matrix Dealord[3,3]=r(sum)
matrix Dealord[3,4]=(Dealord[3,3]^0.5)/Dealord[3,1]
matrix Dealord[3,5]=Dealord[3,4]*(3^0.5)
matrix Dealord[3,6]=Dealord[3,2]/Dealord[3,5]

sum CAR3_eu if Dealorder5yrrolling==4
matrix Dealord[4,1]=r(N)
matrix Dealord[4,2]=r(mean)
sum AR_var_eu if Dealorder5yrrolling==4
matrix Dealord[4,3]=r(sum)
matrix Dealord[4,4]=(Dealord[4,3]^0.5)/Dealord[4,1]
matrix Dealord[4,5]=Dealord[4,4]*(3^0.5)
matrix Dealord[4,6]=Dealord[4,2]/Dealord[4,5]

sum CAR3_eu if Dealorder5yrrolling>4
matrix Dealord[5,1]=r(N)
matrix Dealord[5,2]=r(mean)
sum AR_var_eu if Dealorder5yrrolling>4
matrix Dealord[5,3]=r(sum)
matrix Dealord[5,4]=(Dealord[5,3]^0.5)/Dealord[5,1]
matrix Dealord[5,5]=Dealord[5,4]*(3^0.5)
matrix Dealord[5,6]=Dealord[5,2]/Dealord[5,5]

sum CAR3_eu if Dealorder5yrrolling>1
matrix Dealord[6,1]=r(N)
matrix Dealord[6,2]=r(mean)
sum AR_var_eu if Dealorder5yrrolling>1
matrix Dealord[6,3]=r(sum)
matrix Dealord[6,4]=(Dealord[6,3]^0.5)/Dealord[6,1]
matrix Dealord[6,5]=Dealord[6,4]*(3^0.5)
```

```
1207 matrix Dealord[6,6]=Dealord[6,2]/Dealord[6,5]

1209 matrix Dealord[8,2]=Dealord[1,2]-Dealord[6,2]
1210 matrix Dealord[8,5]=(Dealord[1,5]^2+Dealord[6,5]^2)^0.5
1211 matrix Dealord[8,6]=Dealord[8,2]/Dealord[8,5]

1213 matrix list Dealord

1215 matrix Dealord2 = J(7,6,.)
1216 matrix rownames Dealord2 = Infreqeunt Frequent 1stDeals >=2ndDeals . 1stInfreqVS1stFreq 1
     stFreqVS>=2ndFreq
1217 matrix colnames Dealord2 = N CAR Variance StdDev StdDevCAR T-stat
1218 sum CAR3_eu if Frequentacquirer=="Infrequent"
1219 matrix Dealord2[1,1]=r(N)
1220 matrix Dealord2[1,2]=r(mean)
1221 sum AR_var_eu if Frequentacquirer=="Infrequent"
1222 matrix Dealord2[1,3]=r(sum)
1223 matrix Dealord2[1,4]=(Dealord2[1,3]^0.5)/Dealord2[1,1]
1224 matrix Dealord2[1,5]=Dealord2[1,4]*(3^0.5)
1225 matrix Dealord2[1,6]=Dealord2[1,2]/Dealord2[1,5]

1227 sum CAR3_eu if Frequentacquirer=="Frequent"
1228 matrix Dealord2[2,1]=r(N)
1229 matrix Dealord2[2,2]=r(mean)
1230 sum AR_var_eu if Frequentacquirer=="Frequent"
1231 matrix Dealord2[2,3]=r(sum)
1232 matrix Dealord2[2,4]=(Dealord2[2,3]^0.5)/Dealord2[2,1]
1233 matrix Dealord2[2,5]=Dealord2[2,4]*(3^0.5)
1234 matrix Dealord2[2,6]=Dealord2[2,2]/Dealord2[2,5]

1236 sum CAR3_eu if Frequentacquirer=="Frequent"&Dealorder=="1"
1237 matrix Dealord2[3,1]=r(N)
1238 matrix Dealord2[3,2]=r(mean)
1239 sum AR_var_eu if Frequentacquirer=="Frequent"&Dealorder=="1"
1240 matrix Dealord2[3,3]=r(sum)
1241 matrix Dealord2[3,4]=(Dealord2[3,3]^0.5)/Dealord2[3,1]
1242 matrix Dealord2[3,5]=Dealord2[3,4]*(3^0.5)
1243 matrix Dealord2[3,6]=Dealord2[3,2]/Dealord2[3,5]

1245 sum CAR3_eu if Frequentacquirer=="Frequent"&Dealorder==">=2"
1246 matrix Dealord2[4,1]=r(N)
1247 matrix Dealord2[4,2]=r(mean)
1248 sum AR_var_eu if Frequentacquirer=="Frequent"&Dealorder==">=2"
1249 matrix Dealord2[4,3]=r(sum)
1250 matrix Dealord2[4,4]=(Dealord2[4,3]^0.5)/Dealord2[4,1]
1251 matrix Dealord2[4,5]=Dealord2[4,4]*(3^0.5)
1252 matrix Dealord2[4,6]=Dealord2[4,2]/Dealord2[4,5]

1254 matrix Dealord2[6,2]=Dealord2[1,2]-Dealord2[3,2]
1255 matrix Dealord2[6,5]=(Dealord2[1,5]^2+Dealord2[3,5]^2)^0.5
1256 matrix Dealord2[6,6]=Dealord2[6,2]/Dealord2[6,5]

1258 matrix Dealord2[7,2]=Dealord2[3,2]-Dealord2[4,2]
1259 matrix Dealord2[7,5]=(Dealord2[3,5]^2+Dealord2[4,5]^2)^0.5
1260 matrix Dealord2[7,6]=Dealord2[7,2]/Dealord2[7,5]

1262 matrix list Dealord2

1264 putexcel set "Stata/Output/CAR differences per group", sheet("Dealorder") modify
1265 putexcel A1=matrix(Dealord) A10=matrix(Dealord2), names
1266 putexcel close
1267 }

1269 **** Testing differences in means for Deal order & Method of payment ****
1270 {
1271 matrix Order_payment = J(16,6,.)
1272 matrix rownames Order_payment = 1stDeals Cash Mixed Stock Other Unknown 2ndDeals Cash Mixed
     Stock Other Unknown . CashVSCash MixedVSMixed StockVSStock
1273 matrix colnames Order_payment = N CAR Variance StdDev StdDevCAR T-stat
1274 sum CAR3_eu if Financialcrisis=="Crisis"
```

```
sum CAR3_eu if Dealorder=="1" & Methodofpayment=="Cash"
matrix Order_payment[2,1]=r(N)
matrix Order_payment[2,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Methodofpayment=="Cash"
matrix Order_payment[2,3]=r(sum)
matrix Order_payment[2,4]=(Order_payment[2,3]^0.5)/Order_payment[2,1]
matrix Order_payment[2,5]=Order_payment[2,4]*(3^0.5)
matrix Order_payment[2,6]=Order_payment[2,2]/Order_payment[2,5]

sum CAR3_eu if Dealorder=="1" & Methodofpayment=="Mixed"
matrix Order_payment[3,1]=r(N)
matrix Order_payment[3,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Methodofpayment=="Mixed"
matrix Order_payment[3,3]=r(sum)
matrix Order_payment[3,4]=(Order_payment[3,3]^0.5)/Order_payment[3,1]
matrix Order_payment[3,5]=Order_payment[3,4]*(3^0.5)
matrix Order_payment[3,6]=Order_payment[3,2]/Order_payment[3,5]

sum CAR3_eu if Dealorder=="1" & Methodofpayment=="Shares"
matrix Order_payment[4,1]=r(N)
matrix Order_payment[4,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Methodofpayment=="Shares"
matrix Order_payment[4,3]=r(sum)
matrix Order_payment[4,4]=(Order_payment[4,3]^0.5)/Order_payment[4,1]
matrix Order_payment[4,5]=Order_payment[4,4]*(3^0.5)
matrix Order_payment[4,6]=Order_payment[4,2]/Order_payment[4,5]

sum CAR3_eu if Dealorder=="1" & Methodofpayment=="Other"
matrix Order_payment[5,1]=r(N)
matrix Order_payment[5,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Methodofpayment=="Other"
matrix Order_payment[5,3]=r(sum)
matrix Order_payment[5,4]=(Order_payment[5,3]^0.5)/Order_payment[5,1]
matrix Order_payment[5,5]=Order_payment[5,4]*(3^0.5)
matrix Order_payment[5,6]=Order_payment[5,2]/Order_payment[5,5]

sum CAR3_eu if Dealorder=="1" & Methodofpayment=="Unknown"
matrix Order_payment[6,1]=r(N)
matrix Order_payment[6,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Methodofpayment=="Unknown"
matrix Order_payment[6,3]=r(sum)
matrix Order_payment[6,4]=(Order_payment[6,3]^0.5)/Order_payment[6,1]
matrix Order_payment[6,5]=Order_payment[6,4]*(3^0.5)
matrix Order_payment[6,6]=Order_payment[6,2]/Order_payment[6,5]

sum CAR3_eu if Dealorder==">=2" & Methodofpayment=="Cash"
matrix Order_payment[8,1]=r(N)
matrix Order_payment[8,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Methodofpayment=="Cash"
matrix Order_payment[8,3]=r(sum)
matrix Order_payment[8,4]=(Order_payment[8,3]^0.5)/Order_payment[8,1]
matrix Order_payment[8,5]=Order_payment[8,4]*(3^0.5)
matrix Order_payment[8,6]=Order_payment[8,2]/Order_payment[8,5]

sum CAR3_eu if Dealorder==">=2" & Methodofpayment=="Mixed"
matrix Order_payment[9,1]=r(N)
matrix Order_payment[9,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Methodofpayment=="Mixed"
matrix Order_payment[9,3]=r(sum)
matrix Order_payment[9,4]=(Order_payment[9,3]^0.5)/Order_payment[9,1]
matrix Order_payment[9,5]=Order_payment[9,4]*(3^0.5)
matrix Order_payment[9,6]=Order_payment[9,2]/Order_payment[9,5]

sum CAR3_eu if Dealorder==">=2" & Methodofpayment=="Shares"
matrix Order_payment[10,1]=r(N)
matrix Order_payment[10,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Methodofpayment=="Shares"
matrix Order_payment[10,3]=r(sum)
matrix Order_payment[10,4]=(Order_payment[10,3]^0.5)/Order_payment[10,1]
```

```
matrix Order_payment[10,5]=Order_payment[10,4]*(3^0.5)
matrix Order_payment[10,6]=Order_payment[10,2]/Order_payment[10,5]

sum CAR3_eu if Dealorder==">=2" & Methodofpayment=="Other"
matrix Order_payment[11,1]=r(N)
matrix Order_payment[11,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Methodofpayment=="Other"
matrix Order_payment[11,3]=r(sum)
matrix Order_payment[11,4]=(Order_payment[11,3]^0.5)/Order_payment[11,1]
matrix Order_payment[11,5]=Order_payment[11,4]*(3^0.5)
matrix Order_payment[11,6]=Order_payment[11,2]/Order_payment[11,5]

sum CAR3_eu if Dealorder==">=2" & Methodofpayment=="Unknown"
matrix Order_payment[12,1]=r(N)
matrix Order_payment[12,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Methodofpayment=="Unknown"
matrix Order_payment[12,3]=r(sum)
matrix Order_payment[12,4]=(Order_payment[12,3]^0.5)/Order_payment[12,1]
matrix Order_payment[12,5]=Order_payment[12,4]*(3^0.5)
matrix Order_payment[12,6]=Order_payment[12,2]/Order_payment[12,5]

matrix Order_payment[14,2]=Order_payment[2,2]-Order_payment[8,2]
matrix Order_payment[14,5]=(Order_payment[2,5]^2+Order_payment[8,5]^2)^0.5
matrix Order_payment[14,6]=Order_payment[14,2]/Order_payment[14,5]

matrix Order_payment[15,2]=Order_payment[3,2]-Order_payment[9,2]
matrix Order_payment[15,5]=(Order_payment[3,5]^2+Order_payment[9,5]^2)^0.5
matrix Order_payment[15,6]=Order_payment[15,2]/Order_payment[15,5]

matrix Order_payment[16,2]=Order_payment[4,2]-Order_payment[10,2]
matrix Order_payment[16,5]=(Order_payment[4,5]^2+Order_payment[10,5]^2)^0.5
matrix Order_payment[16,6]=Order_payment[16,2]/Order_payment[16,5]

matrix list Order_payment

putexcel set "Stata/Output/CAR differences per group", sheet("Order_payment") modify
putexcel A1=matrix(Order_payment), names
putexcel close
}

**** Testing differences in means for Deal order & Target listing ****
{
matrix Order_listed = J(10,6,.)
matrix rownames Order_listed = Public 1stDeals 1stInfreq 1stFreq 2ndDeals Private 1stDeals 1
    stInfreq 1stFreq 2ndDeals
matrix colnames Order_listed = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if Financialcrisis=="Crisis"

sum CAR3_eu if Dealorder=="1" & ListedTarget=="Public"
matrix Order_listed[2,1]=r(N)
matrix Order_listed[2,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & ListedTarget=="Public"
matrix Order_listed[2,3]=r(sum)
matrix Order_listed[2,4]=(Order_listed[2,3]^0.5)/Order_listed[2,1]
matrix Order_listed[2,5]=Order_listed[2,4]*(3^0.5)
matrix Order_listed[2,6]=Order_listed[2,2]/Order_listed[2,5]

sum CAR3_eu if Dealorder=="1" & ListedTarget=="Public" & Frequentacquirer=="Infrequent"
matrix Order_listed[3,1]=r(N)
matrix Order_listed[3,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & ListedTarget=="Public" & Frequentacquirer=="Infrequent"
matrix Order_listed[3,3]=r(sum)
matrix Order_listed[3,4]=(Order_listed[3,3]^0.5)/Order_listed[3,1]
matrix Order_listed[3,5]=Order_listed[3,4]*(3^0.5)
matrix Order_listed[3,6]=Order_listed[3,2]/Order_listed[3,5]

sum CAR3_eu if Dealorder=="1" & ListedTarget=="Public" & Frequentacquirer=="Frequent"
matrix Order_listed[4,1]=r(N)
matrix Order_listed[4,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & ListedTarget=="Public" & Frequentacquirer=="Frequent"
```

```
1414 matrix Order_listed[4,3]=r(sum)
1415 matrix Order_listed[4,4]=(Order_listed[4,3]^0.5)/Order_listed[4,1]
1416 matrix Order_listed[4,5]=Order_listed[4,4]*(3^0.5)
1417 matrix Order_listed[4,6]=Order_listed[4,2]/Order_listed[4,5]

1419 sum CAR3_eu if Dealorder==">=2" & ListedTarget=="Public"
1420 matrix Order_listed[5,1]=r(N)
1421 matrix Order_listed[5,2]=r(mean)
1422 sum AR_var_eu if Dealorder==">=2" & ListedTarget=="Public"
1423 matrix Order_listed[5,3]=r(sum)
1424 matrix Order_listed[5,4]=(Order_listed[5,3]^0.5)/Order_listed[5,1]
1425 matrix Order_listed[5,5]=Order_listed[5,4]*(3^0.5)
1426 matrix Order_listed[5,6]=Order_listed[5,2]/Order_listed[5,5]

1428 sum CAR3_eu if Dealorder=="1" & ListedTarget=="Private"
1429 matrix Order_listed[7,1]=r(N)
1430 matrix Order_listed[7,2]=r(mean)
1431 sum AR_var_eu if Dealorder=="1" & ListedTarget=="Private"
1432 matrix Order_listed[7,3]=r(sum)
1433 matrix Order_listed[7,4]=(Order_listed[7,3]^0.5)/Order_listed[7,1]
1434 matrix Order_listed[7,5]=Order_listed[7,4]*(3^0.5)
1435 matrix Order_listed[7,6]=Order_listed[7,2]/Order_listed[7,5]

1437 sum CAR3_eu if Dealorder=="1" & ListedTarget=="Private" & Frequentacquirer=="Infrequent"
1438 matrix Order_listed[8,1]=r(N)
1439 matrix Order_listed[8,2]=r(mean)
1440 sum AR_var_eu if Dealorder=="1" & ListedTarget=="Private" & Frequentacquirer=="Infrequent"
1441 matrix Order_listed[8,3]=r(sum)
1442 matrix Order_listed[8,4]=(Order_listed[8,3]^0.5)/Order_listed[8,1]
1443 matrix Order_listed[8,5]=Order_listed[8,4]*(3^0.5)
1444 matrix Order_listed[8,6]=Order_listed[8,2]/Order_listed[8,5]

1446 sum CAR3_eu if Dealorder=="1" & ListedTarget=="Private" & Frequentacquirer=="Frequent"
1447 matrix Order_listed[9,1]=r(N)
1448 matrix Order_listed[9,2]=r(mean)
1449 sum AR_var_eu if Dealorder=="1" & ListedTarget=="Private" & Frequentacquirer=="Frequent"
1450 matrix Order_listed[9,3]=r(sum)
1451 matrix Order_listed[9,4]=(Order_listed[9,3]^0.5)/Order_listed[9,1]
1452 matrix Order_listed[9,5]=Order_listed[9,4]*(3^0.5)
1453 matrix Order_listed[9,6]=Order_listed[9,2]/Order_listed[9,5]

1455 sum CAR3_eu if Dealorder==">=2" & ListedTarget=="Private"
1456 matrix Order_listed[10,1]=r(N)
1457 matrix Order_listed[10,2]=r(mean)
1458 sum AR_var_eu if Dealorder==">=2" & ListedTarget=="Private"
1459 matrix Order_listed[10,3]=r(sum)
1460 matrix Order_listed[10,4]=(Order_listed[10,3]^0.5)/Order_listed[10,1]
1461 matrix Order_listed[10,5]=Order_listed[10,4]*(3^0.5)
1462 matrix Order_listed[10,6]=Order_listed[10,2]/Order_listed[10,5]

1464 matrix list Order_listed

1466 putexcel set "Stata/Output/CAR differences per group", sheet("Order_listed") modify
1467 putexcel A1=matrix(Order_listed), names
1468 putexcel close
1469 }

1471 bysort AcquirerCEO (Dealorderoverall) : gen Positivedummy = "Positive" if _n==1&CAR3_eu > 0
1472 bysort AcquirerCEO (Dealorderoverall) : replace Positivedummy = "Negative" if _n==1&CAR3_eu < 0
1473 bysort AcquirerCEO (Dealorderoverall) : replace Positivedummy = Positivedummy[_n-1] if _n > 1

1475 **** Testing differences in means for Deal order & Positive/Negative CEO ****
1476 {
1477 matrix Order_positive = J(8,6,.)
1478 matrix rownames Order_positive = 1stDeals Positive Negative 2ndDeals Positive Negative . 2
     ndPositiveVSNegative
1479 matrix colnames Order_positive = N CAR Variance StdDev StdDevCAR T-stat
1480 sum CAR3_eu if Financialcrisis=="Crisis"

1482 sum CAR3_eu if Dealorder=="1" & Positivedummy=="Positive"
```

```
matrix Order_positive[2,1]=r(N)
matrix Order_positive[2,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Positivedummy=="Positive"
matrix Order_positive[2,3]=r(sum)
matrix Order_positive[2,4]=(Order_positive[2,3]^0.5)/Order_positive[2,1]
matrix Order_positive[2,5]=Order_positive[2,4]*(3^0.5)
matrix Order_positive[2,6]=Order_positive[2,2]/Order_positive[2,5]

sum CAR3_eu if Dealorder=="1" & Positivedummy=="Negative"
matrix Order_positive[3,1]=r(N)
matrix Order_positive[3,2]=r(mean)
sum AR_var_eu if Dealorder=="1" & Positivedummy=="Negative"
matrix Order_positive[3,3]=r(sum)
matrix Order_positive[3,4]=(Order_positive[3,3]^0.5)/Order_positive[3,1]
matrix Order_positive[3,5]=Order_positive[3,4]*(3^0.5)
matrix Order_positive[3,6]=Order_positive[3,2]/Order_positive[3,5]

sum CAR3_eu if Dealorder==">=2" & Positivedummy=="Positive"
matrix Order_positive[5,1]=r(N)
matrix Order_positive[5,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Positivedummy=="Positive"
matrix Order_positive[5,3]=r(sum)
matrix Order_positive[5,4]=(Order_positive[5,3]^0.5)/Order_positive[5,1]
matrix Order_positive[5,5]=Order_positive[5,4]*(3^0.5)
matrix Order_positive[5,6]=Order_positive[5,2]/Order_positive[5,5]

sum CAR3_eu if Dealorder==">=2" & Positivedummy=="Negative"
matrix Order_positive[6,1]=r(N)
matrix Order_positive[6,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Positivedummy=="Negative"
matrix Order_positive[6,3]=r(sum)
matrix Order_positive[6,4]=(Order_positive[6,3]^0.5)/Order_positive[6,1]
matrix Order_positive[6,5]=Order_positive[6,4]*(3^0.5)
matrix Order_positive[6,6]=Order_positive[6,2]/Order_positive[6,5]

matrix Order_positive[8,2]=Order_positive[5,2]-Order_positive[6,2]
matrix Order_positive[8,5]=(Order_positive[5,5]^2+Order_positive[6,5]^2)^0.5
matrix Order_positive[8,6]=Order_positive[8,2]/Order_positive[8,5]

matrix list Order_positive

putexcel set "Stata/Output/CAR differences per group", sheet("Order_positive") modify
putexcel A1=matrix(Order_positive), names
putexcel close
}

**** Testing differences in means for Deal order & Relatedness ****
{
matrix Order_relatedness = J(15,6,.)
matrix rownames Order_relatedness = Focused Infrequent Frequent Freq1st Freq2nd Unrelated
    Infrequent Frequent Freq1st Freq2nd . FocusedInfreqVSFreq UnrelatedInfreqVSFreq
    Focused1stVS2nd Unrelated1stVS2nd
matrix colnames Order_relatedness = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if Financialcrisis=="Crisis"

sum CAR3_eu if AcquisitionType=="Focused" & Frequentacquirer=="Infrequent"
matrix Order_relatedness[2,1]=r(N)
matrix Order_relatedness[2,2]=r(mean)
sum AR_var_eu if AcquisitionType=="Focused" & Frequentacquirer=="Infrequent"
matrix Order_relatedness[2,3]=r(sum)
matrix Order_relatedness[2,4]=(Order_relatedness[2,3]^0.5)/Order_relatedness[2,1]
matrix Order_relatedness[2,5]=Order_relatedness[2,4]*(3^0.5)
matrix Order_relatedness[2,6]=Order_relatedness[2,2]/Order_relatedness[2,5]

sum CAR3_eu if AcquisitionType=="Focused" & Frequentacquirer=="Frequent"
matrix Order_relatedness[3,1]=r(N)
matrix Order_relatedness[3,2]=r(mean)
sum AR_var_eu if AcquisitionType=="Focused" & Frequentacquirer=="Frequent"
matrix Order_relatedness[3,3]=r(sum)
matrix Order_relatedness[3,4]=(Order_relatedness[3,3]^0.5)/Order_relatedness[3,1]
```

```
1551 matrix Order_relatedness[3,5]=Order_relatedness[3,4]*(3^0.5)
1552 matrix Order_relatedness[3,6]=Order_relatedness[3,2]/Order_relatedness[3,5]

1554 sum CAR3_eu if AcquisitionType=="Focused" & Frequentacquirer=="Frequent" & Dealorder=="1"
1555 matrix Order_relatedness[4,1]=r(N)
1556 matrix Order_relatedness[4,2]=r(mean)
1557 sum AR_var_eu if AcquisitionType=="Focused" & Frequentacquirer=="Frequent" & Dealorder=="1"
1558 matrix Order_relatedness[4,3]=r(sum)
1559 matrix Order_relatedness[4,4]=(Order_relatedness[4,3]^0.5)/Order_relatedness[4,1]
1560 matrix Order_relatedness[4,5]=Order_relatedness[4,4]*(3^0.5)
1561 matrix Order_relatedness[4,6]=Order_relatedness[4,2]/Order_relatedness[4,5]

1563 sum CAR3_eu if AcquisitionType=="Focused" & Frequentacquirer=="Frequent" & Dealorder==">=2"
1564 matrix Order_relatedness[5,1]=r(N)
1565 matrix Order_relatedness[5,2]=r(mean)
1566 sum AR_var_eu if AcquisitionType=="Focused" & Frequentacquirer=="Frequent" & Dealorder==">=2"
1567 matrix Order_relatedness[5,3]=r(sum)
1568 matrix Order_relatedness[5,4]=(Order_relatedness[5,3]^0.5)/Order_relatedness[5,1]
1569 matrix Order_relatedness[5,5]=Order_relatedness[5,4]*(3^0.5)
1570 matrix Order_relatedness[5,6]=Order_relatedness[5,2]/Order_relatedness[5,5]

1572 sum CAR3_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Infrequent"
1573 matrix Order_relatedness[7,1]=r(N)
1574 matrix Order_relatedness[7,2]=r(mean)
1575 sum AR_var_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Infrequent"
1576 matrix Order_relatedness[7,3]=r(sum)
1577 matrix Order_relatedness[7,4]=(Order_relatedness[7,3]^0.5)/Order_relatedness[7,1]
1578 matrix Order_relatedness[7,5]=Order_relatedness[7,4]*(3^0.5)
1579 matrix Order_relatedness[7,6]=Order_relatedness[7,2]/Order_relatedness[7,5]

1581 sum CAR3_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Frequent"
1582 matrix Order_relatedness[8,1]=r(N)
1583 matrix Order_relatedness[8,2]=r(mean)
1584 sum AR_var_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Frequent"
1585 matrix Order_relatedness[8,3]=r(sum)
1586 matrix Order_relatedness[8,4]=(Order_relatedness[8,3]^0.5)/Order_relatedness[8,1]
1587 matrix Order_relatedness[8,5]=Order_relatedness[8,4]*(3^0.5)
1588 matrix Order_relatedness[8,6]=Order_relatedness[8,2]/Order_relatedness[8,5]

1590 sum CAR3_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Frequent" & Dealorder=="
     1"
1591 matrix Order_relatedness[9,1]=r(N)
1592 matrix Order_relatedness[9,2]=r(mean)
1593 sum AR_var_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Frequent" & Dealorder
     =="1"
1594 matrix Order_relatedness[9,3]=r(sum)
1595 matrix Order_relatedness[9,4]=(Order_relatedness[9,3]^0.5)/Order_relatedness[9,1]
1596 matrix Order_relatedness[9,5]=Order_relatedness[9,4]*(3^0.5)
1597 matrix Order_relatedness[9,6]=Order_relatedness[9,2]/Order_relatedness[9,5]

1599 sum CAR3_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Frequent" & Dealorder=="
     >=2"
1600 matrix Order_relatedness[10,1]=r(N)
1601 matrix Order_relatedness[10,2]=r(mean)
1602 sum AR_var_eu if AcquisitionType=="Diversification" & Frequentacquirer=="Frequent" & Dealorder
     ==">=2"
1603 matrix Order_relatedness[10,3]=r(sum)
1604 matrix Order_relatedness[10,4]=(Order_relatedness[10,3]^0.5)/Order_relatedness[10,1]
1605 matrix Order_relatedness[10,5]=Order_relatedness[10,4]*(3^0.5)
1606 matrix Order_relatedness[10,6]=Order_relatedness[10,2]/Order_relatedness[10,5]

1608 matrix Order_relatedness[12,2]=Order_relatedness[2,2]-Order_relatedness[3,2]
1609 matrix Order_relatedness[12,5]=(Order_relatedness[2,5]^2+Order_relatedness[3,5]^2)^0.5
1610 matrix Order_relatedness[12,6]=Order_relatedness[12,2]/Order_relatedness[12,5]

1612 matrix Order_relatedness[13,2]=Order_relatedness[7,2]-Order_relatedness[8,2]
1613 matrix Order_relatedness[13,5]=(Order_relatedness[7,5]^2+Order_relatedness[8,5]^2)^0.5
1614 matrix Order_relatedness[13,6]=Order_relatedness[13,2]/Order_relatedness[13,5]

1616 matrix Order_relatedness[14,2]=Order_relatedness[4,2]-Order_relatedness[5,2]
```

```
matrix Order_relatedness[14,5]=(Order_relatedness[4,5]^2+Order_relatedness[5,5]^2)^0.5
matrix Order_relatedness[14,6]=Order_relatedness[14,2]/Order_relatedness[14,5]

matrix Order_relatedness[15,2]=Order_relatedness[9,2]-Order_relatedness[10,2]
matrix Order_relatedness[15,5]=(Order_relatedness[9,5]^2+Order_relatedness[10,5]^2)^0.5
matrix Order_relatedness[15,6]=Order_relatedness[15,2]/Order_relatedness[15,5]

matrix list Order_relatedness

putexcel set "Stata/Output/CAR differences per group", sheet("Order_relatedness") modify
putexcel A1=matrix(Order_relatedness), names
putexcel close
}

gen TobinsQ_level = "High" if TobinsQ>1.3
replace TobinsQ_level = "Low" if TobinsQ<1.3

**** Testing differences in means for Deal order & TobinsQ ****
{
matrix Order_TobQ = J(15,6,.)
matrix rownames Order_TobQ = HighQ Infrequent Frequent Freq1st Freq2nd LowQ Infrequent Frequent
      Freq1st Freq2nd . HighQInfreqVSFreq LowQInfreqVSFreq HighQ1stVS2nd LowQ1stVS2nd
matrix colnames Order_TobQ = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if Financialcrisis=="Crisis"

sum CAR3_eu if TobinsQ_level=="High" & Frequentacquirer=="Infrequent"
matrix Order_TobQ[2,1]=r(N)
matrix Order_TobQ[2,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="High" & Frequentacquirer=="Infrequent"
matrix Order_TobQ[2,3]=r(sum)
matrix Order_TobQ[2,4]=(Order_TobQ[2,3]^0.5)/Order_TobQ[2,1]
matrix Order_TobQ[2,5]=Order_TobQ[2,4]*(3^0.5)
matrix Order_TobQ[2,6]=Order_TobQ[2,2]/Order_TobQ[2,5]

sum CAR3_eu if TobinsQ_level=="High" & Frequentacquirer=="Frequent"
matrix Order_TobQ[3,1]=r(N)
matrix Order_TobQ[3,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="High" & Frequentacquirer=="Frequent"
matrix Order_TobQ[3,3]=r(sum)
matrix Order_TobQ[3,4]=(Order_TobQ[3,3]^0.5)/Order_TobQ[3,1]
matrix Order_TobQ[3,5]=Order_TobQ[3,4]*(3^0.5)
matrix Order_TobQ[3,6]=Order_TobQ[3,2]/Order_TobQ[3,5]

sum CAR3_eu if TobinsQ_level=="High" & Frequentacquirer=="Frequent" & Dealorder=="1"
matrix Order_TobQ[4,1]=r(N)
matrix Order_TobQ[4,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="High" & Frequentacquirer=="Frequent" & Dealorder=="1"
matrix Order_TobQ[4,3]=r(sum)
matrix Order_TobQ[4,4]=(Order_TobQ[4,3]^0.5)/Order_TobQ[4,1]
matrix Order_TobQ[4,5]=Order_TobQ[4,4]*(3^0.5)
matrix Order_TobQ[4,6]=Order_TobQ[4,2]/Order_TobQ[4,5]

sum CAR3_eu if TobinsQ_level=="High" & Frequentacquirer=="Frequent" & Dealorder==">=2"
matrix Order_TobQ[5,1]=r(N)
matrix Order_TobQ[5,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="High" & Frequentacquirer=="Frequent" & Dealorder==">=2"
matrix Order_TobQ[5,3]=r(sum)
matrix Order_TobQ[5,4]=(Order_TobQ[5,3]^0.5)/Order_TobQ[5,1]
matrix Order_TobQ[5,5]=Order_TobQ[5,4]*(3^0.5)
matrix Order_TobQ[5,6]=Order_TobQ[5,2]/Order_TobQ[5,5]

sum CAR3_eu if TobinsQ_level=="Low" & Frequentacquirer=="Infrequent"
matrix Order_TobQ[7,1]=r(N)
matrix Order_TobQ[7,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="Low" & Frequentacquirer=="Infrequent"
matrix Order_TobQ[7,3]=r(sum)
matrix Order_TobQ[7,4]=(Order_TobQ[7,3]^0.5)/Order_TobQ[7,1]
matrix Order_TobQ[7,5]=Order_TobQ[7,4]*(3^0.5)
matrix Order_TobQ[7,6]=Order_TobQ[7,2]/Order_TobQ[7,5]
```

```
sum CAR3_eu if TobinsQ_level=="Low" & Frequentacquirer=="Frequent"
matrix Order_TobQ[8,1]=r(N)
matrix Order_TobQ[8,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="Low" & Frequentacquirer=="Frequent"
matrix Order_TobQ[8,3]=r(sum)
matrix Order_TobQ[8,4]=(Order_TobQ[8,3]^0.5)/Order_TobQ[8,1]
matrix Order_TobQ[8,5]=Order_TobQ[8,4]*(3^0.5)
matrix Order_TobQ[8,6]=Order_TobQ[8,2]/Order_TobQ[8,5]

sum CAR3_eu if TobinsQ_level=="Low" & Frequentacquirer=="Frequent" & Dealorder=="1"
matrix Order_TobQ[9,1]=r(N)
matrix Order_TobQ[9,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="Low" & Frequentacquirer=="Frequent" & Dealorder=="1"
matrix Order_TobQ[9,3]=r(sum)
matrix Order_TobQ[9,4]=(Order_TobQ[9,3]^0.5)/Order_TobQ[9,1]
matrix Order_TobQ[9,5]=Order_TobQ[9,4]*(3^0.5)
matrix Order_TobQ[9,6]=Order_TobQ[9,2]/Order_TobQ[9,5]

sum CAR3_eu if TobinsQ_level=="Low" & Frequentacquirer=="Frequent" & Dealorder==">=2"
matrix Order_TobQ[10,1]=r(N)
matrix Order_TobQ[10,2]=r(mean)
sum AR_var_eu if TobinsQ_level=="Low" & Frequentacquirer=="Frequent" & Dealorder==">=2"
matrix Order_TobQ[10,3]=r(sum)
matrix Order_TobQ[10,4]=(Order_TobQ[10,3]^0.5)/Order_TobQ[10,1]
matrix Order_TobQ[10,5]=Order_TobQ[10,4]*(3^0.5)
matrix Order_TobQ[10,6]=Order_TobQ[10,2]/Order_TobQ[10,5]

matrix Order_TobQ[12,2]=Order_TobQ[2,2]-Order_TobQ[3,2]
matrix Order_TobQ[12,5]=(Order_TobQ[2,5]^2+Order_TobQ[3,5]^2)^0.5
matrix Order_TobQ[12,6]=Order_TobQ[12,2]/Order_TobQ[12,5]

matrix Order_TobQ[13,2]=Order_TobQ[7,2]-Order_TobQ[8,2]
matrix Order_TobQ[13,5]=(Order_TobQ[7,5]^2+Order_TobQ[8,5]^2)^0.5
matrix Order_TobQ[13,6]=Order_TobQ[13,2]/Order_TobQ[13,5]

matrix Order_TobQ[14,2]=Order_TobQ[4,2]-Order_TobQ[5,2]
matrix Order_TobQ[14,5]=(Order_TobQ[4,5]^2+Order_TobQ[5,5]^2)^0.5
matrix Order_TobQ[14,6]=Order_TobQ[14,2]/Order_TobQ[14,5]

matrix Order_TobQ[15,2]=Order_TobQ[9,2]-Order_TobQ[10,2]
matrix Order_TobQ[15,5]=(Order_TobQ[9,5]^2+Order_TobQ[10,5]^2)^0.5
matrix Order_TobQ[15,6]=Order_TobQ[15,2]/Order_TobQ[15,5]

matrix list Order_TobQ

putexcel set "Stata/Output/CAR differences per group", sheet("Order_TobQ") modify
putexcel A1=matrix(Order_TobQ), names
putexcel close
}

**** Testing differences in means for Deal order & Crisis ****
{
matrix Dealord3 = J(9,6,.)
matrix rownames Dealord3 = Crisis 1stDeals >=2ndDeals >=2ndDeals NotCrisis Crisis . 1
    stCrisisVS2ndCrisis 2ndNotCrisisVS2ndCrisis
matrix colnames Dealord3 = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if Financialcrisis=="Crisis"
matrix Dealord3[1,1]=r(N)
matrix Dealord3[1,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis"
matrix Dealord3[1,3]=r(sum)
matrix Dealord3[1,4]=(Dealord3[1,3]^0.5)/Dealord3[1,1]
matrix Dealord3[1,5]=Dealord3[1,4]*(3^0.5)
matrix Dealord3[1,6]=Dealord3[1,2]/Dealord3[1,5]

sum CAR3_eu if Financialcrisis=="Crisis" & Dealorder=="1"
matrix Dealord3[2,1]=r(N)
matrix Dealord3[2,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis" & Dealorder=="1"
matrix Dealord3[2,3]=r(sum)
```

```
1755 matrix Dealord3[2,4]=(Dealord3[2,3]^0.5)/Dealord3[2,1]
1756 matrix Dealord3[2,5]=Dealord3[2,4]*(3^0.5)
1757 matrix Dealord3[2,6]=Dealord3[2,2]/Dealord3[2,5]

1759 sum CAR3_eu if Financialcrisis=="Crisis" & Dealorder==">=2"
1760 matrix Dealord3[3,1]=r(N)
1761 matrix Dealord3[3,2]=r(mean)
1762 sum AR_var_eu if Financialcrisis=="Crisis" & Dealorder==">=2"
1763 matrix Dealord3[3,3]=r(sum)
1764 matrix Dealord3[3,4]=(Dealord3[3,3]^0.5)/Dealord3[3,1]
1765 matrix Dealord3[3,5]=Dealord3[3,4]*(3^0.5)
1766 matrix Dealord3[3,6]=Dealord3[3,2]/Dealord3[3,5]

1768 sum CAR3_eu if Dealorder==">=2"
1769 matrix Dealord3[4,1]=r(N)
1770 matrix Dealord3[4,2]=r(mean)
1771 sum AR_var_eu if Dealorder==">=2"
1772 matrix Dealord3[4,3]=r(sum)
1773 matrix Dealord3[4,4]=(Dealord3[4,3]^0.5)/Dealord3[4,1]
1774 matrix Dealord3[4,5]=Dealord3[4,4]*(3^0.5)
1775 matrix Dealord3[4,6]=Dealord3[4,2]/Dealord3[4,5]

1777 sum CAR3_eu if Dealorder==">=2" & Financialcrisis=="Not Crisis"
1778 matrix Dealord3[5,1]=r(N)
1779 matrix Dealord3[5,2]=r(mean)
1780 sum AR_var_eu if Dealorder==">=2" & Financialcrisis=="Not Crisis"
1781 matrix Dealord3[5,3]=r(sum)
1782 matrix Dealord3[5,4]=(Dealord3[5,3]^0.5)/Dealord3[5,1]
1783 matrix Dealord3[5,5]=Dealord3[5,4]*(3^0.5)
1784 matrix Dealord3[5,6]=Dealord3[5,2]/Dealord3[5,5]

1786 sum CAR3_eu if Dealorder==">=2" & Financialcrisis=="Crisis"
1787 matrix Dealord3[6,1]=r(N)
1788 matrix Dealord3[6,2]=r(mean)
1789 sum AR_var_eu if Dealorder==">=2" & Financialcrisis=="Crisis"
1790 matrix Dealord3[6,3]=r(sum)
1791 matrix Dealord3[6,4]=(Dealord3[6,3]^0.5)/Dealord3[6,1]
1792 matrix Dealord3[6,5]=Dealord3[6,4]*(3^0.5)
1793 matrix Dealord3[6,6]=Dealord3[6,2]/Dealord3[6,5]

1795 matrix Dealord3[8,2]=Dealord3[2,2]-Dealord3[3,2]
1796 matrix Dealord3[8,5]=(Dealord3[2,5]^2+Dealord3[3,5]^2)^0.5
1797 matrix Dealord3[8,6]=Dealord3[8,2]/Dealord3[8,5]

1799 matrix Dealord3[9,2]=Dealord3[5,2]-Dealord3[6,2]
1800 matrix Dealord3[9,5]=(Dealord3[5,5]^2+Dealord3[6,5]^2)^0.5
1801 matrix Dealord3[9,6]=Dealord3[9,2]/Dealord3[9,5]

1803 matrix list Dealord3

1805 matrix Dealord4 = J(9,6,.)
1806 matrix rownames Dealord4 = Crisis 1stDeals >=2ndDeals >=2ndDeals NotCrisis Crisis . 1
     stCrisisVS2ndCrisis 2ndNotCrisisVS2ndCrisis
1807 matrix colnames Dealord4 = N CAR Variance StdDev StdDevCAR T-stat
1808 sum CAR3_eu if Financialcrisis=="Crisis"&Frequentacquirer=="Frequent"
1809 matrix Dealord4[1,1]=r(N)
1810 matrix Dealord4[1,2]=r(mean)
1811 sum AR_var_eu if Financialcrisis=="Crisis"&Frequentacquirer=="Frequent"
1812 matrix Dealord4[1,3]=r(sum)
1813 matrix Dealord4[1,4]=(Dealord4[1,3]^0.5)/Dealord4[1,1]
1814 matrix Dealord4[1,5]=Dealord4[1,4]*(3^0.5)
1815 matrix Dealord4[1,6]=Dealord4[1,2]/Dealord4[1,5]

1817 sum CAR3_eu if Financialcrisis=="Crisis" & Dealorder=="1"&Frequentacquirer=="Frequent"
1818 matrix Dealord4[2,1]=r(N)
1819 matrix Dealord4[2,2]=r(mean)
1820 sum AR_var_eu if Financialcrisis=="Crisis" & Dealorder=="1"&Frequentacquirer=="Frequent"
1821 matrix Dealord4[2,3]=r(sum)
1822 matrix Dealord4[2,4]=(Dealord4[2,3]^0.5)/Dealord4[2,1]
1823 matrix Dealord4[2,5]=Dealord4[2,4]*(3^0.5)
```

```
matrix Dealord4[2,6]=Dealord4[2,2]/Dealord4[2,5]

sum CAR3_eu if Financialcrisis=="Crisis" & Dealorder==">=2"&Frequentacquirer=="Frequent"
matrix Dealord4[3,1]=r(N)
matrix Dealord4[3,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis" & Dealorder==">=2"&Frequentacquirer=="Frequent"
matrix Dealord4[3,3]=r(sum)
matrix Dealord4[3,4]=(Dealord4[3,3]^0.5)/Dealord4[3,1]
matrix Dealord4[3,5]=Dealord4[3,4]*(3^0.5)
matrix Dealord4[3,6]=Dealord4[3,2]/Dealord4[3,5]

sum CAR3_eu if Dealorder==">=2"&Frequentacquirer=="Frequent"
matrix Dealord4[4,1]=r(N)
matrix Dealord4[4,2]=r(mean)
sum AR_var_eu if Dealorder==">=2"&Frequentacquirer=="Frequent"
matrix Dealord4[4,3]=r(sum)
matrix Dealord4[4,4]=(Dealord4[4,3]^0.5)/Dealord4[4,1]
matrix Dealord4[4,5]=Dealord4[4,4]*(3^0.5)
matrix Dealord4[4,6]=Dealord4[4,2]/Dealord4[4,5]

sum CAR3_eu if Dealorder==">=2" & Financialcrisis=="Not Crisis"&Frequentacquirer=="Frequent"
matrix Dealord4[5,1]=r(N)
matrix Dealord4[5,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Financialcrisis=="Not Crisis"&Frequentacquirer=="Frequent"
matrix Dealord4[5,3]=r(sum)
matrix Dealord4[5,4]=(Dealord4[5,3]^0.5)/Dealord4[5,1]
matrix Dealord4[5,5]=Dealord4[5,4]*(3^0.5)
matrix Dealord4[5,6]=Dealord4[5,2]/Dealord4[5,5]

sum CAR3_eu if Dealorder==">=2" & Financialcrisis=="Crisis"&Frequentacquirer=="Frequent"
matrix Dealord4[6,1]=r(N)
matrix Dealord4[6,2]=r(mean)
sum AR_var_eu if Dealorder==">=2" & Financialcrisis=="Crisis"&Frequentacquirer=="Frequent"
matrix Dealord4[6,3]=r(sum)
matrix Dealord4[6,4]=(Dealord4[6,3]^0.5)/Dealord4[6,1]
matrix Dealord4[6,5]=Dealord4[6,4]*(3^0.5)
matrix Dealord4[6,6]=Dealord4[6,2]/Dealord4[6,5]

matrix Dealord4[8,2]=Dealord4[2,2]-Dealord4[3,2]
matrix Dealord4[8,5]=(Dealord4[2,5]^2+Dealord4[3,5]^2)^0.5
matrix Dealord4[8,6]=Dealord4[8,2]/Dealord4[8,5]

matrix Dealord4[9,2]=Dealord4[5,2]-Dealord4[6,2]
matrix Dealord4[9,5]=(Dealord4[5,5]^2+Dealord4[6,5]^2)^0.5
matrix Dealord4[9,6]=Dealord4[9,2]/Dealord4[9,5]

matrix list Dealord4

putexcel set "Stata/Output/CAR differences per group", sheet("Dealordercrisis") modify
putexcel A1=matrix(Dealord3) A12=matrix(Dealord4), names
putexcel close
}

**** Testing differences in means for Deal order & Crisis2 ****
{
matrix Dealcrisis = J(9,6,.)
matrix rownames Dealcrisis = Crisis Infrequent Frequent Freq1st Freq1stIT Freq1stFIN Freq2nd
    Freq2ndIT Freq2ndFIN
matrix colnames Dealcrisis = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if Financialcrisis=="Crisis"
matrix Dealcrisis[1,1]=r(N)
matrix Dealcrisis[1,2]=r(mean)
sum AR_var_eu if Financialcrisis=="Crisis"
matrix Dealcrisis[1,3]=r(sum)
matrix Dealcrisis[1,4]=(Dealcrisis[1,3]^0.5)/Dealcrisis[1,1]
matrix Dealcrisis[1,5]=Dealcrisis[1,4]*(3^0.5)
matrix Dealcrisis[1,6]=Dealcrisis[1,2]/Dealcrisis[1,5]

sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Infrequent"
matrix Dealcrisis[2,1]=r(N)
```

```
1893 matrix Dealcrisis[2,2]=r(mean)
1894 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Infrequent"
1895 matrix Dealcrisis[2,3]=r(sum)
1896 matrix Dealcrisis[2,4]=(Dealcrisis[2,3]^0.5)/Dealcrisis[2,1]
1897 matrix Dealcrisis[2,5]=Dealcrisis[2,4]*(3^0.5)
1898 matrix Dealcrisis[2,6]=Dealcrisis[2,2]/Dealcrisis[2,5]

1900 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent"
1901 matrix Dealcrisis[3,1]=r(N)
1902 matrix Dealcrisis[3,2]=r(mean)
1903 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent"
1904 matrix Dealcrisis[3,3]=r(sum)
1905 matrix Dealcrisis[3,4]=(Dealcrisis[3,3]^0.5)/Dealcrisis[3,1]
1906 matrix Dealcrisis[3,5]=Dealcrisis[3,4]*(3^0.5)
1907 matrix Dealcrisis[3,6]=Dealcrisis[3,2]/Dealcrisis[3,5]

1909 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder=="1"
1910 matrix Dealcrisis[4,1]=r(N)
1911 matrix Dealcrisis[4,2]=r(mean)
1912 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder=="1"
1913 matrix Dealcrisis[4,3]=r(sum)
1914 matrix Dealcrisis[4,4]=(Dealcrisis[4,3]^0.5)/Dealcrisis[4,1]
1915 matrix Dealcrisis[4,5]=Dealcrisis[4,4]*(3^0.5)
1916 matrix Dealcrisis[4,6]=Dealcrisis[4,2]/Dealcrisis[4,5]

1918 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder=="1" &
     ITcrisis=="IT crisis"
1919 matrix Dealcrisis[5,1]=r(N)
1920 matrix Dealcrisis[5,2]=r(mean)
1921 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder=="1" &
     ITcrisis=="IT crisis"
1922 matrix Dealcrisis[5,3]=r(sum)
1923 matrix Dealcrisis[5,4]=(Dealcrisis[5,3]^0.5)/Dealcrisis[5,1]
1924 matrix Dealcrisis[5,5]=Dealcrisis[5,4]*(3^0.5)
1925 matrix Dealcrisis[5,6]=Dealcrisis[5,2]/Dealcrisis[5,5]

1927 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder=="1" &
     ITcrisis=="Not IT crisis"
1928 matrix Dealcrisis[6,1]=r(N)
1929 matrix Dealcrisis[6,2]=r(mean)
1930 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder=="1" &
     ITcrisis=="Not IT crisis"
1931 matrix Dealcrisis[6,3]=r(sum)
1932 matrix Dealcrisis[6,4]=(Dealcrisis[6,3]^0.5)/Dealcrisis[6,1]
1933 matrix Dealcrisis[6,5]=Dealcrisis[6,4]*(3^0.5)
1934 matrix Dealcrisis[6,6]=Dealcrisis[6,2]/Dealcrisis[6,5]

1936 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder==">=2"
1937 matrix Dealcrisis[7,1]=r(N)
1938 matrix Dealcrisis[7,2]=r(mean)
1939 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder==">=2"
1940 matrix Dealcrisis[7,3]=r(sum)
1941 matrix Dealcrisis[7,4]=(Dealcrisis[7,3]^0.5)/Dealcrisis[7,1]
1942 matrix Dealcrisis[7,5]=Dealcrisis[7,4]*(3^0.5)
1943 matrix Dealcrisis[7,6]=Dealcrisis[7,2]/Dealcrisis[7,5]

1945 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder==">=2" &
     ITcrisis=="IT crisis"
1946 matrix Dealcrisis[8,1]=r(N)
1947 matrix Dealcrisis[8,2]=r(mean)
1948 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder==">=2" &
     ITcrisis=="IT crisis"
1949 matrix Dealcrisis[8,3]=r(sum)
1950 matrix Dealcrisis[8,4]=(Dealcrisis[8,3]^0.5)/Dealcrisis[8,1]
1951 matrix Dealcrisis[8,5]=Dealcrisis[8,4]*(3^0.5)
1952 matrix Dealcrisis[8,6]=Dealcrisis[8,2]/Dealcrisis[8,5]

1954 sum CAR3_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder==">=2" &
     ITcrisis=="Not IT crisis"
1955 matrix Dealcrisis[9,1]=r(N)
```

```
1956 matrix Dealcrisis[9,2]=r(mean)
1957 sum AR_var_eu if Financialcrisis=="Crisis" & Frequentacquirer=="Frequent" & Dealorder==">=2" &
     ITcrisis=="Not IT crisis"
1958 matrix Dealcrisis[9,3]=r(sum)
1959 matrix Dealcrisis[9,4]=(Dealcrisis[9,3]^0.5)/Dealcrisis[9,1]
1960 matrix Dealcrisis[9,5]=Dealcrisis[9,4]*(3^0.5)
1961 matrix Dealcrisis[9,6]=Dealcrisis[9,2]/Dealcrisis[9,5]

1963 matrix list Dealcrisis

1965 putexcel set "Stata/Output/CAR differences per group", sheet("Dealordercrisis2") modify
1966 putexcel A1=matrix(Dealcrisis), names
1967 putexcel close
1968 }

1970 **** Testing for differences in means for Domestic ****
1971 {
1972 matrix Dom_listed = J(11,6,.)
1973 matrix rownames Dom_listed = Domestic Listed Unlisted Cross-country Listed Unlisted .
     DomesticListedVSUnlisted CrossListedVSUnlisted ListedVSListed UnlistedVSUnlisted
1974 matrix colnames Dom_listed = N CAR Variance StdDev StdDevCAR T-stat

1976 sum CAR3_eu if Crosscountry=="Domestic" & ListedTarget == "Public"
1977 matrix Dom_listed[2,1]=r(N)
1978 matrix Dom_listed[2,2]=r(mean)
1979 sum AR_var_eu if Crosscountry=="Domestic" & ListedTarget == "Public"
1980 matrix Dom_listed[2,3]=r(sum)
1981 matrix Dom_listed[2,4]=(Dom_listed[2,3]^0.5)/Dom_listed[2,1]
1982 matrix Dom_listed[2,5]=Dom_listed[2,4]*(3^0.5)
1983 matrix Dom_listed[2,6]=Dom_listed[2,2]/Dom_listed[2,5]

1985 sum CAR3_eu if Crosscountry=="Domestic" & ListedTarget == "Private"
1986 matrix Dom_listed[3,1]=r(N)
1987 matrix Dom_listed[3,2]=r(mean)
1988 sum AR_var_eu if Crosscountry=="Domestic" & ListedTarget == "Private"
1989 matrix Dom_listed[3,3]=r(sum)
1990 matrix Dom_listed[3,4]=(Dom_listed[3,3]^0.5)/Dom_listed[3,1]
1991 matrix Dom_listed[3,5]=Dom_listed[3,4]*(3^0.5)
1992 matrix Dom_listed[3,6]=Dom_listed[3,2]/Dom_listed[3,5]

1994 sum CAR3_eu if Crosscountry=="Cross-country" & ListedTarget == "Public"
1995 matrix Dom_listed[5,1]=r(N)
1996 matrix Dom_listed[5,2]=r(mean)
1997 sum AR_var_eu if Crosscountry=="Cross-country" & ListedTarget == "Public"
1998 matrix Dom_listed[5,3]=r(sum)
1999 matrix Dom_listed[5,4]=(Dom_listed[5,3]^0.5)/Dom_listed[5,1]
2000 matrix Dom_listed[5,5]=Dom_listed[5,4]*(3^0.5)
2001 matrix Dom_listed[5,6]=Dom_listed[5,2]/Dom_listed[5,5]

2003 sum CAR3_eu if Crosscountry=="Cross-country" & ListedTarget == "Private"
2004 matrix Dom_listed[6,1]=r(N)
2005 matrix Dom_listed[6,2]=r(mean)
2006 sum AR_var_eu if Crosscountry=="Cross-country" & ListedTarget == "Private"
2007 matrix Dom_listed[6,3]=r(sum)
2008 matrix Dom_listed[6,4]=(Dom_listed[6,3]^0.5)/Dom_listed[6,1]
2009 matrix Dom_listed[6,5]=Dom_listed[6,4]*(3^0.5)
2010 matrix Dom_listed[6,6]=Dom_listed[6,2]/Dom_listed[6,5]

2012 matrix Dom_listed[8,2]=Dom_listed[2,2]-Dom_listed[3,2]
2013 matrix Dom_listed[8,5]=(Dom_listed[2,5]^2+Dom_listed[3,5]^2)^0.5
2014 matrix Dom_listed[8,6]=Dom_listed[8,2]/Dom_listed[8,5]

2016 matrix Dom_listed[9,2]=Dom_listed[5,2]-Dom_listed[6,2]
2017 matrix Dom_listed[9,5]=(Dom_listed[5,5]^2+Dom_listed[6,5]^2)^0.5
2018 matrix Dom_listed[9,6]=Dom_listed[9,2]/Dom_listed[9,5]

2020 matrix Dom_listed[10,2]=Dom_listed[2,2]-Dom_listed[5,2]
2021 matrix Dom_listed[10,5]=(Dom_listed[2,5]^2+Dom_listed[5,5]^2)^0.5
2022 matrix Dom_listed[10,6]=Dom_listed[10,2]/Dom_listed[10,5]
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```
matrix Dom_listed[11,2]=Dom_listed[3,2]-Dom_listed[6,2]
matrix Dom_listed[11,5]=(Dom_listed[3,5]^2+Dom_listed[6,5]^2)^0.5
matrix Dom_listed[11,6]=Dom_listed[11,2]/Dom_listed[11,5]

matrix list Dom_listed

putexcel set "Stata/Output/CAR differences per group", sheet("Domestic_listed") modify
putexcel A1=matrix(Dom_listed), names
putexcel close
}

gen CDquartiles = "Domestic"
sum KSCulturalDistance if Crosscountry=="Cross-country", detail
replace CDquartiles = "p100" if KSCulturalDistance > r(p75)
replace CDquartiles = "p75" if KSCulturalDistance > r(p50) & CDquartiles == "Domestic"
replace CDquartiles = "p50" if KSCulturalDistance > r(p25) & CDquartiles == "Domestic"
replace CDquartiles = "p25" if KSCulturalDistance > 0 & CDquartiles == "Domestic"

**** Testing for differences in means for Cultural Distance ****
{
matrix CD = J(12,6,.)
matrix rownames CD =Domestic Cross-country CDp25 CDp50 CDp75 CDp50-75 CDp100 . DomesticVSCross-
    country CDp25VSCDp50-75 CDp25VSCDp100 CDp50-75VSCDp100
matrix colnames CD = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if Crosscountry=="Domestic"
matrix CD[1,1]=r(N)
matrix CD[1,2]=r(mean)
sum AR_var_eu if Crosscountry=="Domestic"
matrix CD[1,3]=r(sum)
matrix CD[1,4]=(CD[1,3]^0.5)/CD[1,1]
matrix CD[1,5]=CD[1,4]*(3^0.5)
matrix CD[1,6]=CD[1,2]/CD[1,5]

sum CAR3_eu if Crosscountry=="Cross-country"
matrix CD[2,1]=r(N)
matrix CD[2,2]=r(mean)
sum AR_var_eu if Crosscountry=="Cross-country"
matrix CD[2,3]=r(sum)
matrix CD[2,4]=(CD[2,3]^0.5)/CD[2,1]
matrix CD[2,5]=CD[2,4]*(3^0.5)
matrix CD[2,6]=CD[2,2]/CD[2,5]

sum CAR3_eu if CDquartiles == "p25"
matrix CD[3,1]=r(N)
matrix CD[3,2]=r(mean)
sum AR_var_eu if CDquartiles == "p25"
matrix CD[3,3]=r(sum)
matrix CD[3,4]=(CD[3,3]^0.5)/CD[3,1]
matrix CD[3,5]=CD[3,4]*(3^0.5)
matrix CD[3,6]=CD[3,2]/CD[3,5]

sum CAR3_eu if CDquartiles == "p50"
matrix CD[4,1]=r(N)
matrix CD[4,2]=r(mean)
sum AR_var_eu if CDquartiles == "p50"
matrix CD[4,3]=r(sum)
matrix CD[4,4]=(CD[4,3]^0.5)/CD[4,1]
matrix CD[4,5]=CD[4,4]*(3^0.5)
matrix CD[4,6]=CD[4,2]/CD[4,5]

sum CAR3_eu if CDquartiles == "p75"
matrix CD[5,1]=r(N)
matrix CD[5,2]=r(mean)
sum AR_var_eu if CDquartiles == "p75"
matrix CD[5,3]=r(sum)
matrix CD[5,4]=(CD[5,3]^0.5)/CD[5,1]
matrix CD[5,5]=CD[5,4]*(3^0.5)
matrix CD[5,6]=CD[5,2]/CD[5,5]

sum CAR3_eu if CDquartiles == "p50"|CDquartiles == "p75"
```

```
matrix CD[6,1]=r(N)
matrix CD[6,2]=r(mean)
sum AR_var_eu if CDquartiles == "p50"|CDquartiles == "p75"
matrix CD[6,3]=r(sum)
matrix CD[6,4]=(CD[6,3]^0.5)/CD[6,1]
matrix CD[6,5]=CD[6,4]*(3^0.5)
matrix CD[6,6]=CD[6,2]/CD[6,5]

sum CAR3_eu if CDquartiles == "p100"
matrix CD[7,1]=r(N)
matrix CD[7,2]=r(mean)
sum AR_var_eu if CDquartiles == "p100"
matrix CD[7,3]=r(sum)
matrix CD[7,4]=(CD[7,3]^0.5)/CD[7,1]
matrix CD[7,5]=CD[7,4]*(3^0.5)
matrix CD[7,6]=CD[7,2]/CD[7,5]

matrix CD[9,2]=CD[1,2]-CD[2,2]
matrix CD[9,5]=(CD[1,5]^2+CD[2,5]^2)^0.5
matrix CD[9,6]=CD[9,2]/CD[9,5]

matrix CD[10,2]=CD[3,2]-CD[6,2]
matrix CD[10,5]=(CD[3,5]^2+CD[6,5]^2)^0.5
matrix CD[10,6]=CD[10,2]/CD[10,5]

matrix CD[11,2]=CD[3,2]-CD[7,2]
matrix CD[11,5]=(CD[3,5]^2+CD[7,5]^2)^0.5
matrix CD[11,6]=CD[11,2]/CD[11,5]

matrix CD[12,2]=CD[6,2]-CD[7,2]
matrix CD[12,5]=(CD[6,5]^2+CD[7,5]^2)^0.5
matrix CD[12,6]=CD[12,2]/CD[12,5]

matrix list CD

putexcel set "Stata/Output/CAR differences per group", sheet("CulturalDist") modify
putexcel A1=matrix(CD), names
putexcel close
}

**** Testing for differences in means for Cultural Distance2 ****
{
gen CDquartiles2 = "Domestic"
sum KSCulturalDistance if Crosscountry=="Cross-country", detail
replace CDquartiles2 = "p100" if KSCulturalDistance > r(p90)
replace CDquartiles2 = "p10100" if KSCulturalDistance > r(p10) & CDquartiles2 == "Domestic"
replace CDquartiles2 = "p10" if KSCulturalDistance > 0 & CDquartiles2 == "Domestic"

matrix CDtest = J(4,6,.)
matrix rownames CDtest =CDp10 CDp10100 CDp100 CDp10-CDp100
matrix colnames CDtest = N CAR Variance StdDev StdDevCAR T-stat
sum CAR3_eu if CDquartiles2 == "p10"
matrix CDtest[1,1]=r(N)
matrix CDtest[1,2]=r(mean)
sum AR_var_eu if CDquartiles2 == "p10"
matrix CDtest[1,3]=r(sum)
matrix CDtest[1,4]=(CDtest[1,3]^0.5)/CDtest[1,1]
matrix CDtest[1,5]=CDtest[1,4]*(3^0.5)
matrix CDtest[1,6]=CDtest[1,2]/CDtest[1,5]

sum CAR3_eu if CDquartiles2 == "p10100"
matrix CDtest[2,1]=r(N)
matrix CDtest[2,2]=r(mean)
sum AR_var_eu if CDquartiles2 == "p10100"
matrix CDtest[2,3]=r(sum)
matrix CDtest[2,4]=(CDtest[2,3]^0.5)/CDtest[2,1]
matrix CDtest[2,5]=CDtest[2,4]*(3^0.5)
matrix CDtest[2,6]=CDtest[2,2]/CDtest[2,5]

sum CAR3_eu if CDquartiles2 == "p100"
```

```
matrix CDtest[3,1]=r(N)
matrix CDtest[3,2]=r(mean)
sum AR_var_eu if CDquartiles2 == "p100"
matrix CDtest[3,3]=r(sum)
matrix CDtest[3,4]=(CDtest[3,3]^0.5)/CDtest[3,1]
matrix CDtest[3,5]=CDtest[3,4]*(3^0.5)
matrix CDtest[3,6]=CDtest[3,2]/CDtest[3,5]

matrix CDtest[4,2]=CDtest[1,2]-CDtest[3,2]
matrix CDtest[4,5]=(CDtest[1,5]^2+CDtest[3,5]^2)^0.5
matrix CDtest[4,6]=CDtest[4,2]/CDtest[4,5]

matrix list CDtest

putexcel set "Stata/Output/CAR differences per group", sheet("CulturalDist") modify
putexcel A1=matrix(CD) A20=matrix(CDtest), names
putexcel close
}

**** Testing for differences in means for Cultural Distance & Relatedness ****
{
matrix CDrelated = J(13,6,.)
matrix rownames CDrelated = CDq1 CDq1_Related CDq1_Unrelated CDq23 CDq23_Related CDq23_
    Unrelated CDq4 CDq4_Related CDq4_Unrelated . CDq1_Related-Unrelated CDq23_Related-
    Unrelated CDq4_Related-Unrelated
matrix colnames CDrelated = N CAR Variance StdDev StdDevCAR T-stat

sum CAR3_eu if CDquartiles == "p25"
matrix CDrelated[1,1]=r(N)
matrix CDrelated[1,2]=r(mean)
sum AR_var_eu if CDquartiles == "p25"
matrix CDrelated[1,3]=r(sum)
matrix CDrelated[1,4]=(CDrelated[1,3]^0.5)/CDrelated[1,1]
matrix CDrelated[1,5]=CDrelated[1,4]*(3^0.5)
matrix CDrelated[1,6]=CDrelated[1,2]/CDrelated[1,5]

sum CAR3_eu if CDquartiles == "p25" & AcquisitionType == "Focused"
matrix CDrelated[2,1]=r(N)
matrix CDrelated[2,2]=r(mean)
sum AR_var_eu if CDquartiles == "p25" & AcquisitionType == "Focused"
matrix CDrelated[2,3]=r(sum)
matrix CDrelated[2,4]=(CDrelated[2,3]^0.5)/CDrelated[2,1]
matrix CDrelated[2,5]=CDrelated[2,4]*(3^0.5)
matrix CDrelated[2,6]=CDrelated[2,2]/CDrelated[2,5]

sum CAR3_eu if CDquartiles == "p25" & AcquisitionType == "Diversification"
matrix CDrelated[3,1]=r(N)
matrix CDrelated[3,2]=r(mean)
sum AR_var_eu if CDquartiles == "p25" & AcquisitionType == "Diversification"
matrix CDrelated[3,3]=r(sum)
matrix CDrelated[3,4]=(CDrelated[3,3]^0.5)/CDrelated[3,1]
matrix CDrelated[3,5]=CDrelated[3,4]*(3^0.5)
matrix CDrelated[3,6]=CDrelated[3,2]/CDrelated[3,5]

sum CAR3_eu if CDquartiles == "p50"|CDquartiles == "p75"
matrix CDrelated[4,1]=r(N)
matrix CDrelated[4,2]=r(mean)
sum AR_var_eu if CDquartiles == "p50"|CDquartiles == "p75"
matrix CDrelated[4,3]=r(sum)
matrix CDrelated[4,4]=(CDrelated[4,3]^0.5)/CDrelated[4,1]
matrix CDrelated[4,5]=CDrelated[4,4]*(3^0.5)
matrix CDrelated[4,6]=CDrelated[4,2]/CDrelated[4,5]

sum CAR3_eu if (CDquartiles == "p50"|CDquartiles == "p75") & AcquisitionType == "Focused"
matrix CDrelated[5,1]=r(N)
matrix CDrelated[5,2]=r(mean)
sum AR_var_eu if (CDquartiles == "p50"|CDquartiles == "p75") & AcquisitionType == "Focused"
matrix CDrelated[5,3]=r(sum)
matrix CDrelated[5,4]=(CDrelated[5,3]^0.5)/CDrelated[5,1]
matrix CDrelated[5,5]=CDrelated[5,4]*(3^0.5)
```

```
2231 matrix CDrelated[5,6]=CDrelated[5,2]/CDrelated[5,5]

2233 sum CAR3_eu if (CDquartiles == "p50"|CDquartiles == "p75") & AcquisitionType == "
         Diversification"
2234 matrix CDrelated[6,1]=r(N)
2235 matrix CDrelated[6,2]=r(mean)
2236 sum AR_var_eu if (CDquartiles == "p50"|CDquartiles == "p75") & AcquisitionType == "
         Diversification"
2237 matrix CDrelated[6,3]=r(sum)
2238 matrix CDrelated[6,4]=(CDrelated[6,3]^0.5)/CDrelated[6,1]
2239 matrix CDrelated[6,5]=CDrelated[6,4]*(3^0.5)
2240 matrix CDrelated[6,6]=CDrelated[6,2]/CDrelated[6,5]

2242 sum CAR3_eu if CDquartiles == "p100"
2243 matrix CDrelated[7,1]=r(N)
2244 matrix CDrelated[7,2]=r(mean)
2245 sum AR_var_eu if CDquartiles == "p100"
2246 matrix CDrelated[7,3]=r(sum)
2247 matrix CDrelated[7,4]=(CDrelated[7,3]^0.5)/CDrelated[7,1]
2248 matrix CDrelated[7,5]=CDrelated[7,4]*(3^0.5)
2249 matrix CDrelated[7,6]=CDrelated[7,2]/CDrelated[7,5]

2251 sum CAR3_eu if CDquartiles == "p100" & AcquisitionType == "Focused"
2252 matrix CDrelated[8,1]=r(N)
2253 matrix CDrelated[8,2]=r(mean)
2254 sum AR_var_eu if CDquartiles == "p100" & AcquisitionType == "Focused"
2255 matrix CDrelated[8,3]=r(sum)
2256 matrix CDrelated[8,4]=(CDrelated[8,3]^0.5)/CDrelated[8,1]
2257 matrix CDrelated[8,5]=CDrelated[8,4]*(3^0.5)
2258 matrix CDrelated[8,6]=CDrelated[8,2]/CDrelated[8,5]

2260 sum CAR3_eu if CDquartiles == "p100" & AcquisitionType == "Diversification"
2261 matrix CDrelated[9,1]=r(N)
2262 matrix CDrelated[9,2]=r(mean)
2263 sum AR_var_eu if CDquartiles == "p100" & AcquisitionType == "Diversification"
2264 matrix CDrelated[9,3]=r(sum)
2265 matrix CDrelated[9,4]=(CDrelated[8,3]^0.5)/CDrelated[8,1]
2266 matrix CDrelated[9,5]=CDrelated[8,4]*(3^0.5)
2267 matrix CDrelated[9,6]=CDrelated[8,2]/CDrelated[8,5]

2269 matrix CDrelated[11,2]=CDrelated[2,2]-CDrelated[3,2]
2270 matrix CDrelated[11,5]=(CDrelated[2,5]^2+CDrelated[3,5]^2)^0.5
2271 matrix CDrelated[11,6]=CDrelated[11,2]/CDrelated[11,5]

2273 matrix CDrelated[12,2]=CDrelated[5,2]-CDrelated[6,2]
2274 matrix CDrelated[12,5]=(CDrelated[5,5]^2+CDrelated[6,5]^2)^0.5
2275 matrix CDrelated[12,6]=CDrelated[12,2]/CDrelated[12,5]

2277 matrix CDrelated[13,2]=CDrelated[8,2]-CDrelated[9,2]
2278 matrix CDrelated[13,5]=(CDrelated[8,5]^2+CDrelated[9,5]^2)^0.5
2279 matrix CDrelated[13,6]=CDrelated[13,2]/CDrelated[13,5]

2281 matrix list CDrelated

2283 putexcel set "Stata/Output/CAR differences per group", sheet("CulturalDist") modify
2284 putexcel M2=matrix(CDrelated), names
2285 putexcel close
2286 }

2288 **** Testing for differences in means for Cultural Distance & Crisis ****
2289 {
2290 matrix CDcrisis = J(11,6,.)
2291 matrix rownames CDcrisis = NotCrisis NotCrisisCDq1 NotCrisisCDq23 NotCrisisCDq4 Crisis
         CrisisCDq1 CrisisCDq23 CrisisCDq4 DomesticNot DomesticCrisis CrisisDomesticVSCrisisCDq4
2292 matrix colnames CDcrisis = N CAR Variance StdDev StdDevCAR T-stat

2294 sum CAR3_eu if CDquartiles == "p25" & Financialcrisis == "Not Crisis"
2295 matrix CDcrisis[2,1]=r(N)
2296 matrix CDcrisis[2,2]=r(mean)
2297 sum AR_var_eu if CDquartiles == "p25" & Financialcrisis == "Not Crisis"
```

```
matrix CDcrisis[2,3]=r(sum)
matrix CDcrisis[2,4]=(CDcrisis[2,3]^0.5)/CDcrisis[2,1]
matrix CDcrisis[2,5]=CDcrisis[2,4]*(3^0.5)
matrix CDcrisis[2,6]=CDcrisis[2,2]/CDcrisis[2,5]

sum CAR3_eu if (CDquartiles == "p50"|CDquartiles == "p75") & Financialcrisis == "Not Crisis"
matrix CDcrisis[3,1]=r(N)
matrix CDcrisis[3,2]=r(mean)
sum AR_var_eu if (CDquartiles == "p50"|CDquartiles == "p75") & Financialcrisis == "Not Crisis"
matrix CDcrisis[3,3]=r(sum)
matrix CDcrisis[3,4]=(CDcrisis[3,3]^0.5)/CDcrisis[3,1]
matrix CDcrisis[3,5]=CDcrisis[3,4]*(3^0.5)
matrix CDcrisis[3,6]=CDcrisis[3,2]/CDcrisis[3,5]

sum CAR3_eu if CDquartiles == "p100" & Financialcrisis == "Not Crisis"
matrix CDcrisis[4,1]=r(N)
matrix CDcrisis[4,2]=r(mean)
sum AR_var_eu if CDquartiles == "p100" & Financialcrisis == "Not Crisis"
matrix CDcrisis[4,3]=r(sum)
matrix CDcrisis[4,4]=(CDcrisis[4,3]^0.5)/CDcrisis[4,1]
matrix CDcrisis[4,5]=CDcrisis[4,4]*(3^0.5)
matrix CDcrisis[4,6]=CDcrisis[4,2]/CDcrisis[4,5]

sum CAR3_eu if CDquartiles == "p25" & Financialcrisis == "Crisis"
matrix CDcrisis[6,1]=r(N)
matrix CDcrisis[6,2]=r(mean)
sum AR_var_eu if CDquartiles == "p25" & Financialcrisis == "Crisis"
matrix CDcrisis[6,3]=r(sum)
matrix CDcrisis[6,4]=(CDcrisis[6,3]^0.5)/CDcrisis[6,1]
matrix CDcrisis[6,5]=CDcrisis[6,4]*(3^0.5)
matrix CDcrisis[6,6]=CDcrisis[6,2]/CDcrisis[6,5]

sum CAR3_eu if (CDquartiles == "p50"|CDquartiles == "p75") & Financialcrisis == "Crisis"
matrix CDcrisis[7,1]=r(N)
matrix CDcrisis[7,2]=r(mean)
sum AR_var_eu if (CDquartiles == "p50"|CDquartiles == "p75") & Financialcrisis == "Crisis"
matrix CDcrisis[7,3]=r(sum)
matrix CDcrisis[7,4]=(CDcrisis[7,3]^0.5)/CDcrisis[7,1]
matrix CDcrisis[7,5]=CDcrisis[7,4]*(3^0.5)
matrix CDcrisis[7,6]=CDcrisis[7,2]/CDcrisis[7,5]

sum CAR3_eu if CDquartiles == "p100" & Financialcrisis == "Crisis"
matrix CDcrisis[8,1]=r(N)
matrix CDcrisis[8,2]=r(mean)
sum AR_var_eu if CDquartiles == "p100" & Financialcrisis == "Crisis"
matrix CDcrisis[8,3]=r(sum)
matrix CDcrisis[8,4]=(CDcrisis[8,3]^0.5)/CDcrisis[8,1]
matrix CDcrisis[8,5]=CDcrisis[8,4]*(3^0.5)
matrix CDcrisis[8,6]=CDcrisis[8,2]/CDcrisis[8,5]

sum CAR3_eu if CDquartiles == "Domestic" & Financialcrisis == "Not Crisis"
matrix CDcrisis[9,1]=r(N)
matrix CDcrisis[9,2]=r(mean)
sum AR_var_eu if CDquartiles == "Domestic" & Financialcrisis == "Not Crisis"
matrix CDcrisis[9,3]=r(sum)
matrix CDcrisis[9,4]=(CDcrisis[9,3]^0.5)/CDcrisis[9,1]
matrix CDcrisis[9,5]=CDcrisis[9,4]*(3^0.5)
matrix CDcrisis[9,6]=CDcrisis[9,2]/CDcrisis[9,5]

sum CAR3_eu if CDquartiles == "Domestic" & Financialcrisis == "Crisis"
matrix CDcrisis[10,1]=r(N)
matrix CDcrisis[10,2]=r(mean)
sum AR_var_eu if CDquartiles == "Domestic" & Financialcrisis == "Crisis"
matrix CDcrisis[10,3]=r(sum)
matrix CDcrisis[10,4]=(CDcrisis[10,3]^0.5)/CDcrisis[10,1]
matrix CDcrisis[10,5]=CDcrisis[10,4]*(3^0.5)
matrix CDcrisis[10,6]=CDcrisis[10,2]/CDcrisis[10,5]

matrix CDcrisis[11,2]=CDcrisis[10,2]-CDcrisis[8,2]
matrix CDcrisis[11,5]=(CDcrisis[10,5]^2+CDcrisis[8,5]^2)^0.5
```

```
matrix CDcrisis[11,6]=CDcrisis[11,2]/CDcrisis[11,5]

matrix list CDcrisis

putexcel set "Stata/Output/CAR differences per group", sheet("CulturalDist_crisis") modify
putexcel A1=matrix(CDcrisis), names
putexcel close
}

export excel Eventdate CAR3_eu CAR11_eu CAR21_eu Crosscountry AcquisitionType
    KSCulturalDistance logCD logCD2 using "Stata/Output/CAR for culturaldistance.xlsx",
    firstrow(variables) replace
}

*********************************************************
****              ****
****    FOR DISCUSSION       ****
****              ****
*********************************************************

{
**** Matrix with Target country and CAR for all cross-country acquisitions: ****
{
tab TargetCountry if Crosscountry=="Cross-country"
matrix tar_country = J(68,2,.)
levelsof TargetCountry if Crosscountry=="Cross-country", local(levels)
matrix rownames tar_country = `levels'
matrix colnames tar_country = N Mean
scalar i=1
foreach l of local levels {
 sum CAR3_eu if TargetCountry == "`l'" & Crosscountry=="Cross-country"
 matrix tar_country[scalar(i),1]=r(N)
 matrix tar_country[scalar(i),2]=r(mean)
 scalar i=i+1
}
matrix list tar_country
}

**** Matrix with Acquirer country for all acquisitions: ****
{
tab AcquirerCountry
matrix acq_country = J(25,2,.)
levelsof AcquirerCountry, local(levels)
matrix rownames acq_country = `levels'
matrix colnames acq_country = N Mean
scalar i=1
foreach l of local levels {
 sum CAR3_eu if AcquirerCountry == "`l'"
 matrix acq_country[scalar(i),1]=r(N)
 matrix acq_country[scalar(i),2]=r(mean)
 scalar i=i+1
}
matrix list acq_country
}

putexcel set "Stata/Output/CAR by region", sheet("Sheet1") modify
putexcel A1=matrix(acq_country) E1=matrix(tar_country), names
putexcel close

**** Matrix with Acquirer country and CAR for all domestic acquisitions: ****
{
tab AcquirerCountry if Crosscountry=="Domestic"
matrix acq_domestic = J(22,2,.)
levelsof AcquirerCountry if Crosscountry=="Domestic", local(levels)
matrix rownames acq_domestic = `levels'
matrix colnames acq_domestic = N Mean
scalar i=1
foreach l of local levels {
 sum CAR3_eu if AcquirerCountry == "`l'" & Crosscountry=="Domestic"
 matrix acq_domestic[scalar(i),1]=r(N)
```

```
 matrix acq_domestic[scalar(i),2]=r(mean)
 scalar i=i+1
}
matrix list acq_domestic

putexcel set "Stata/Output/CAR by region_domestic", sheet("Sheet1") modify
putexcel A1=matrix(acq_domestic), names
putexcel close
}
}

log close
translate eventstudy.smcl eventstudy.pdf, replace
```