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M&A Rationales and Their Effect on Value Creation

An empirical study on the Nordic stock market between 1998 - 2018

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Abstract

The purpose of this paper is to contribute to prior literature examining whether mergers and acquisitions (M&A) create value and if some deal types create relatively larger value for both acquiring and target shareholders. This study does that by investigating how the acquirer's rationale for entering a M&A deal affect value creation for acquiring and target firms. Further, we asses which factors that are important in explaining value creation within and across different acquisition types. The different deal types are categorized by the acquirer's rationale for entering a deal, which can be distinguished by capturing growth, consolidation, complementary assets and products, economies of scale, and financial related synergies. The data consists of 218 and 214 M&A deals in the Nordics between 1998 and 2018 for the acquirer and target sample, respectively.

Firstly, to examine if the acquirer's rationale for entering a M&A transaction impact firm value, we apply the event study methodology to evaluate the significance of announcement period average cumulative abnormal returns ($ACAR$) and differences in $ACAR$ across the five deal types. Secondly, in order to understand which factors are important in explaining the $ACAR$ within and across the different deal types, we conduct a cross-sectional regression using the payment method (cash or stock/mix), deal geography (cross-border or domestic), earnings multiple paid by the acquirer (EV/EBITDA), deal size (targets enterprise value) and deal direction (vertical or horizontal) as explanatory variables.

The results of this study are summarized as following: (1) M&A create significant value for acquiring shareholders in growth, economies of scale and consolidation deals. (2) Differences in $ACAR$ between deal types are not significant indicating that M&A rationale do not impact value creation for acquiring firms. (3) M&A create significant value for target shareholders across all deal types. (4) Target shareholders in growth deals experience a significantly larger $ACAR$ than in other deal types. Consolidation and financially motivated deals create significantly larger $ACAR$ for the target firm than deals motivated by complementary assets and products. The results suggest that acquirers M&A rationale have a significant impact on value creation for target firms. (5) The explanatory variables differ significantly in their impact of value creation for both acquiring and targets across the different M&A deals.

1. Introduction

1.1 Background

1.1.1 M&A in 2018 and future outlook

The year 2018 has been a strong year globally for M&A with $4.1 trillion in announced transaction volumes, earning the place as the third highest year ever in terms of deal volume. Compared to previous year, where the corresponding volume amounted to $3.6 trillion, the market is up approximately 16% (Albersmeier et al., 2019). They identify the drivers of increased deal volume as: improving cash flows, low cost of debt, positive global outlook and growth, strengthening balance sheets, CEO confidence and investor support. For the Nordic region, 2018 was also a relatively strong year with total announced deal value amounting to approximately $93 billion (Bureau Van Dijk, 2019). Deal volume was large across domestic and cross-border deals, strategic and financial buys, across all sectors but with technology and healthcare representing 17% and 12% of global volume in 2018. The outlook for 2019 is positive and M&A activity is predicted to remain strong both globally and in the Nordics. In Deloittes annual M&A outlook survey, 76% of the corporate respondents believes that deal volume will increase in upcoming year (Deloitte, 2019). For the private equity respondents, the equivalent number is 87%. The results of the survey show that the largest rationale for entering M&A deals in 2019 is be to expand current customer bases by tapping into new geographical markets or by acquiring companies with complementary products and services.

1.1.2 Defining M&A and synergies

Jensen (2005) argues that a firm's main purpose is to maximise value for their shareholders. Different firms adopt different strategies to maximise value. However, many firms will in their lifetime stand before a strategic decision to acquire or merge with another firm. They must then decide on whether a deal will create or destroy value for their shareholders. An acquisition is defined as a purchase of an asset which can be a corporate division, plant, property, or an entire company, where ultimate control and ownership is exchanged to the acquirer. In an acquisition, there is normally one buyer purchasing the assets or shares of the

seller. In a merger, two firms fuse to constitute one combined legal entity, usually by exchanging shares (Sherman, 2018).

M&A has become an increasingly employed strategy by managers to create value for shareholders (Albersmeier et al., 2019). At the core of this strategy, is the fundamental decision of whether value is maximized by buying new competence, earnings opportunities, additional customer bases and market entries or building it internally (Sherman, 2018). Any manager must analyse this trade-off before deciding on whether deal is favourable for shareholders. A M&A transaction can create value for acquiring firm through three mechanisms: target firm is purchased for a price lower than its intrinsic value; enhancement of the targets post-acquisition financial and operational performance on a stand-alone basis; realisation of synergies between the two firms (Cravatte and Masset, 2019). The latter one is considered the main reason why firms decide to engage in M&A activity (Mocciaro Li Destri et al., 2012). This is because synergies increase competitiveness and generate greater cash flow than what would be possible if the firms acted independently. If synergies exist, the value of the combined firm must be larger than the sum of the two firms when acting separately (Iversen, 2011).

Synergies can broadly be categorized into two groups: operational and financial. Operational synergies are mainly realised through improvements in sales or production as a result of the combination (Cravatte and Masset, 2019). The impact of operational synergies is found on the income statement and is either derived from revenue or cost enhancements. Revenue synergies are generated when a combination of two firm's product offerings and customer bases complement each other to generate larger revenue volume than would be possible if the firms acted independently. Cost synergies are generated when the combined cost base of the two firms is smaller than the sum of the cost bases of the two firms on a stand-alone basis. Financial synergies arise from different sources, e.g. through a lower combined weighted average cost of capital, when a firm's excess cash can fund investment opportunities that another firm has or when the combination leads to a lower tax base (Cravatte and Masset, 2019). The existence of synergies explains most M&A rationales and also why acquirers are willing to bid a premium on the market price of the target (Iversen, 2011).

1.2 Problem Discussion

M&A is currently and forecasted to be a large part of firm's strategic decisions in generating growth, improving efficiency, lowering costs etc. (Albersmeier et al., 2019). Therefore, it is relevant to investigate value creation generated by M&A and whether it can be empirically observed for both acquiring and target firms. This research topic has been greatly debated both in practice and in the field of academia (Sherman, 2018). The two most commonly adopted approaches to measure value creation in M&A are the accounting and shareholder approach. In former, value creation is quantified by improvements in operating accounting profits and other measures. In the shareholder approach, value creation is measured by the stock market cumulative abnormal returns, CAR, during the deal announcement period (Hussain et al., 2016).

It is commonly agreed by various researchers that M&A creates significant value for target firms (Lerkerød et al., 2017). However, in the case of acquiring firms, earlier research provides conflicting results. Some studies infer that M&A deals are value destroying for the buying firm, yielding a negative cumulative abnormal return during the event period (Haleblian et al., 2009; Tuch and O'Sullivan, 2007). Other scholars provide empirical evidence of relatively small positive abnormal returns for the acquiring firm shareholders (Alexandridis et al., 2017; Goergen and Renneboog, 2003). Also, there is research that infer that M&A activity neither creates nor destroys value, generating a net gain/loss of 0% on the event day (Bergström et al., 1993). In conclusion, there is no unanimous inference among researchers on whether M&A create value for acquiring shareholders or not.

With that said, a lot of recent research has been dedicated to studying why some deals create value while some do not. Various different factors have been tested to see how they impact value creation in M&A deals. For example, previous research has commonly been carried out to investigate how M&A performance is affected by the means of payment in a transaction (e.g. Lau et al., 2008; Rahman, 2002), whether the transaction is domestic or cross-border (e.g. Eckbo and Thorburn, 2000; Martynova and Renneboog, 2006), the size of the deal (e.g. Alhenawi and Stilwell, 2017; Seth et al., 2002). The main focus of this paper, is to investigate how the acquiring firm's rationale for entering a M&A deal affect value creation for both

acquiring and target shareholders. Seemingly less research has been attributed to investigate the relationship between M&A rationale and value creation. However, there are some noteworthy findings from previous scholars.

Chatterjee et al. (1986) find that a lot of prior studies concludes that the strategic fit between two firms is the most vital factor for a successful deal. They suggest that M&A motivated through operational synergies with firms having similar operational profiles create superior deal value. Other scholars reinforce that operational motives in acquisitions are better in creating value and emphasize that deals between firms which have complementary assets and products create greater value (Bena and Li, 2014; Maksimovic et al., 2011). Agrawal et al. (1992) and Singh and Montgomery (1987) identifies transactions motivated by gains through economies of scale and market power synergies as more value adding.

Hamza (2009) finds that M&A where managers prime motivation is to realise growth related synergies create relatively superior value. When diversification and financial synergies is the motive of the acquisition, the transaction is regarded less valuable and sometimes value destroying (Shanley and Correa, 1992). The mentioned researchers unanimously agree that non-conglomerate deals aiming to realise operational and strategic synergies outperform conglomerate deals seeking to generate financial synergies. In contrast, Elgers and Clark (1980) emphasizes that a greater source for value arrive from financially motivated deals, in the form of easier access to capital, lower bankruptcy cost and strengthened income stability. Lerkerød et al. (2017) supports this finding by concluding that diversifying M&A create relatively larger value than focused M&A for the acquiring firm. Evidently, there is a divergence in opinions regarding which types of M&A transactions create superior value. Thus, further research on this topic is required.

1.3 Research Questions and Contribution

A great amount of previous research investigating M&A and value creation from a quantitative approach focuses on whether M&A enhances the performance of acquiring and target firms by analysing announcement period stock market returns (Lerkerød et al., 2017). Further development has been made by researching the potential value drivers behind M&A

deals, mainly comparing M&A performance differences between small and large, cross-border and domestic, cash and stock deals (Das and Kapil, 2012). Studies which focuses on M&A rationale and value creation have mainly been binominal in nature, comparing conglomerate and non-conglomerate, related and unrelated, complementary and non-complementary deals to examine whether there exist significant deviations in the degree of value creation between the M&A types (Seth, 1990). Furthermore, only a handful of research in this area has been attributed to the Nordic market (Lerkerød et al., 2017). Therefore, the purpose of this study is to more specifically categorize acquirers M&A rationales and investigate whether different rationales lead to different performance in terms of stock market return during the deal announcement period. In order to understand differences in value creation for different deal types, we analyse value drivers within and across the deal types. This study will focus on M&A deals taking place in the Nordic market between 1998 and 2018. To conclude, the research questions which this study investigates are:

- ***Research Question 1 (RC_1):*** *How do the acquirer's rationale for entering a M&A deal affect value creation for acquiring and target shareholders?*

- ***Research Question 2 (RC_2):*** *Which factors are important in explaining value creation for acquirers and targets within and across the different deal types, categorized by M&A rationale?*

In order to answer the first research question, the acquirer's rationale for entering a deal is categorised by analysing press releases on announcement day which consists of manager's motivation on why they have entered the deal. Based on reviewed press releases by managers and literature review, the different motives for entering a transaction is categorised into the following[1]:

- *Growth:* strengthening presence in existing markets or entering new geographical markets, product or service segments. Underlining this rationale is revenue synergies captured as the acquirer is able to sell its products in new markets. Moreover, the

[1] A more detailed explanation of the different M&A rationales is found in *2.1 M&A Motives & Synergies.*

acquirer can benefit from cost advantages by avoiding to grow organically using internal resources.

- *Consolidation:* consolidating a market to gain pricing and negotiating power. These deals are argued to create both revenue and cost synergies.
- *Complementary products and assets:* revenue synergies captured through a cross-selling strategy as the acquirer can sell its products to the targets client base and vice-versa. When assets are complementary cost synergies can be achieved through a more efficient utilisation of resources.
- *Economies of scale:* cost synergies from a more efficient production, decreasing unit costs. These effects are brought upon by economies of scale, scope and learning.
- *Financial:* include financial synergies generated by lower cost of capital through diversification, lowering tax base, decreasing bankruptcy cost, providing cash for investment needs etc.

The first part of this paper is attributed to analysing previous literature. Based on previous findings, hypotheses are formulated on 1) whether M&A create value for acquiring and target shareholders 2) how the acquirer's rationale for entering a M&A deal affect value for both acquirers and targets 3) which factors is expected to drive value within and across the different deal types. This paper applies the event study methodology and a shareholder approach to test these hypotheses. Announcement period average cumulative abnormal returns, $ACAR$, are evaluated using relevant parametric and non-parametric tests to answer whether M&A is value adding for acquires and targets[2]. Importantly, value creation is in this paper defined and used synonymously with positive and statistically significant $ACAR$. In order to fully answer the first research question, a test for $ACAR$ differences between the different deal types is carried out.

The second research question is examined through a cross-sectional regression using firms individual cumulative abnormal return, CAR, as the dependent variable and different value

[2] Definition of average cumulative abnormal return is found in *4.1.3 Calculate and accumulate abnormal returns.*

drivers as explanatory variables. The determination of the explanatory variables is based on the literature review and consists of the following[3]:

- *Payment method:* how the acquirer finances the deal, which can be through cash, stock or a mix of these.
- *Deal geography:* whether the deal is domestic or cross-border.
- *Earnings multiple*: the earning multiple reflects how much is paid for each Euro earned by the target firm. It is here defined by the targets enterprise value divided by their earnings before interest depreciation and amortization (EV/EBITDA).
- *Deal size*: defined by the sum of the bid proposed by the acquirer for the equity stake and the net debt of the target firm.
- *Deal direction*: whether the deal is between vertical, horizontal or conglomerate counterparts.

The cross-sectional regression is carried out for all M&A rationale groups in both the acquiring and target sample. Lastly, the results from the event study and the cross-sectional regression is discussed in relation to previous literature. In the end, the aim of this paper is to contribute to previous research and simultaneously create a foundation for further research on the topic of M&A rationales and their impact on value creation.

2. Literature Review

2.1 M&A Rationales and Synergies

Before analysing previous literature on the empirical relationship between M&A motives and value creation it is imperative to understand why firms decide to engage in M&A activity. There have been several theories proposed to explain why M&A occur. These are usually bundled into two categories: non-value-maximizing and value-maximizing theories (Seth, 1990). The former propose that manager engage in M&A deals to maximise their own utility, while the latter suggest that M&A occur to maximise value for shareholders through the

[3] For a more detailed discussion around the value drivers see section 2*.3 Value Drivers Across Different Deal Types* and *4.2 Cross-Sectional Regression.*

realisation of synergies. Firm synergies serve as the value driver behind the majority of deals (Mocciaro Li Destri et al., 2012). When two entities work together and their combined output is greater than the sum of their individual output, synergies are present: 2 + 2 = 5 (Iversen, 2011).

The rationale for why acquirers are willing to pay a premium over market value to purchase another firm can be broken down in different ways. The categorisation applied and discussed in this paper is primarily based on the findings of Damodoran (2005). He describes the financial and operational motives and synergies for why firms decide to engage in M&A transactions. He breaks down the operational motives into four types, while treating different financial motives as one bundled group. The five identified M&A motives and synergies by Damodaran (2005) is discussed separately in this section of the literature review. The final part of this section is attributed to the non-value maximization theory of M&A and alternative rationales for pursing M&A activity.

2.1.1 Growth

According to Qudaiby and Khan (2014) the main motivation for engaging in M&A is to grow. M&A as a growth strategy has gained recent momentum globally due to augmented deregulation, liberalization interventions, globalization and privatization policies implemented by numerous countries worldwide (Gupta, 2012). A study carried out in the US set up to identify the most common motives for why managers decide to engage in M&A activity, shows that achieving growth more rapidly than possible by internal efforts and avoiding risk of internal start-ups in expansion, is ranked second and fourth, respectively (Kishore, 2009).

Deciding on a M&A growth strategy is not possible without a comprehensive assessment on the different options for growth. Managers must consider the impact which M&A has on cash flow related to synergies, organizational and strategical aspects and business risk before deciding to engage in a deal (Haberberg and Rieple, 2001). Many firms decide to pursue M&A opportunities as a strategy to penetrate new geographical markets since it is sometimes more efficient than growing organically and taking on the risk alone (Damodaran, 2005). For

example, when Scanfil Oyj decided to acquire PartnerTech AB from Bure Equity AB in 2015, the acquisition was argued to strengthen Scanfils market share and expand their operation in Sweden. Consequently, the deal was believed to increase the revenue, operating profit and earnings per share of Scanfil Oyj (Mergermarket, 2019). Firms also decide to grow into new key business areas through M&A arguing that it is more efficient than attempting to build the expertise internally (Sherman, 2018). For instance, in 2005, LjungbergGruppen AB agreed to acquire Atrium Fastigheter AB, explaining that they were aiming to develop and grow within the business segment of office management and commercial real estate (Mergermarket, 2019). Transactions rationalised by growth are common in mature industries with established actors, mainly as a mean to avoid the competitive response that can emerge when mature firms attempt to grow organically (Schoenberg, 2006). Growth motivated deals generates cost synergies through more efficient market entries and revenue synergies by increasing sales through new distribution channels. Finally, learning-related synergies may exist as presence on several markets can lead to gained knowledge from observing a more varied range of competitors (Iversen, 2011).

2.1.2 Consolidation

Growth motivated deals should not be interchanged with deals aiming to consolidate a market. In consolidation transactions, the focus is on combining actors within a market rather than on penetrating new markets (Damodaran, 2005). In contrast to growth motivated M&A where size of acquirer is imperative, market structure plays a more important role as acquisitions which intend to consolidate are more common in fragmented markets. Consolidation is regarded the oldest M&A motivation and is founded on the monopoly power theory. The theory argues that consolidation deals aim to eliminate competition and increase market shares to achieve cost and revenue synergies through an improvement in bargaining and market power (Straub, 2007).

On the cost side, a combined more powerful entity can benefit from an increase in bargaining power and negotiate more favourable deals with suppliers. Revenue synergies are realised through a weakened competitive landscape which allows the combined entity to exercise greater pricing power towards customers (Damodaran, 2005). Additionally, greater market

power impact the actions of other interest groups (e.g. shareholders, banks, employees, labour unions, pressure groups and governments) positively, to accommodate for a larger market player (Campbell et al., 1994). To illustrate, in 2011 Cloetta AB signed an agreement to acquire Leaf Holland BV to consolidate the confectionary market in the Nordics, Netherlands and Italy. The deal was communicated to generate revenue and cost related synergies of 65MSEK and 45MSEK respectively (Mergermarket, 2019). Moreover, consolidation through M&A can also lead to other synergies such as an increase in production efficiency (economies of scale) and cross-selling possibilities (complementary products). However, these are treated as separate M&A rationales as consolidation deals are mainly motivated by an increase in market, bargaining and pricing power (Sherman, 2018).

2.1.3 Complementary Products and Assets

According to several studies, M&A between companies with complementary products or assets are more common than between those without complementarities (Bena and Li, 2014; Hoberg and Phillips, 2010; Rhodes-Kropf and Robinson, 2008). An example of when complementarity attributes between two combining firms can create value is shared distribution channels for complementary products or services. Customers find it more convenient to bundle their purchases and by providing them with an incentive to purchase from one supplier rather than multiple suppliers synergy value is realised (Iversen, 2011). Further, when two firms have similar customer bases and complementary products, adopting a cross-selling strategy, where the target sells its products to the acquirer's client base and vice-versa, is synergetic from a revenue perspective (Cravatte and Masset, 2019).

Products which are complementary and which create value when combined are said to be interconnected in some way (Iversen, 2011). Similarly, Cool and Dierickx (1989) refers to asset complementarity as "asset-stock interconnectedness", where accumulating one stock of asset improves the performance of accumulating another stock of asset and vice-versa. For example, acquiring a strong R&D department will feed on the accumulation of the current internal market knowledge and the other way around. The learning curve from asset accumulation and interconnectedness ease the maintenance and improve the performance of other assets. Cyert et al. (1993) explains another learning-related synergy which emerges

when a firm acquires another firm with complementary products. This is the ability to collect information of customer reactions on dissimilar product attributes and consequently learn more about their customer's preferences. An example of a complementary driven deal was in 2014 when Jyske Bank decided to merge with BRFkredit a/s. The rationale was that the two firms complemented each other good in terms of business operations and strategy to create a fully integrated mortgage-credit and banking group in Denmark. The deal allows the combined group to offer a full range of financial services to all customer segments and spur growth through cross-selling opportunities between the mortgage-credit and bank client bases (Mergermarket, 2019). Finally, M&A motivated to access new technologies fall into this category as it is regarded a complementary asset which will enhance the performance of other internal assets (Iversen, 2011).

2.1.4 Economies of Scale

Many M&A deals are motivated by cost efficiency synergies derived from economies of scale. The notion of scale economics is that synergies are realised from a larger combined firm being able to produce a greater output which ultimately decreases the cost of each produced unit (Damodaran, 2005). Langlois (1999) observes four explanations of scale economics: 1) The increase in number of produced units leads to increased dilution of fixed costs resulting in a decrease of unit costs. 2) A combined firm will employ larger and more specialised machines enabling a more efficiently produced output. 3) More efficient division of labour as a larger firm is more organized and set-up costs related to changing tasks is reduced. 4) Plants and warehouses are more efficiently employed. Scale economics refers to the benefit of derived from producing a single output type while scope economics can yield the same synergetic effects by producing different outputs in the same production process (Sherman, 2018). Whereas scale and scope economics refer to cost benefits derived instantly from an increase in output, learning economics refers to the reduction of unit price over time brought upon knowledge development as a result of a larger and more advanced production process (Iversen, 2011).

Moreover, synergies from scale economics is not only derived from a more efficient production set-up but also from resource sharing. Moreover, by merging pool resources efficiently, a combined firm can reduce costs in different corporate functions (e.g. marketing, HR, R&D, sales). Evidently, deals motivated by economies of scale, scope and learning creates cost synergies as the combined firm is run more efficiently than what would be possible if they acted independently. Additionally, as a result of reduced costs, managers can decide to lower selling prices and still remain profitable. This strategy increases revenue if price elasticity of the demand is adequately high to offset the effect from lower prices. As a result, an economies of scale deal can generate both cost and revenue synergies (Iversen, 2011). An example of a scale economics driven deal was in 2016 when Wilh. Wilhelmsen ASA decided to merge with Wallenius Lines AB. Both parties explained that the deal would facilitate one joint governance structure which would simplify the business model. Further, the combined entity was argued to benefit from economies of scale through commercial, administrative and operational efficiency gains as well as a more optimal planning function. The deal was expected to generate synergy gains of USD 50-100m (Mergermarket, 2019).

2.1.5 Financial

The prior four discussed M&A motives are all operational in nature as a deal is argued to generate different efficiency gains in the day-to-day business. Financial deals are rationalised by enhancements in financial profile, investment opportunities and valuation of the combined firm (Cravatte & Masset, 2019). According to Kishore's (2009) study on the most common M&A motives, the number one ranked rationale for acquiring another firm is to take advantage of awareness that a firm is undervalued. Post-acquisition of an undervalued firm, the buying firm aims to create value by reselling it, either as a whole or in parts, at a profit (Schoenberg, 2006). This strategy is commonly referred to as asset-stripping and while these possibilities are hard to find, a modern employed variant is the unbundling strategy where firms purchase conglomerates which are valued at less than the sum of their individual constituent businesses. Value is realised when the individual firms are sold separately at a profit. Relatedly, Schoenberg (2006) explains how firms can create immediate EPS enhancement by acquiring firms which are traded at lower earnings multiples than itself. The combined firm is normally traded on the acquirers multiple post the deal and value is created.

Another common financial motive is tax related synergies brought upon from entering a deal. A profitable firm can benefit from acquiring a firm that has built up losses over time, as the accumulated losses of the target can be netted against future profits. This reduces the tax liabilities of the combined firm. Further, tax synergies can arise when the acquirer takes advantage of tax laws to write up the targets assets, increasing depreciation and thus saving tax costs (Damodaran, 2005). Financial synergies can also arise when one firm with high-return investment opportunities and limited cash acquires a firm that possesses a cash-rich balance sheet and limited investment opportunities, or vice-versa. Synergy value is created as profitable investments can be undertaken with the excess cash which would not be possible if the firms acted separately. This M&A rationale is most common when larger companies acquires smaller ones or when publicly traded companies acquires private ones (Damodaran, 2005).

Another financial related synergy arises when two firms with offsetting cyclicality in earnings combine. Earnings will become more predictable and stable. As a result, the combined firm will experience an increase in debt capacity, and can therefore borrow more money to fund profitable investment opportunities. An increase in borrowing also create tax benefits which manifests itself in lower cost of capital and thus increasing the value of the firm. The same rationale is applied when firms acquire for the sole purpose of diversification. A varied business portfolio reduces aggregate risk, lowers the cost of capital and increases firm valuation (Damodaran, 2005). An example of a financially motivated deal was in 2013 when Brinova Logistik AB was acquired by Catena AB. With this transaction, Catena argued that they will access more capital to finance their proprietary development projects in the Solna district (Mergermarket, 2019).

2.1.6 Alternative motives

The previously discussed managerial motives assumes M&A to be a rationale choice and that managers make decisions to maximise value for their shareholders (Damodaran, 2005). However, there are alternative theories on why firms engage in M&A activity which possibly explains why many deals fail to create value. One of those is the empire-building theory which argues that M&A opportunities is pursued by managers to maximise personal utility.

Some managers prefer acquisition policies as a mean to grow fast as they desire to control larger companies and enjoy greater power (Sherman, 2018). A development of the empire-building theory is Black's (1989) hypothesis of overpayment. He suggests that managers overpay in M&A deals as they are excessively optimistic and because their interest differs from their shareholders. Black (1989) explains that this is the main source of value destruction for acquiring firms in M&A deals. The empire-building motive and the overpayment effect roots back to the agency theory which argues that incentive problems arises as a result of the separation between owners and managers (Jensen and Meckling, 1976).

2.2 Value Creation in M&A and Differences Between M&A Rationales

Previous section focuses on prior literature carried out to define different deal rationales and how different deal types are expected to create value for in theory. This section of the literature review is firstly attributed to empirical findings of whether M&A creates significant value for acquiring and target shareholders. Secondly, the review is centred around the question whether some deal types, categorized by the acquirers M&A rationale, create significantly superior value than other deals. Lastly, the null hypotheses to be tested in order to answer the first research question is formulated.

2.2.1 M&A and value creation

There is a great amount of prior literature attributed to investigate whether M&A deals are value adding for acquiring and target shareholders. Cools et al. (2007) studies M&A performance between 1992 and 2006, focusing on deals in North America, Europe and Asia Pacific. They find that 58% of deals are value destroying for acquiring shareholders, with an average net loss of 1.20% in terms of announcement period $ACAR$. When considering the target shareholders in the sample, 56% of deals were value creating with an average total net gain of 1.80%. Holl et al. (1996) conducts a similar event study in the United Kingdom for the period 1980-1990. They conclude that M&A destroys value for acquiring firms, with an average net loss of 4.04%, while target firms experience an average net gain of 29.18%.

Goergen and Renneboog (2003) studies M&A value creation in the UK between 1993 and 2000. They observe a net loss of 1.65% and net gain of 29.32% for acquiring and target shareholders, respectively. The two researchers also conduct a study on the European M&A market during the same period and finds that acquiring shareholders experiences an average value gain of 1.00% while target shareholders gain on average 15.00% as a result of M&A transactions. More recently, Alexandridis et al. (2017) investigates value creation in 3,811 US deals announced between 2010 and 2015. They find that acquiring shareholders experience a significantly positive $ACAR$ of 1.42%.

In Sweden between 1982 and 1990, Bergström et al. (1993) finds that M&A neither create nor destroy value for the acquiring firm providing an $ACAR$ equal to 0.00% while the deal is value adding for target firms with a net gain of 17.00%. A more recent conducted study on the Nordic M&A market containing deals from 1995 to 2014, shows that target firms experience a significant average cumulative abnormal return of 21.01% during the defined three-day event window (Lerkerød et al., 2017). Further, they find that bidding firms experience a gain of 0.98%. However, the results are not statistically significant and the authors fail to reject the null hypothesis that M&A do not create significant value for acquiring firms.

To conclude there is not enough conclusive evidence of value creation in acquiring firms while scholars are in agreement that M&A create significant value for target shareholders. Based on this we develop the following hypotheses to partly answer the first research question:

- ***Hypothesis 1 (H_1)****: M&A do not create statistically significant cumulative abnormal returns for acquiring shareholders.*
- ***Hypothesis 2 (H_2):*** *M&A do create statistically significant positive cumulative abnormal returns for target shareholders.*

With other words, H_1 states that we expect M&A to create no significant value for acquiring shareholders. H_2 formulates that M&A is predicted to create significantly positive value for target shareholders.

2.2.2 M&A rationales and differences in value creation

Seth (1990) investigates the inconsistent findings of value creation for acquiring firms in M&A by examining whether different M&A rationales are associated with different degrees of value creation. He defines two types of M&A motives differing in the degree of relatedness between the merging firms. Combinations between related firms aim to maximize value for shareholders by realising operational synergies such as increased market power or cost efficiency improvement brought upon by scale economics. Unrelated M&A are driven by coinsurance synergies realised through imperfect correlation between earnings and cash flows which reduces bankruptcy risk and increases debt capacity. These deals generate risk diversification synergies as a portfolio of businesses with different economic cycles smooth earnings and essentially reduces the cost of capital (Seth, 1990). He applies the event study methodology on a sample consisting of 104 acquisition offers taking place between 1962 and 1979. The results suggest that related M&A, when horizontal in nature, generates a significantly larger announcement period $ACAR$ than unrelated deals. When vertical mergers are included in the sample, the significant differences in $ACAR$ vanishes. Seth (1990) fails to reject the null hypothesis that synergistic gains for unrelated and related M&A are equal and concludes that the acquirers M&A rationale do not impact value creation.

Singh and Montgomery (1987) also set up their study to answer the question of whether combining related rather than unrelated firms create superior value in M&A deals. They also apply the event study methodology, analysing $ACAR$ and absolute dollar gains for a sample of 105 mergers between 1975 and 1979. Significantly larger $ACAR$ and absolute dollar gains are observed for related firms in comparison to unrelated ones. They explain the results by arguing that operational synergies derived by for example market and pricing power gains are unobtainable in unrelated M&A. In contrast, synergies from unrelated M&A is present in related transactions. They conclude that value creation for related M&A should on average be greater than for unrelated deals. Other studies propose the same relationship between firm relatedness and value creation (Lubatkin, 1987; Shelton, 1988).

Elgers and Clark (1980) studies value creation of different merger types, through a CAR analysis of 337 acquiring firms and 66 target firms between 1957 and 1975. They focus on the performance difference between non-conglomerate and conglomerate M&A. In contrast to previously discussed research, they find that conglomerate mergers are more value adding for both acquiring and target shareholders. Lerkerød et al. (2017) also finds that M&A aiming for diversification lead to a significantly greater acquirer abnormal return in comparison to focused deals. They suggest that a possible explanation for the results is that managers in focused acquisitions tend to overestimate the value of operational synergies and consequently overpay for the target firm.

Where previous literature mainly focuses on the performance divergence between related (non-conglomerate) and unrelated (conglomerate) M&A, more recent research has been attributed to investigate differences in value creation for strategic-fit and complementary deals. Bena and Li (2014) demonstrate that firms combining with complementary attributes create superior deal value. They emphasize that technological complementarity between firm's innovation activities has a significantly positive impact on value for both the acquiring and target firm. This effect is reduced when firms has a higher degree of similarity in product markets. Hoberg and Phillips (2010) also investigates the post-merger performance of complementary deals. They focus on long-term profitability, revenue growth, and announcement period $ACAR$. The results indicate that performance is enhanced when the acquirer purchases a target which has a high degree of complementarity to the acquires product offering. Further studies to test whether complementary M&A generate relatively greater value arrives to the same conclusion (Maksimovic et al., 2011).

Goedhart et al. (2015) reinforces the argument that limited research has been carried out to investigate how different M&A rationales impact value creation. They hypothesize that this is due to the wide and non-objective way of classifying the different deal rationales. However, through a comprehensive literature review, the researchers identify specific strategic rationales in M&A which has created significant value in the past. They summarize successful takeovers as those where the acquirer aim to: 1) Acquire complementary technologies and skills faster and cheaper than would be possible if built in-house 2) Enhance the financial performance of the target company 3) Exploit the target business scalability specific for that

industry 4) Consolidate markets and remove surplus industry capacity by shutting down the targets production facilities to decrease supply 5) Enter new markets to enable cross-selling 6) Identify early winners and develop their activities. Goedhart et al. (2015) also identifies some M&A rationales that has rarely created value in the past. These are acquisitions which aim to: 1) Consolidate markets in order to gain pricing power 2) Achieve economies of scale benefits in abnormally fragmented markets 3) Transform the core functions of the combined firms 4) Buy firms which are believed to trade under intrinsic value.

Evidently, there is no unanimous agreement between researchers on how the acquirers deal rationale impact value creation and whether some deal types generate relatively larger abnormal returns for acquiring and target shareholders. On the basis of these inconclusive and contradictory findings we define the two following null hypotheses in order to fully answer the first research question:

- ***Hypothesis 3 (H_3):*** *No statistically significant difference in average cumulative abnormal returns between deal types, categorized by acquirers deal rationale, for acquiring firms.*
- ***Hypothesis 4 (H_4):*** *No statistically significant difference in average cumulative abnormal returns between deal types, categorized by acquirers deal rationale, for target firms.*

With other words, H_3 and H_4 states that value creation for acquiring and target shareholders in M&A do not depend on acquirer's rationale for entering the deal.

2.3 Value Drivers Within the Different Deal Types

In order to understand performance differences between deal types, we must investigate different potential drivers of value within and across the M&A rationale groups. Previous research provides a range of different value drivers in M&A deals. Some of the major ones is discussed in this section of the literature review. More specifically, this section will discuss previous research on how the payment method, deal geography, earnings multiple paid by the

acquirer, deal size and deal direction impact value in M&A. Lastly, in order to answer the second research question, the final two null hypotheses are formulated.

2.3.1 Payment Method

There is a large amount of literature comparing cash and stock financed deals in order to determine which payment method drive value in M&A. Rahman (2002) dually examines the long-term operating performance and the short-term stock market performance of acquiring firms paying cash versus stock. He concludes that the payment method is a significant value driver in M&A with the inference that cash deals create superior value to acquiring shareholders in relation to stock financed deals. Lau et al. (2008) investigates 72 M&A of Australian publicly listed firms during the period 1999-2004. Their findings indicate that cash paid acquisitions are generally more successful than equity ones, in terms of post-deal operating performance indicated by an increase in sales growth, profitability, cash flow, and operating efficiency. Furthermore, the results show that bidding firms in equity financed deals experience a decline or no enhancement of post-deal return on equity and assets. The conclusion that cash acquisitions create superior value in M&A deals relatively to stock financed acquisitions for bidding firms is agreed upon by the majority of researchers (Hamza, 2009).

A proposed explanation of this phenomenon is the signalling hypothesis discussed by Martynova and Renneboog (2006). Firstly, deciding to finance the deal with stocks can signal to the market that the acquirer is overvalued, which is then reflected by a lower abnormal return on announcement day. Further, the cash payment method means increasing leverage level which signals managers confidence in the firm's future ability to generate cash to maintain the larger debt volume. Empirically, it is also observed that leverage-increasing deals lead to superior stock price reactions (Jensen, 1986). In contrast to the case of acquiring firms, we find no conclusive evidence that the payment method has any significant effect on the degree of value creation for target firms.

2.3.2 Deal Geography

Another commonly discussed value driver in M&A is whether the deal is between domestic counterparts or conducted across national boundaries making it a cross-border deal. Martynova and Renneboog (2006) reveals through their study on the European M&A market that domestic acquisitions create significantly superior announcement period cumulative abnormal returns than cross-border ones, for both acquirers and targets. Eckbo and Thorburn (2000) examines the performance of Canadian domestic deals and cross-border deals with an US acquirer and Canadian target. They conclude that the domestic acquirers earn significant positive CAR in the event window, while U.S. acquirers experience CAR indistinguishable from zero. Furthermore, they present a possible explanation of the results by arguing that domestic acquirers possess greater knowledge of the local market. Therefore, they are in a better position than foreign acquirers to benefit from potential synergies after the deal.

Hazelkorn and Zenner (2004) argue that cross-border takeovers lead to superior announcement period abnormal returns than domestic ones. They explain that despite a potentially more difficult post M&A integration between two firms with different cultures, languages and social codes, cross-border deals enable firms to expose their product offering into a wider geographic market, gain local technological knowledge, and facilitate a lower cost production. Lerkerød et al. (2017) also investigates the impact that cross-border deals have on value creation for both acquiring and target firms. They find no significant relationship between transactions CAR and whether the deal has been carried out domestically or across national boundaries. With that said, the extensive research carried out on this topic is split in their conclusions.

2.3.3 Earnings multiple

The earnings multiple paid by the acquirer, here defined as the EV/EBITDA multiple, is another proposed driver of value in M&A deals. Goergen and Renneboog (2003) and Hazelkorn and Zenner (2004) demonstrates that buying firms trading at low earnings multiples, commonly referred to as value firms, tend to yield larger abnormal returns on announcement day. The explanation is that these deals contain lower risk because the bidding

firm is paying less for each earned Euro by the target. For target firms the relationship between value creation and the paid earnings multiple is inversely related to that of acquirers. A higher multiple paid is normally reflected in a larger bid premium and consequently a larger CAR for target firms upon announcement. This relationship is agreed upon by the majority of researchers investigating value drivers in M&A (Goergen and Renneboog, 2003).

2.3.4 Deal Size

Another commonly suggested value driver in M&A is the size of the deal. The majority of prior literature examining the relationship between takeover success and deal size indicate that large deals do not create value to the same extent as smaller ones, for the bidding firm (Alexandridis et al., 2017). Moeller et al. (2004) concludes that there is an inverse relationship between size of the acquirer and value creation meaning that relatively larger acquirers normally experience lower CAR than smaller ones. In a later study, Moeller et al. (2005) concludes that large acquirers destroy value for their shareholders, while smaller acquirers create value for their shareholders. The researchers explain that smaller firms focus more on acquiring target firms which have a similar product offering and operate in a similar market. These deal attributes are argued to harmonise the post-M&A integration and synergy realisation phase.

Demsetz and Lehn (1985) argues that smaller acquirers outperform larger ones because they do not have to deal with the agent-principal problem to the same extent as larger acquirers. This is because management in smaller firms normally own a relatively larger share of the firm. Therefore, their interest is more aligned with the interest of owners. Furthermore, Gorton et al. (2009) also show that smaller acquirers outperform larger ones. According to them, larger bidders typically overpay for target firms as a strategy to gain size and shield themselves from being acquired themselves. This means that target shareholders generally experience a higher degree of value creation when the acquirer and the deal size is large. Gorton et al. (2009) further explains that smaller deals are more profitable because the combination aim to strengthen the firms market position as well as increasing their attractiveness for a takeover offer. Normally, a larger target has a relatively more complex organizational configuration. As a consequence, Ravenscraft and Scherer (1989) argues that

the post-integration in these deals are difficult, time-consuming and costly. Therefore, smaller deals tend to outperform larger ones. More recently, Alexandridis et al. (2017) reinforces the argument that smaller deals are significantly more valuable, in terms of $ACAR$ for acquiring shareholders than larger ones.

2.3.5 Deal Direction

The final explanatory variable and potential value driver to be considered in the literature review is the deal direction. The direction of the deal can either be vertical, horizontal or conglomerate. Tremblay and Tremblay (2012) explain that vertical deals constitute a fusion between two firms that have seller-buyer relationship. An upstream vertical deal happens when a firm acquires one of its suppliers, and a downstream vertical deal is when a firm acquires one of its customers. On the contrary, horizontal deals, are mainly between firms that exist and compete in the same marketplace. Finally, they argue that conglomerate deals are between firms operating in unrelated markets.

A lot of prior research seems to indicate that horizontal deals create relatively superior value to acquiring shareholders (Rozen-Bakher, 2018). Horizontal M&A and related synergies are closely related to synergies created in consolidation and economies of scale deals. These are increased market and pricing power, lower marginal cost and increase in resource sharing (Tremblay and Tremblay, 2012). It is argued that the post-merger integration of the two firms are less complicated in a horizontal deal due to their similarity in operations and business structure. Furthermore, Tremblay and Tremblay (2012) explain that possible vertical M&A are limited as there is a few choices of target firms that can combine with the acquiring firm which eventually decreases managements choices and opportunities to create deal value. For target shareholders, there seems to be no conclusive and unanimous agreement on which deal direction create relatively superior value in M&A.

To conclude, prior literature of the five proposed value drivers in M&A offer a meaningful insight on how value for both acquirers and targets is generated. However, seemingly no research has been attributed to investigate how these value drivers differs between the five

deal types categorized by the acquirer's transaction rationale. On that basis, and in order to answer the second research question, we formulate the following two null hypotheses:

- ***Hypothesis 5 (H_5):*** *The defined value drivers; cash payment (+), cross-border deals (±), earning multiple paid (-), deal size (-), and vertical deals (-) have the same relationship with cumulative abnormal returns for acquiring firms across all M&A rationale types.*
- ***Hypothesis 6 (H_6):*** *The defined value drivers; cash payment (±), cross-border deals (±), earning multiple paid (+), deal size (+), and vertical deals (±) have the same relationship with cumulative abnormal returns for target firms across all M&A rationale types.*

With other words, H_5 and H_6 states that when running the cross-sectional regression on the firms CAR, we expect the coefficient signs of all explanatory factors to be the same across all deal types. The direction of the relationship between the explanatory variable and the CAR is stated in parenthesises where a +, - and ± sign indicates an expected positive, negative and neutral relationship. On the basis of previous literature, we hypothesize that cash deals have a significantly positive effect on value creation for acquiring firms. Secondly, we expect deal geography to have no significant impact on CAR so that cross-border and domestic deals is expected to generate no significant difference in term of value creation. Finally, we predict that the earnings multiple (EV/EBITDA) paid, deal size and vertical deals to have a significantly negative effect on value for acquiring shareholders. For target firms, we expect that the earnings multiple paid and deal size has a significantly positive effect on value creation. Further, we hypothesize that the payment method, deal geography and direction to have no significant effect on value creation for target shareholders.

3. Data

To test the defined six hypotheses, the event study methodology and a cross-sectional regression analysis is carried out. Prior to that, a robust data sample which assures trustworthy and unbiased results is defined. The identified M&A transactions and related information such as announcement date, ownership stake and press releases containing management deal

comments, is obtained from *Mergermarket*. The source is widely considered a reliable database and is used practically in various financial firms (Lerkerød et al., 2017). For the selected transactions, the *Thomson Reuters* database is used to extract stock relevant quotes. *Thomson Reuters* is regarded a trusted provider of financial information and similar to *Mergermarket,* it is used by various professionals both in practice and in academia. This section discusses the sample selection procedure in detail and provides descriptive statistics on the selected data samples.

3.1 Sample Selection

The aim with the sample selection process is to provide a data sample which enables robust testing, ensures validity in the results and offers a fair representation of the underlying population (Booth et al., 2013). This paper deals with two main samples and ten sub-samples. The main samples consist of one sample for acquiring firms and one for target firms. The primary difference between the two is that in the acquirer sample, the acquirer must be publicly listed while the target does not have to and vice-versa for the target sample. The two main samples consist of five sub-samples each, distinguished by the M&A rationale of the acquirer. In order to arrive to these samples, the following sample selection criterions are applied:

(1) The transaction must be defined as a merger or acquisition, where the acquirer obtains a majority stake in the target.
(2) The acquirer/target must be publicly listed on any of the Nordic stock exchanges[4].
(3) The transaction must be announced between 01/01/1998 and 01/01/2019.
(4) The transaction must be completed.
(5) The deal value must be disclosed and be above €5 million.
(6) Stock prices are available at least 250 trading days prior to and at least 1 day post announcement date.
(7) The stock has been traded in 2/3 days of the 250 trading days prior to the announcement date.

[4] The stock market index applied for Sweden; OMSX30, Denmark; OMXC20, Norway; OMX Oslo 20, Finland; OMX Helsinki 25, Iceland; ICEX Main.

(8) Overlapping M&A transactions for the same firm is omitted: another deal announced in any of the 250 trading days prior to the announcement is removed from the sample.
(9) The acquirer's rationale for entering the transaction must be observable in the official press releases following the deal announcement.

Firstly, following the definition of M&A by Sherman (2018), we apply a majority ownership criterion to filter out minority investments from the sample. The interest lays in transactions which leads to a change in control from the target to acquirer's shareholders. Previous literature provides no clear-cut definition of controlling interest as control can be obtained by different ownership stakes depending on the ownership structure of the other shareholders. In public firms where ownership is normally highly fragmented, gaining control of a firm do not necessarily require owning the majority of the capital and voting rights (Bhagat and Brickley, 1984). However, analysing ownership structure post M&A and concluding on whether the acquirer has gained absolute control when the acquiring stake is less than 50% is a comprehensive task and beyond the scope of this paper. Therefore, the majority stake criterion is applied. This means that the acquirer ownership stake pre-acquisition cannot exceed 50%. Meanwhile the post-acquisition ownership stake must exceed 50%. The information of acquisition ownership stake and voting rights is obtained from *Mergermarket*.

Secondly, this paper focus on M&A activity in the Nordics because conducting the study in this geographical setting will contribute to previous literature which provide limited insight to M&A rationales and their effect on value creation for Nordic firms. Also, an imperative foundation for testing CAR in event studies and to assure validity in the results is to carry out the study on an efficient and regulated stock market. This is because insider trading and information leakage impacts abnormal returns positively prior to the announcement day leading to biased test results. The Nordic Council of Ministers (2004) through their research suggest that the Nordic high standard legal environment, clearing and settlement processes, co-operation between exchanges lead to a high-degree of stock market efficiency. The Nordic countries share similar political stability, cultures, legal systems, risk profiles and corporate structures and thus treating them aggregately in this study is regarded reasonable.

Moreover, the focus is on the Nordics to generate a larger sample size. This is essential in the event study and cross-sectional regression methodology in order to provide robust and reliable findings (Booth et al., 2013). Furthermore, by focusing on multiple countries we make sure that the sample covers deals in a wider range of industries. Some industry-deals are mainly concentrated in one specific country. For example, the majority of energy deals takes place in Norway or deals in the medical industry being concentrated Denmark. This is important as we want to draw general conclusions regarding M&A and value creation which means that we must prevent bias arising from having a sample centred around a few industries. This information is also extracted from *Mergermarket*

The third criterion states that the deal must be announced sometime between 1998 and 2019. Similar to previous criterion, this delimitation is closely related to the study's research contribution and question. The majority of prior research attributed to this topic dates back to the 20th century. As demonstrated by Albersmeier et al., (2019) the last 20 years includes the most active years in M&A history. Therefore, it is important to thoroughly investigate this period. Moreover, a span of 20 years ensures a large and diversified sample of M&A deals. The announcement date is provided by *Mergermarket*.

The fourth criteria mean that only bids that leads to a completed deal is included in the sample. This is common practice in previous literature on M&A value creation. The robustness of the data sample improves when only including completed transactions (Lerkerød et al., 2017). This is because on announcement day the target firms price reaction often does not amount to the premium bided by the acquirer. This divergence reflects the uncertainty that a deal will not be completed. Higher uncertainty can be translated to a lower probability of deal completion and as a result the value generated is not fully absorbed in the market reaction. This reduces the quality and reliability of the data. With that said, it is hard for the market to know ex-ante which transactions that will be completed. However, it is fair to hypothesise that only including completed deals in the sample reduces the market uncertainty factor on announcement day. In other words, by having non-completed deals in the sample we will increase the risk of including deals that the market expects to be non-completed. The information regarding deal completion is obtained from *Mergermarket*.

Criteria five deals with the disclosure of deal value. This criterion is important to determine the materiality of the deal as we do not expect dramatic price reactions for firms buying abnormally small targets. Optimally, we would go through each deal and assess the materiality in the size of the deal relative to the size of the acquirer. However, this is beyond the scope of this study. Therefore, we apply an absolute deal value criteria which states that the disclosed deal value must be equal or above €5 million, otherwise the deal is omitted from the sample. This information is also extracted from *Mergermarket*.

The sixth criteria follow from the event study approach applied in this paper. Stock return data prior to the announcement date is required in order to estimate expected returns which is then used to calculate abnormal returns (Booth et al., 2013). The length of the period prior to announcement day i.e. the estimation window, is 250 trading days. The criterion also states that stock returns for at least 1 days post the announcement is required. This is essential following the definition of the event window[5]. Stock quotes is retrieved from *Thomson Reuters.*

Criterion seven is imperative to prevent bias arising from nonsynchronous and thin trading. These issues arise when there is low trading frequency for a stock meaning unchanged stock prices over a longer period of time. This feature is common for illiquid, small and risky firms. Including thinly traded stocks in the sample creates bias in the event study through the following sequence: firms which are unfrequently traded will have a majority of their returns equal to zero in the estimation window; low covariance with the market return; a beta approximately equal to zero unfairly indicating low risk; a low beta leads to lower estimated expected returns through the market model[6]; this incorrectly leads to higher estimated abnormal returns (Bartholdy et al., 2006). Different scholars provide different ways to adjust for thinly trading stocks in event studies. However, as they have not arrived to a commonly accepted approach to deal with this issue, this paper will omit these stocks from the sample. This paper will follow the procedure applied by Lerkerød et al. (2017) and only include stocks which has been traded at least in 2/3 of the days in the estimation window is included in the sample.

[5] Estimation and event window is discussed further in *4.1.1 Defining the event and time line*
[6] The market model is discussed in detail in the methodology section *4.1.2 Calculate expected returns.*

Another potential bias arising from the event study methodology is overlapping M&A within the same firm (Bartholdy et al., 2006). More specifically, if a firm acquires another firm and has in the previous 250 trading days acquired another firm, the most recent deal must be omitted from the sample to prevent bias. This bias arises as a result of prior deal impacting the estimation of expected returns and consequently the abnormal returns. Therefore, it is important to fulfil criterion eight in the sample selection procedure. Overlapping M&A information is retrieved from *Mergermarket*.

Lastly, it must be evident on why management has decided to engage in the deal. By examining official press releases from acquiring management post the announcement, it must be clear on managements rationale for acquiring the target and how the takeover is argued to create shareholder value. If this is not possible, the deal is omitted from the sample. A critical assumption is that the communicated M&A rationale is the true one and that managers do not have a hidden motive for entering the deal. Press releases with management comments is also obtained from *Mergermarket.*

3.2 Sample Description and Statistics

Applying the mentioned nine criterions results in 218 and 214 deals for the acquiring and target sample, respectively. This section describes the characteristics of the two samples. This is essential in order to understand how other parameters than M&A rationales can possibly affect the findings of the event study and cross-sectional regression. Table (1) and (2) demonstrates important characteristics for the deals included in the acquiring and target sample, respectively.

In the acquiring sample the most common M&A rationale is growth (30% of sample), while consolidation (17%), complementary assets and products (20%) and economies of scale (20%) deals account for approximately similar proportions of the sample. The least common deal type is financially motivated transactions (13%). Growth (36%) motivated transactions are also overrepresented in the target sample, while consolidation (18%), complementary assets and product (17%) and financially (19%) motivated deals stand for similar proportions. Economies of scale (10%) deals are the least represented deal type in target sample.

	Growth	Consolidation	Complementary	Economies of scale	Financial	**Total**
Denmark	6	7	1	5	2	**21**
Finland	12	8	11	7	2	**40**
Iceland	0	1	1	0	2	**4**
Norway	19	12	10	13	6	**60**
Sweden	29	9	20	19	16	**93**
Total	**66**	**37**	**43**	**44**	**28**	**218**
1998 - 2003[7]	10	14	9	10	1	**44**
2003 - 2008	35	12	12	16	13	**88**
2008 - 2013	9	5	8	10	10	**42**
2013 - 2019	12	6	14	8	4	**44**
Total	**66**	**37**	**43**	**44**	**28**	**218**
>€500m	6	19	7	10	6	**48**
€100m-€500m	15	10	9	13	12	**59**
€50m-€100m	16	1	6	4	3	**30**
<€50m	29	7	21	17	7	**81**
Total	**66**	**37**	**43**	**44**	**28**	**218**
Cash	36	15	15	9	16	**91**
Stock	15	14	17	23	8	**77**
Mix	15	8	11	12	4	**50**
Total	**66**	**37**	**43**	**44**	**28**	**218**
Domestic	30	19	29	36	24	**138**
Cross Border	36	18	14	8	4	**80**
Total	**66**	**37**	**43**	**44**	**28**	**218**
Horizontal	53	36	38	32	13	**172**
Vertical	13	1	5	12	10	**41**
Conglomerate	0	0	0	0	5	**5**
Total	**66**	**37**	**43**	**44**	**28**	**218**
Automotive & Transportation	1	4	0	2	0	**7**
Medical, Biotechnology & Chemicals	4	1	4	2	1	**12**
Computer, Internet & Telecommunications	18	5	15	9	3	**50**
Industrial & Construction	9	3	6	9	4	**31**
Consumer	3	7	3	4	3	**20**
Financial Services	9	8	4	6	9	**36**
Energy	6	5	0	2	2	**15**
Real Estate & Leisure	4	1	4	2	4	**15**
Other	12	3	7	8	2	**32**
Total	**66**	**37**	**43**	**44**	**28**	**218**
EV/EBITDA	*13.32*	*12.10*	*12.89*	*12.04*	*10.18*	***12.11***

Table 1: The table shows number of deals for the acquiring sample. The M&A rationales are represented in the columns and the related information is displayed in the rows. In the following order the row sections displays number of observations categorized by: Deal geography; period of deal announcement; deal value (targets enterprise value); payment method; whether the transaction is between domestic counterparts or cross-border; M&A direction; industry classification. The last row contains information of the trimmed mean (20%) EV/EBITDA paid by the acquirer.

[7] The period encompasses deals between 01/01/1998 and 01/01/2003. The same date format is applied for the other periods. This holds for Table (2) as well.

	Growth	Consolidation	Complementary	Economies of Scale	Financial	**Total**
Denmark	13	4	7	3	7	**34**
Finland	6	3	4	0	1	**14**
Iceland	0	0	0	0	2	**2**
Norway	30	11	12	8	11	**72**
Sweden	27	21	14	10	20	**92**
Total	**76**	**39**	**37**	**21**	**41**	**214**
1998 - 2003	19	13	9	4	10	**55**
2003 - 2008	22	20	12	9	10	**73**
2008 - 2013	21	4	6	5	10	**46**
2013 - 2019	14	2	10	3	11	**40**
Total	**76**	**39**	**37**	**21**	**41**	**214**
>€500m	11	12	5	2	9	**39**
€100m-€500m	24	17	15	8	17	**81**
€50m-€100m	22	6	4	4	6	**42**
<€50m	19	4	13	7	9	**52**
Total	**76**	**39**	**37**	**21**	**41**	**214**
Cash	63	26	28	17	29	**163**
Stock	7	8	4	4	3	**26**
Mix	6	5	5	0	9	**25**
Total	**76**	**39**	**37**	**21**	**41**	**214**
Domestic	41	21	27	18	30	**137**
Cross Border	35	18	10	3	11	**77**
Total	**76**	**39**	**37**	**21**	**41**	**214**
Horizontal	51	37	28	19	18	**153**
Vertical	25	2	9	2	22	**60**
Conglomerate	0	0	0	0	1	**1**
Total	**76**	**39**	**37**	**21**	**41**	**214**
Automotive & Transportation	3	1	4	5	4	**17**
Medical, Biotechnology & Chemicals	2	3	1	0	3	**9**
Computer, Internet & Telecommunications	15	7	10	7	6	**45**
Industrial & Construction	12	1	6	1	7	**27**
Consumer	11	5	4	3	5	**28**
Financial Services	7	4	3	1	5	**20**
Energy	8	2	3	3	1	**17**
Real Estate & Leisure	7	9	1	1	6	**24**
Other	11	7	5	0	4	**27**
Total	**76**	**39**	**37**	**21**	**41**	**214**
EV/EBITDA	*10.74*	*10.87*	*12.80*	*11.79*	*11.17*	***11.47***

Table 2: The table shows number of deals for the target sample. The M&A rationales are represented in the columns and the related information is displayed in the rows. In the following order the row sections displays number of observations categorized by: Deal geography; period of deal announcement; deal value (targets enterprise value); payment method; whether the transaction is between domestic counterparts or cross-border; M&A direction; industry classification. The last row contains information of the trimmed mean (20%) EV/EBITDA paid by the acquirer.

Deal concentration is mainly in Sweden and Norway. The two countries stand for 70% and 77% of all deals in the acquiring and target sample, respectively. In the acquiring sample, the five deal types are represented in all countries except Iceland. In the target sample, the different deals are represented in all countries except Iceland covering only two financially motivated deals and Finland where no economies of scale deals are represented. Deals from the four time periods is found for each of the five deal types in both samples. The period between 2003 and 2008 is a relatively busy period in terms of M&A transactions. The acquiring sample consists of relatively smaller deals, where 37% of the deals had a value of less than €50m. In the target sample, only 24% of deals had a value below €50m.

In the acquiring sample the different payment methods are represented across all deal types. For the target sample only deals driven by economies of scale lack transactions financed with a mix of stock and cash. Domestic transactions are more common than cross-border ones, accounting for 63% and 64% of the deals in the acquirer and target sample, respectively. In both samples, all M&A rationale deal groups consist of both vertical and horizontal deals. Conglomerate transactions are only represented in the financial deal type. Additionally, almost all industries are represented across all deals in both samples. Finally, we observe that in the acquiring sample, bidders in growth deals pay a relatively larger EV/EBITDA. In the target sample the same is true for acquirers in complementary deals.

To conclude, as table (1) and (2) displays both samples can be considered diversified in terms of geography, year in which the deal was announced, deal value, payment method, whether the deal is between domestic counterparts or cross border, M&A direction and industry. A diversified sample in terms of deal characteristics is important for the reliability of the empirical results as it enables general conclusions to be drawn regarding the different M&A rationales and their impact on value creation.

4. Methodology

Following the sample selection procedure, we have two main samples: the acquiring and target sample. Furthermore, we obtain ten sub-samples categorized by M&A rationale as demonstrated in figure (1).

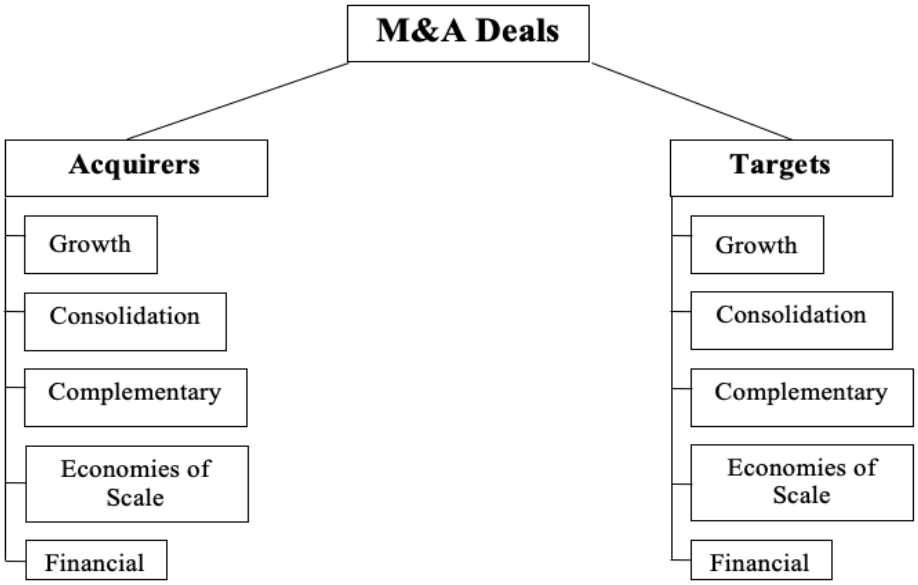

Figure 1: The figure displays the two main samples categorized by acquirers and targets as well as the sub-samples categorized by M&A rationale.

The methodology applied in this paper is composed by two parts. Firstly, in order to answer the first research question, an event study is carried out to estimate abnormal returns for all deals. The abnormal returns are accumulated across the different deal types and evaluated for statistical significance. This provides us with the necessary information to conclude on whether M&A create value for acquiring and target shareholders. In order to investigate whether there are significant differences in value creation between the deal types, a test of $ACAR$ differences is applied. The second part of the methodology relates to answering the second research question on what drives value in the different deal types. To do that, a cross-sectional regression is carried out. This section explains in detail both the event study approach and the cross-sectional regression methodology.

4.1 Event Study

Event studies have an extensive history in economics and finance as a pillar methodology to investigate the effects of economic events on firm value. The approach has many different applications including measuring how earnings announcements, stock splits, issues of new equity or debt, and announcements of macroeconomic events impact the financial performance of the firm. In M&A research, event studies have commonly been applied to quantitatively investigate the impact which deal announcements has on value creation for both acquiring and target firms (MacKinley, 1997). Furthermore, previous scholars with similar research questions has also constructed their analysis around an event study (Alexandridis et al., 2017; Lerkerød et al., 2017; Seth, 1990).

The power of event studies and the shareholder approach, assuming market efficiency, is that effects of an event announcement is reflected instantaneously in stock prices (MacKinley, 1997). In contrast, applying the accounting approach causes difficulties in quantifying long-term performance changes which are directly related to the deal. Therefore, this paper will apply the shareholder approach and define value creation as significant average cumulative abnormal return upon the deal announcement period. More specifically, the event study methodology applied in this paper is divided into five sequel steps:

(1) Define the event and time line
(2) Estimate expected returns
(3) Calculate, accumulate and average abnormal returns
(4) Evaluate and test abnormal returns
(5) Evaluate and test differences in abnormal returns between deal types

In total, ten event studies are carried out as returns are accumulated and tested for the five different deal types in both the acquiring and target sample. The mentioned five sequel steps of the event study are identical in all samples. The following sections will in detail explain each of these five steps.

4.1.1 Define the event and time line

The first step of any event study is to define the event (MacKinley, 1997). In this paper, the events of interest are M&A announcements. The event day is the day which management officially and publicly communicate the deal. The alternative is to define the event day as the day when the deal is completed. However, as the majority of the price reaction is absorbed on announcement day, studying security prices on completion day would provide little useful information. Furthermore, defining the announcement day as the event day is common practice when studying M&A effects on firm value (Seth, 1990).

The next step concerns defining the different time variables needed to conduct the event study. These include determining the frequency over which returns are estimated and the length of the estimation and event window. Booth et al. (2013) explains that the majority of early event studies use monthly price returns, but since the mid-1980s when technical improvements in stock markets were made, the use of daily price returns has become more common. In fact, using daily returns has become standard and is almost exclusively used in all event studies. Therefore, this study will focus on daily returns so that time increments, τ, in the time line shown in figure (1), equals to one day.

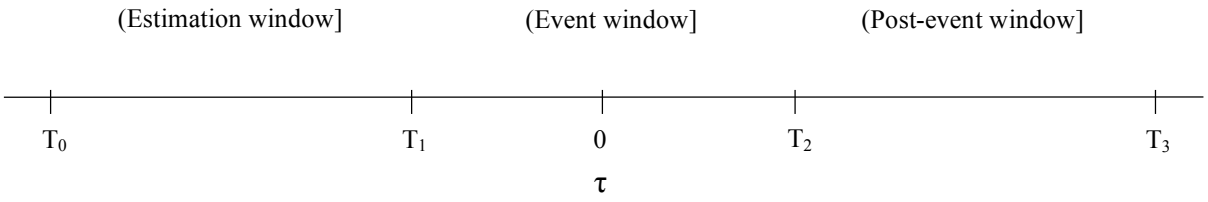

Figure 2: Event study time line

Defining a period prior to the event i.e. the estimation window is imperative in order to estimate firms expected daily returns. The estimation window length, L_1, is the period between $T_{0+\tau}$ and T_1. In contrast to determining the return frequency, there is no unified agreement between researchers on the optimal length of the estimation period. Litvak (2007) argues that the ideal length is 500 days, Lane et al. (1983) use 200 days, while Cox and Peterson (1994) use 100 days to estimate expected returns. MacKinlay (1997) proposes 250 trading days as the optimal estimation window length. This is the L_1 applied in this paper. The

motivation behind this decision is that using stock returns from one business year, should theoretically capture all possible cyclicality in firm performance. Furthermore, a longer estimation window reduces the variance of the calculated abnormal returns as demonstrated in equation (8).

The event window length, L_2, is the period ranging from $T_{1+\tau}$ to T_2. The period includes the event day, $\tau = 0$. Similar to when estimating L_1, there is a divergence in opinion among researchers on which L_2 is optimal to fully capture the effect of the event. However, consensus is to define the event window to be longer than the event day itself meaning that days prior and post the announcement are also examined (MacKinlay, 1997). The period prior to the event day is examined because information regarding the deal can possibly have been acquired by market participants prior to the official announcement. As a consequence, the price reaction will occur prior to the actual announcement day. It is important to include a period post the deal announcement in the event window because some deals are announced after the stock market has closed. The price impact is therefore observed the next trading day. The proposed length of the event window, L_2, commonly range between (-1, +1) to (-20, +20) in previous research (Booth et al., 2013). However, MacKinlay (1997) suggests using a three-day event window consisting of one day prior to the event, the event day and one day post the event, (−1, +1). This is the event window length applied in this paper.

It is important that the estimation window and the event window do not overlap. This practice prevents estimators of expected returns to be influenced by returns in the announcement period. The bias from overlapping windows arises as event window returns can have a great impact when including them in the estimation window to calculate expected returns. Consequently, abnormal returns in the event period are underestimated (Mackinley, 1997). Other considerations and sources for bias when determining the estimation window concerns thin trading, and overlap between other M&A announcements[8]. These issues are dealt with in the sample selection procedure. The post-event window is the period after the event window. This study will not focus on this period. Instead, we hypothesise that the findings from the event window, $T_{1+\tau}$ to T_2, have implications on what creates value for the firm post the event, $T_{2+\tau}$ to T_3, where $T_3 = +\infty$.

[8] These biases are explained in detail in criteria 7 and 8 in *3.1 Sample Selection.*

4.1.2 Estimate expected returns

There has been a great amount of research contributed to finding the optimal model for estimating expected stock returns. A number of approaches has been suggested to do this. MacKinley (1997) broadly categorizes these approaches into two groups: economic and statistical models. In the former, the models rely on economic assumptions regarding investor behaviour and do not depend only on statistical assumptions. The most widely applied economic models to estimate expected returns are the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) model. As argued by Sharpe (1964) and Lintner (1965) the CAPM is an equilibrium model which states that a firm's expected return is derived by its covariance with the market return. Ross (1976) advocates the APT which postulate that an asset's expected return is given by a linear combination of numerous risk factors.

In contrast to economic models, statistical approaches to estimate expected returns are independent from economic assumptions and only rely on statistical assumptions. An example of such a model is the constant mean return model where the asset return is assumed to be constant through time and only affected by the variance of the error term. Factor models are examples of statistical models explaining expected returns through multiple explanatory factors, usually portfolios of traded assets (MacKinley, 1997). The most common multi-factor models, are the three and five-factor models derived by Fama and French (1993, 2015). An example of a one-factor model is the market model, which argues a linear relationship between asset returns and the one-factor: market returns (MacKinley, 1997).

The model applied in this paper to estimate expected returns is the market model. This is the commonly preferred model in event studies suggested and applied by various scholars (MacKinley, 1997; Bartholdy et al., 2006; Booth et al., 2013). An alternative model which was commonly used in the 1970 in event studies is the CAPM. However, since divergences in the model performance has been detected, researches have mostly disregarded the CAPM in event studies (MacKinley, 1997). The APT is similar to the market model in its properties and add little explanatory power. The constant mean return model do not account for the systematic risk component when estimating returns and is therefore mostly overlooked in

event studies in favour for the market model. More sophisticated models include multi-factor models. However, MacKinley (1997) argues that additional factors to the market return are abundant and add limited additional explanatory power. With that said, this paper applies the market model. The model is a statistical model which estimates the asset return by linearly relating it to the market portfolio return. More specifically, for any asset, *i*, the model estimates:

$$R_{i\tau} = \alpha_i + \beta_i R_{m\tau} + \varepsilon_{i\tau} \quad (1)$$
$$E(\varepsilon_{i\tau}) = 0 \qquad Var(\varepsilon_{it}) = \sigma_{\varepsilon i}^2$$

where $R_{i\tau}$ and $R_{m\tau}$ are the day-τ returns for asset *i*, and market portfolio, *m*, respectively. The zero-expectation error term is denoted $\varepsilon_{i\tau}$. The proxy for the market portfolio is the main local stock market index for asset *i*. Further, α_i, β_i and $\sigma_{\varepsilon i}^2$ are parameters derived by the ordinary least square (OLS) regression used to estimate the market model:

$$\hat{\beta}_i = \frac{\sum_{\tau=T_0+1}^{T_1}(R_{i\tau} - \hat{\mu}_i)(R_{m\tau} - \hat{\mu}_m)}{\sum_{\tau=T_0+1}^{T_1}(R_{m\tau} - \hat{\mu}_m)^2} \quad (2)$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i\hat{\mu}_m \quad (3)$$

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1 - 2}\sum_{\tau=T_0+1}^{T_1}(R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau})^2 \quad (4)$$

where

$$\hat{\mu}_i = \frac{1}{L_1}\sum_{\tau=T_0+1}^{T_1} R_{i\tau} \quad (5)$$

and

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{m\tau} \tag{6}$$

The parameter estimates are derived by the OLS regression on the firms returns in the estimation window consisting of $L_1 = 250$ observations between $T_{0+\tau}$ and T_1. In order for the OLS to be considered an efficient estimator, a number of statistical assumptions must be accounted for. Studenmund (2010) outlines these assumptions as:

(1) The regression model is correctly defined, linear and has an additive error term.
(2) The error term is normally distributed with a zero population mean.
(3) The error term is uncorrelated with the explanatory variables.
(4) Explanatory variables are not linearly related to any other explanatory variables (no multicollinearity).
(5) The error terms are uncorrelated with each other (no autocorrelation).
(6) The error term has an unchanged variance (no heteroscedasticity).

Imposing these assumptions will increase the robustness of the estimated market model parameters and consequently also the results of the event study. The first assumption is fulfilled as is evident from equation (1). Secondly, MacKinley (1997) explains that while the normality assumption is strong, in practice it does not cause any econometric problems as the assumption is empirically reasonable and the market model is generally robust to deviances from the assumption. Studenmund (2010) explains that for large samples with many observations, the sample error term mean is likely to be close to zero. The third assumption regards the correlation between the error term and the market return. This is empirically tested by regressing each stocks error term with the market return (Studenmund, 2010). The results of the regressions show that that no beta coefficient is significantly different from zero, indicating that there is no correlation between the error terms and the market returns. The fourth assumption is not relevant for the market model, as the model only contains one explanatory variable.

It is imperative to test for autocorrelation as its presence cause the OLS approach to longer be the minimum variance estimator and therefore not efficient. Further autocorrelation causes the estimate of the standard error of the beta coefficient, SE ($\hat{\beta}_i$), leading to invalid hypothesis testing (Studenmund, 2010). To prevent such bias, graphical analysis is carried out to detect error terms which have a serial correlation. Secondly, a Durbin-Watson d-test is performed to investigate whether there exists first-order autocorrelation in the error terms[9]. Both analysis, indicate no significant autocorrelation in the error terms. Lastly, potential heteroscedasticity in the error terms are dealt with by applying White-Huber standard errors in the OLS regression (White, 1980).

To conclude the market model can be considered an efficient and robust estimator of expected returns in our study. The efficiency of using the market model will rely upon the R^2 of the model regression as a higher R^2 means greater variance reduction of the estimated abnormal returns (MacKinley, 1997).

4.1.3 Calculate, accumulate and average abnormal returns

Using the market model parameters estimated in (2) and (3), we can calculate abnormal returns. $AR_{i\tau}$ is the abnormal return for asset *i,* calculated for $L_2 = 3$ observations in the event window where $\tau = T_{1+\tau}, \ldots, T_2$. More specifically, he abnormal return is calculated as:

$$AR_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau} \tag{7}$$

By re-arranging (7), we see that the abnormal return is synonymous to the error term of the market model measured on an out of sample basis (event window rather than estimation window). Consequently, as the error term is assumed in the market model to follow a normal distribution with zero mean and variance $\sigma_{\varepsilon i}^2$, the abnormal return is normally distributed with zero mean and variance equal to (MacKinley, 1997):

$$\sigma_{AR_{i\tau}}^2 = \sigma_{\varepsilon_i}^2 + \frac{1}{L_1}\left[1 + \frac{(R_{m\tau} - \hat{\mu}_m)^2}{\hat{\sigma}_m^2}\right] \tag{8}$$

[9] See Studenmund (2010) for further explanation and discussion of the Durbin-Watson d test.

The variance of the abnormal return is composed firstly by the variance of the error term $\sigma_{\varepsilon_i}^2$ from (1) and secondly by additional variance as a result of the sampling error in α_i and β_i . As the length of the estimation window, L_1, increases, the sampling error approaches zero and the additional variance of the second term vanishes. The resulting reduction in $\sigma_{AR_{i\tau}}^2$ is another reason why we apply an estimation window of 250 days rather than 100, 150 or 200 days suggested by some other scholars (Booth et al., 2013).

The next step is to accumulate abnormal returns in the event window through two dimensions; time and across stocks. Firstly, aggregation of abnormal returns through time for one stock, *i*, is considered as this is imperative in an event window containing multiple days. CAR_i is defined as the cumulative abnormal return during the three-day event window, $\tau = T_{1+\tau}, \ldots, T_2$, for each stock, *i*:

$$CAR_i = \sum_{\tau=T_{1+\tau}}^{T_2} AR_{i\tau} \tag{9}$$

where the variance of the cumulative abnormal return is defined as:

$$\sigma_{CAR_i}^2 = (T_2 - T_{1+\tau} + 1)\, \sigma_{AR_{i\tau}}^2 \tag{10}$$

CAR_i is normally distributed with zero mean and variance given in (10). Aggregation of returns across time is carried out for each stock, *i*, as demonstrated in (9). However, it is also necessary to aggregate abnormal returns across securities within each M&A rationale group, *j*. Each CAR_i belongs to a deal group *j* and is therefore denoted as CAR_{ij}. Each deal type group consists of N_j events and the average cumulative abnormal return in within group *j* is calculated as:

$$ACAR_j = \frac{1}{N_j} \sum_{i=1}^{N_j} CAR_{ij} \tag{11}$$

where the variance is equal to:

$$\sigma^2_{ACAR_j} = \frac{1}{N_j^2} \sum_{i=1}^{N_j} \sigma^2_{CAR_{ij}} \tag{12}$$

As can be seen from (12), the common assumption of no overlap in event windows across securities is used to set the covariance term equals zero (Mackinley, 1997). With (11) the abnormal returns generated from the event study has been accumulated through time and securities and averaged within each M&A rationale category. The next step is testing the $ACAR$ for statistical significance.

4.1.4 Evaluate and test abnormal returns

Prior of testing whether the $ACAR$ are significantly different between the M&A rationale groups, we consider whether the $ACAR$ are significantly different from zero or positive for the acquiring and target sample, respectively, on a stand-alone basis. The two main approaches to test this are either parametric or non-parametric in nature. These are normally employed together to provide additional credibility to the conclusions (MacKinley, 1997). This paper follows the same practice. The first parametric test applied is a T-test for testing mean abnormal returns, where the test statistic is defined as:

$$\theta_1 = \frac{ACAR_j}{\sqrt{\sigma^2_{ACAR_j}}} \tag{13}$$

The test in (13) is a standard test procedure applied in many similar event studies (MacKinley, 1997). A common alternative to (13) and one suggested by Dutta (2014) to provide a strong complement, is the T-test for testing mean standardized abnormal returns. The test statistic for N_j number of securities, i, in respective deal group, j, is specified as:

$$\theta_2 = \frac{1}{\sqrt{N_j}} \sum_{i=1}^{N_j} SCAR_{ij} \tag{14}$$

Where the standardized cumulative abnormal return, $SCAR_{ij}$, is defined as the cumulative abnormal return for each security, CAR_{ij}, divided by its standard deviation, expressed as the square root of (10). More specifically, for security *i*:

$$SCAR_{ij} = \frac{CAR_{ij}}{\sqrt{\sigma^2_{CAR_{ij}}}} \tag{15}$$

The parametric methodologies for testing abnormal returns depend on the assumption that returns are normally distributed. However, much of pervious literature indicate that stock returns do not have this property (Dutta, 2014). Consequently, parametric tests can yield misleading results and is therefore used in conjunction with non-parametric tests. These tests are considered more powerful in identifying significant abnormal returns and does not require any assumptions regarding the distribution of stock returns (Dutta, 2014). The most common non-parametric tests are the sign and rank test developed by Thompson and Zivney (1989), and Corrado and Zivney (1992). The sign test, is binomially constructed to investigate the signs of the cumulative abnormal returns, $\mathrm{CAR_{ij}}$. The foundation of the test is the null hypothesis expecting that the fraction of positive announcement period $\mathrm{CAR_{ij}}$ within a sample is equal to 0.5. An additional requirement for this test is independency across securities which is considered fulfilled in this study. The sign test requires two parameters: the total number of deals within the deal type sample, N_j, and the number of firms which experienced a positive $\mathrm{CAR_{ij}}$ during the event period within that sample, $\mathrm{N_j^+}$. The test-statistic, θ_3, is defined as:

$$\theta_3 = \left[\frac{N_j^+}{N_j} - 0.5\right]\frac{\sqrt{N_j}}{0.5} \tag{16}$$

The distribution of test statistic θ_3 is standard normal with a mean and variance equal to zero and one, respectively (MacKinley, 1997). A disadvantage of the sign test is that it can possibly be wrongly specified if there is skewness in the distribution of the cumulative abnormal returns (MacKinley, 1997). As a response to this potential weakness, Corrado and Zivney (1992) suggests a non-parametric rank test to test possible existence and significance

of CAR. For each of the N_j stocks in each deal type sample, j, we consider all daily abnormal returns between $T_{0+\tau}$ and T_2, i.e. the estimation and event window, amounting to a total of $L_{1+2} = 253$ observations. When dealing with a single day event window the rank test ranks daily abnormal returns in L_{1+2}. However, this study consists of a three-day event window, which means that the ranking is applied to three-day cumulative abnormal returns between $T_{0+\tau}$ and T_2. The return sample for each stock, i, therefore consists of $L_{1+2} / 3 = \bar{L}_{1+2} = 84$ cumulative abnormal return observations. These three-day returns are ranked from one to $\bar{L}_{1+2}$, where one is given to the lowest return and $\bar{L}_{1+2}$ to the highest return[10]. The ranking of the event period cumulative abnormal return for security i within deal group j, is denoted K_{ij}. The rank test is based on the null hypothesis of no significant CAR, so that the expected rank of the event period is $(\bar{L}_{1+2}+ 1) / 2 = 42.5$. The test statistic for this null hypothesis is defined as:

$$\theta_4 = \frac{1}{N_j} \sum_{i=1}^{N_j} \left(K_{ij} - \frac{(\bar{L}_{1+2} + 1)}{2} \right) / s(K) \tag{17}$$

where,

$$s(K) = \sqrt{\frac{1}{\bar{L}_{1+2}} \sum_{\tau = T_{0+1}}^{T_2} \left(\frac{1}{N_j} \sum_{i=1}^{N_j} \left(K_{ij\tau} - \frac{(\bar{L}_{1+2} + 1)}{2} \right)^2 \right)} \tag{18}$$

To conclude, non-parametric tests are mainly regarded as more powerful than parametric tests to detect abnormal returns in event studies (Duta, 2014). However, these tests are normally not applied in isolation but in combination with parametric tests providing additional robustness of the inferences drawn based on the test results. Therefore, this paper applies both test procedures.

[10] The first day of the estimation window is disregarded in the rank test to allow for three-day CAR which is made up of 252 AR.

4.1.5 Evaluate and test differences in abnormal returns between deal types

The final part of the event study concerns fully answering the first research question of whether acquirer's rationales have an impact on value creation in M&A. Comparing the results from the tests defined in (13), (14), (16) and (17) is not sufficient to do so. Instead we apply a method to statistically test for differences in $ACAR$ between the different deal types. We follow the practice applied by previous researches and perform a T-test on $ACAR$ differences (Elgers and Clark, 1980; Lane et al., 1983). This test is carried out between two samples at the time.

Prior to performing the test, we must determine whether the two samples have equal or unequal variance as this will impact the structure of the T-test. The average cumulative abnormal return, $ACAR_j$, and the corresponding variance, $\sigma^2_{ACAR_j}$, for each deal type, j, is given in (11) and (12) respectively. To test the null hypothesis that $\sigma^2_{ACAR_j}$, is equal across the two samples, a Levene's (1960) test is carried out. If the test results provide a p-value less than $\alpha = 0.05$ the null hypothesis is rejected and we infer that there is a deviation between the population variances. In contrast to the generalized F-test for equality in variance, the Levene's test has been applied due to its robustness even when the data is non-normally distributed[11]. If the test indicates equal variances, a T-test assuming equal variances is applied and the following test statistic is arrived to:

$$\theta_5 = \frac{ACAR_1 \; - \; ACAR_2}{\sigma_p \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}} \tag{19}$$

where,

$$\sigma_p = \sqrt{\frac{(N_1 - 1)\sigma^2_{ACAR_1} + \; (N_2 - 1)\sigma^2_{ACAR_2}}{N_1 + \; N_2 + 2}} \tag{20}$$

[11] For further specification of the Levens test for equal variances see Levene (1960).

σ_p is defined as the pooled standard deviation for the two deal samples consisting of N_1 and N_2 deals, respectively. If the Levene's test implies different variances between the two samples, an unequal variance T-test, often referred to as a Welch (1947) T-test, is applied. The test statistic, $\theta_5^{\cdot}$, where $\cdot$ indicates that the two samples have unequal variances, is defined as:

$$\theta_5^{\cdot} = \frac{ACAR_1 \ - \ ACAR_2}{\sqrt{\frac{\sigma^2_{ACAR_1}}{N_1} + \frac{\sigma^2_{ACAR_2}}{N_2}}} \tag{21}$$

The null hypothesis is that there is no difference in value creation between the deal types. This test is carried out repeatedly across different pairs of deal types in order to conclude on whether some deal rationales create superior value for shareholders.

4.1.6 Critical values and type 1 and 2 errors

This study is concerned with M&A and value creation, as well as if there exist any significant differences between different deal types in terms of value creation. For the first four tests defined in (13), (14), (16) and (17) the null hypothesis is that we expect no and significantly positive announcement period abnormal returns for the acquiring and target firms, respectively. Therefore, the statistical tests applied on the acquiring sample is two-sided. The distribution of the test statistic, θ_T, is considered standard normal and with a size, α, the null hypothesis is rejected when:

$$\theta_T < \Phi_v^{-1}\left(\frac{\alpha}{2}\right) \ or \ \theta_T > \Phi_v^{-1}\left(1 - \frac{\alpha}{2}\right) \tag{22}$$

Where Φ_v^{-1} is equal to the inverse of the Student's t-distribution cumulative distribution function with $v = N_j - 1$ degrees of freedom where N_j is equal to the number of deals in respective deal group. The statistical tests applied on the target sample is one-sided as we expect to observe significantly positive abnormal return upon deal announcement. The null hypothesis is rejected when:

$$\theta_T < \Phi_v^{-1}(\alpha) \tag{23}$$

In the tests of $ACAR$ differences between deal types defined in (19) and (21), the test is two-sided and the null hypothesis is rejected when the conditions stated (22) is fulfilled. All discussed tests are tested against a size, α, equal to 10%, 5% and 1%. The defined significance levels determine the probability of committing a type I error, which is rejecting a true null hypothesis. It is important to consider type I errors in hypotheses testing as, α, indicates the probability of concluding on a relationship that is actually not existent. For example, in the case of hypothesis 1, a type I error would be incorrectly concluding that acquiring firms create significant value for their shareholders. In contrast, a type II error is when we fail to reject a null hypothesis that is in fact false. To conclude, the event study is performed across all sub-samples, categorized by M&A rationale, in both the acquiring and target sample. With that said, a total of ten event studies are carried out.

4.2 Cross-Sectional Regression

4.2.1 The cross-sectional regression model

The second part of the methodology concerns answering the second research question and consequently the testing of null hypothesis 5 and 6. To do that, a cross-sectional regression consisting of multiple explanatory variables, is carried out on the CAR_{ij} obtained from the event study. This is a commonly applied approach in similar studies set up to test the relationship between a different factors and M&A abnormal returns (Alexandridis et al., 2017; Lerkerød et al., 2017). Further, conducting the identical regression across the different deal types, show how the different explanatory variables impact value creation differently depending on the rationale of the deal. In general terms, a multiple regression with k explanatory variables can be written as:

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_k x_{ik} + \varepsilon \tag{24}$$

y_i is the dependent variable and x_i are the independent variables. The intercept and slope coefficients are denoted by β_0 and β_k, respectively. Lastly, the models error term is denoted by ε. In this study, the multiple regression equation is defined as:

$$CAR_{ij} = \beta_0 + \beta_1 CASH_{ij} + \beta_2 CROSS_{ij} + \beta_3 EVEBITDA_{ij} + \beta_4 LOGSIZE_{ij} + \beta_5 VERTICAL_{ij} + \varepsilon \quad (25)$$

The first explanatory variable, $CASH$, relates to the payment method. The variable is categorical and takes on the value 1 when the deal is financed with cash and 0 if the deal is financed with stock or a mix between cash and stock. A significantly positive β_1 infer that cash deals generate larger CAR while a significantly negative β_1 suggests that stock and mixed financing create superior CAR in M&A deals. The variable, $CROSS$, is also categorical and relates to the deal geography. If the deal is conducted between firms across national boundaries, $CROSS$ takes on the value 1. In domestic deals the variable equals to 0. A significantly positive β_2 suggests that cross-border deals generate superior value than domestic ones, while a significantly negative β_2 infer the opposite.

The $EVEBITDA$ variable stands for the earning multiple proposed by the acquirer to buy the target and is defined as the targets enterprise value divided by the EBITDA. The enterprise value is defined as the sum of the targets implied equity value and net debt, defined as the short and long-term debt minus cash and equivalents. The net debt is not added whenever the target firm is a bank or insurance firm, as this will distort the multiple. The EBITDA is defined as prior year's full year EBITDA. The EV/EBITDA is applied in this paper over other earnings multiples as it is mainly considered more accurate in firm valuation (Minjina, 2009). For this variable, there exist missing values in the data which are replaced with the trimmed mean (20%) of the paid EV/EBITDA in the related sub-sample. This is a common practice and treatment of missing values (Burke, 2001). $EVEBITDA$ is a continuous variable.

The fourth explanatory variable, $LOGSIZE$, is defined as the natural logarithm of the enterprise value expressed in millions of Euros. This variable is presented as the natural logarithm and in millions to control for size differences between the CAR and deal size. This makes coefficient, β_4, more interpretable. Similar to previous explanatory variable, the

$LOGSIZE$ is contrinious. For both, $EVEBITDA$ and $LOGSIZE$ a positive slope coefficient in β_3, β_4, indicates a positive relationship between the variables and value creation. Finally, VERTICAL, relates to the deal direction. The variable is categorical and takes on the value 1 when the deal is between vertical counterparts and 0 when the deal is horizontal[12]. A significantly positive β_5 infer that vertical deals generate larger cumulative abnormal returns in M&A deals while a significantly negative β_5 suggests that horizontal deals create superior value.

4.2.2 Coefficient significance and critical values

In order to determine whether the relationship between the explanatory variable, k, and the CAR is statistically significant, the coefficient, β_k, is tested using a T-test defined as:

$$\theta_6 = \frac{\beta_k}{SE(\beta_k)} \tag{26}$$

Where, $SE(\beta_k)$ is equal to the standard error of coefficient β_k. As stated in H_5 and H_6 we expect different explanatory variables to have different relationships with cumulative abnormal returns for both the acquiring and target sample. When the variable is hypothesized to have no significant relationship (±) with the announcement period CAR, the test becomes two-sided and we reject the null hypothesis whenever θ_6 fulfils the conditions stated in (22). When the variable is predicted to have a positive relationship (+) with CAR, the test becomes one-sided and we reject the null hypothesis when the conditions in (23) are met. If in H_5 and H_6 the relationship is hypothesized to be negative (-), the test also becomes one-sided. However, the null hypothesis is the rejected when:

$$\theta_T > \Phi_v^{-1}(1 - \alpha) \tag{27}$$

Similarly, to previous tests, the test defined in (26) is tested against a size, α, equal to 10%, 5% and 1%.

[12] The few conglomerate deals in the sample are treated as horizontal.

4.2.3 OLS regression assumptions and other considerations

The six stated assumptions for OLS regressions as outlined by Studenmund (2010) also holds for multiple cross-sectional regressions[13]. The arising econometrical issues are dealt with in the same way as previously when using OLS in the market model to estimate firms expected returns. In contrast the market model, the multiple regression deals with many explanatory variables. Therefore, the fourth assumptions of no linear relationship between the explanatory variables should be fulfilled. The correlation matrix between the explanatory variables indicate no multicollinearity, for both the acquiring and target sample. Finally, the R^2 of the regression is presented. However, not too much emphasis is put on this value as the aim of the regression is not to find a model that predicts CAR but rather to assess the different variables and their relationship with the dependent variable on a stand-alone basis. Some variables are even hypothesized to have no significant relationship with CAR. To conclude, the multiple regression is performed across all sub-samples, categorized by M&A rationale, in both the acquiring and target sample. With that said, a total of ten regressions are performed.

5. Results

The first section of the results will present the empirical findings from the event study and the five parametric and non-parametric tests. The results for the acquiring firm sample is presented first followed by the results for the target firms. The second part of the results section presents the results from the cross-sectional regression. Similarly, this section is divided into two parts, one for the acquiring sample and one for the target sample.

[13] See section *4.1.2 Estimate expected returns* for the six assumptions.

5.1 Value Creation in Acquiring Firms

The four event study tests defined in (13), (14), (16) and (17) is analysed in combination with a graphical analysis to investigate whether M&A create significant value for acquiring shareholders. More specifically, we test null hypothesis 1:

- ***(H_1):*** *M&A do not create statistically significant cumulative abnormal returns for acquiring shareholders.*

The announcement period average cumulative average abnormal return is positive for all M&A rationale groups. Figure (3) displays the average daily abnormal return for each deal type group. It can be observed that on the event day, $\tau = 0$, there is a notable increase in the average abnormal return across all deal types except financial ones.

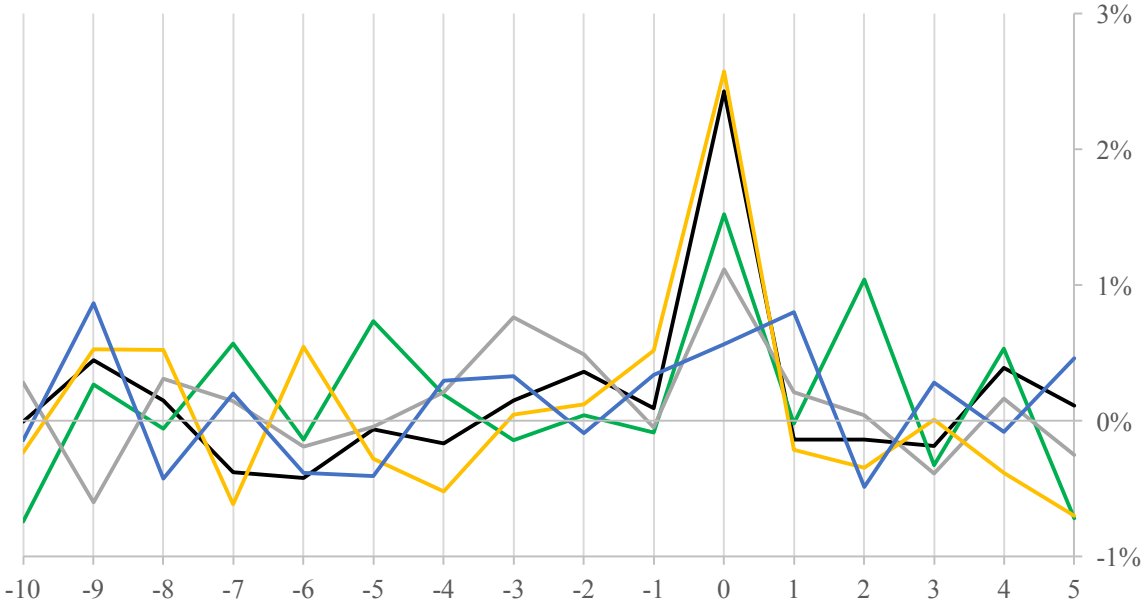

Figure 3: The graph displays the equally averaged percentage daily abnormal returns for the five different deal types within the acquiring sample. The data ranges from 10 days prior to 5 days after the event day, denoted by 0. The event window is defined as the period [-1,+1]. The X- and Y-axis shows the days and percentage returns, respectively.

Prior and post the event day the average abnormal returns across the five different deal types ranges from approximately -1% to 1%. During the event window, average abnormal returns

ranges from 0.5% and 2.5%. The same is demonstrated in figure (4) which presents the average abnormal returns in index format. Evidently, the five indices experience an upswing in the event window [-1, +1] and trade relatively flat prior and post this period. Notably from figue (3) and (4), economies of scale and growth deals experiences the largest increase in abnormal returns during the event window. The former and latter mentioned deal type experiences an $ACAR$ of 2.88% and 2.38%, respecitevly. Financially motivated deals generates an $ACAR$ of 1.76%. Consolidation and complementary deals generates the lowest $ACAR$ of 1.38% and 1.26%, respecitevly. To conclude, based on the graphical analysis it seems that all deals are value adding for acquiring shareholders.

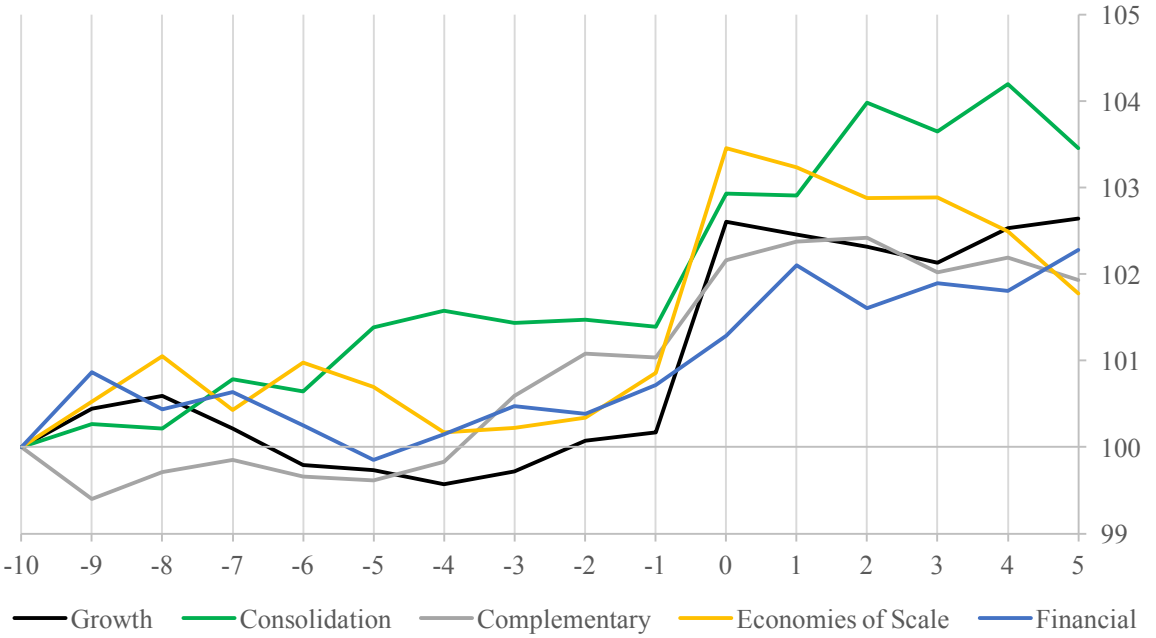

Figure 4: The graph displays the indexed equally averaged daily abnormal returns for the five different rationales groups within the acquiring sample. The initial index value is 100 and runs from 10 days prior to the event day until 5 days post the event day, denoted by 0. The event window is defined as the period [-1,+1]. The X- and Y-axis shows the days and percentage returns, respectively.

However, as can be observed from table (3), no T-statistic for testing whether mean abnormal returns is different from zero, θ_1, are statistically significant. The same holds for the test-statistics for testing mean standardized abnormal returns, θ_2. With that said, neither parametric tests indicates with statistical significance that M&A create value for acquiring shareholders. As explained in equation (13) and (15), underlying the two parametric tests is each firms, i, cummulative abnormal return CAR_{ij}, and related variance, $\sigma^2_{CAR_{ij}}$. A graphical represeantaion of these properties is shown in figuere (5) where each deal in the acquiring

sample is represented by a dot in the graph. The graphical analysis of figuere (5) provides no contradicting information to the two parametric tests. Observations from a specific deal type group is neither concentrated in the upper-left (high CAR_i, low $\sigma^2_{CAR_i}$) nor in the lower-right (low CAR_i, high $\sigma^2_{CAR_i}$) of the graph.

	N	$ACAR$	θ_1	θ_2	θ_3	θ_4
Growth	66	2.38%	1.24	1.45	2.46***	2.70***
Consolidation	37	1.38%	0.65	0.72	1.30	1.87*
Complementary	43	1.28%	0.61	0.54	0.76	1.28
Economies of Scale	44	2.88%	1.38	1.46	2.11**	3.06***
Financial	28	1.76%	0.72	0.86	1.13	0.11

*Table 3: The table summarizes the results from the event study tests for the acquiring firms. The first column contains the different deal types. Secondly, N stands for number of observations within each sub-sample. The third column shows the average three-day cumulative abnormal return within each M&A rationale group. The remaining columns displays the test results from the parametric test defined in (13) and (14), and the non-parametric sign and rank test defined in (16) and (17) respectively. *, ** and *** indicates if the test statistic is significant on a 10%, 5% and 1% level (two-sided test).*

The sign test, θ_3, is statistically significant at a 1% level for growth motivated M&A suggesting that on average, growth transactions generate positive announcement period $ACAR$. This result is reinforced by the rank test statistic, θ_4, which is also significantly positive at a 1% level. For consolidation deals the rank test is positvely significant at a 10% suggesting that these deals create value for acquiring shareholders. Transactions motivated by economies of scale, add shareholder value accroding to the sign and rank test which are significant on a 5% and 1% level, respectively. Financial and deals rationalised by compelementary products and assets do not seem to add statstically significant value to the acquiring firm based on the results from the parametric and non-parametric tests.

To conclude, as previously discussed the non-parametric tests is argued to provide more robust and valid results than the parametric ones. Therefore, for growth and economies of scale M&A it can on the basis of the sign and rank test be concluded that acquisitions lead to value creation for the acquiring firm. Moreover, the rank test also indicates that consolidation deals create significant value for the acquirer. With that said, we reject hypothesis 1.

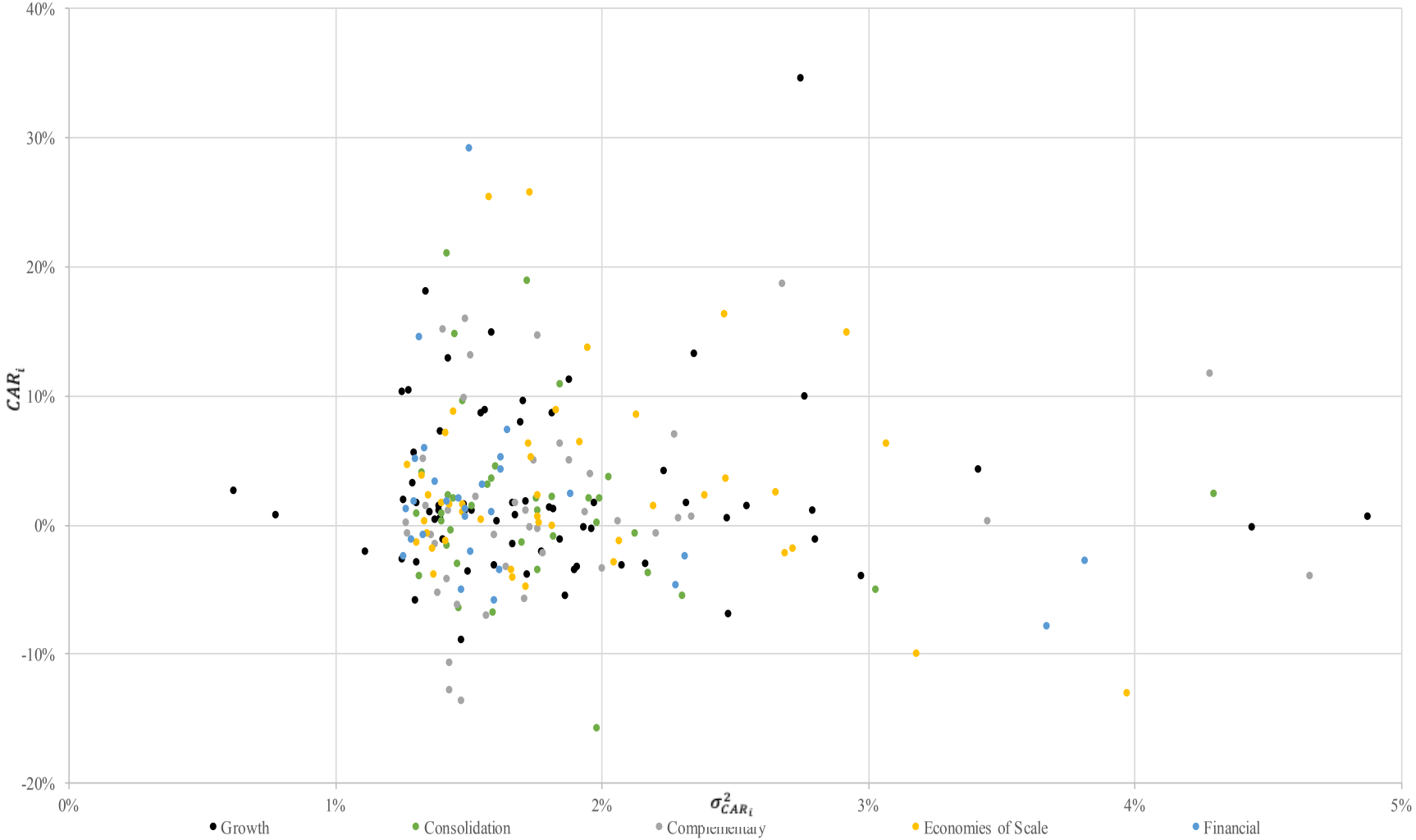

Figure 5: The graph displays the three-day cumulative abnormal return on the Y-axis and the corresponding CAR variance for each acquiring firm, represented by a dot in the graph. The colour of the dot shows which M&A rationale group that the acquiring firm belongs to.

5.2 Differences in Value Creation Between Deal Types for Acquiring Firms

A parametric T-test for mean differences as defined in equation (19) is conducted and analysed in order to determine whether the acquires deal rationale impact value creation for the acquiring firm. More specifically, we test null hypothesis 3:

- ***(H_3):*** *No statistically significant difference in average cumulative abnormal returns between deal types, categorized by acquirers deal rationale, for acquiring firms.*

The test in equation (19) is applied over the test defined in (21) as the Levenes (1960) test for equal variance indicate no significant deviations in variance between the different deal types. Table (4) presents the differences in average cumulative abnormal returns between the different deal types with corresponding θ_5 presented in parenthesis.

	Growth	Consolidation	Complementary	Economies of Scale	Financial
Growth	-	1.00%	1.11%	-0.50%	0.62%
	-	*(0.51)*	*(0.57)*	*(-0.25)*	*(0.3)*
Consolidation	-1.00%	-	0.10%	-1.50%	-0.38%
	(-0.51)	-	*(0.05)*	*(-0.73)*	*(-0.17)*
Complementary	-1.11%	-0.10%	-	-1.60%	-0.48%
	(-0.57)	*(-0.05)*	-	*(-0.78)*	(-0.22)
Economies of Scale	0.50%	1.50%	1.60%	-	1.12%
	(0.25)	(0.73)	(0.78)	-	(0.52)
Financial	-0.62%	0.38%	0.48%	-1.12%	-
	(-0.3)	(0.17)	(0.22)	(-0.52)	-

*Table 4: The matrix shows average cumulative abnormal returns differences between the different deal types in the acquiring sample. The ACAR difference is defined as the row group ACAR minus the column ACAR. The corresponding test-statistic from the T-test of mean differences defined in equation (19) is presented in parenthesis below the ACAR. *, ** and *** indicates if the test statistic is significant on a 10%, 5% and 1% level (two-sided test).*

Notably, economies of scale transactions observe a 1.50% and 1.60% larger $ACAR$ than consolidation and complementary deals, respectively. Further, growth deals experience a $ACAR$ which is 1.00% and 1.11% larger than consolidation and complementary deals, respectively. However, the results are not statistically significant and it cannot be concluded that the differences are non-stochastic. The test results imply that acquirer M&A rationale do not have an impact on value creation for acquiring shareholders. Therefore, we fail to reject hypothesis 3.

5.3 Value Creation in Target Firms

The results of the four event study tests defined in (13), (14), (16) and (17) is evaluated together with a graphical analysis to investigate whether M&A create significant value for target shareholders. More specifically, we test null hypothesis 2:

- ***(H_2):*** *M&A do create statistically significant positive cumulative abnormal returns for target shareholders.*

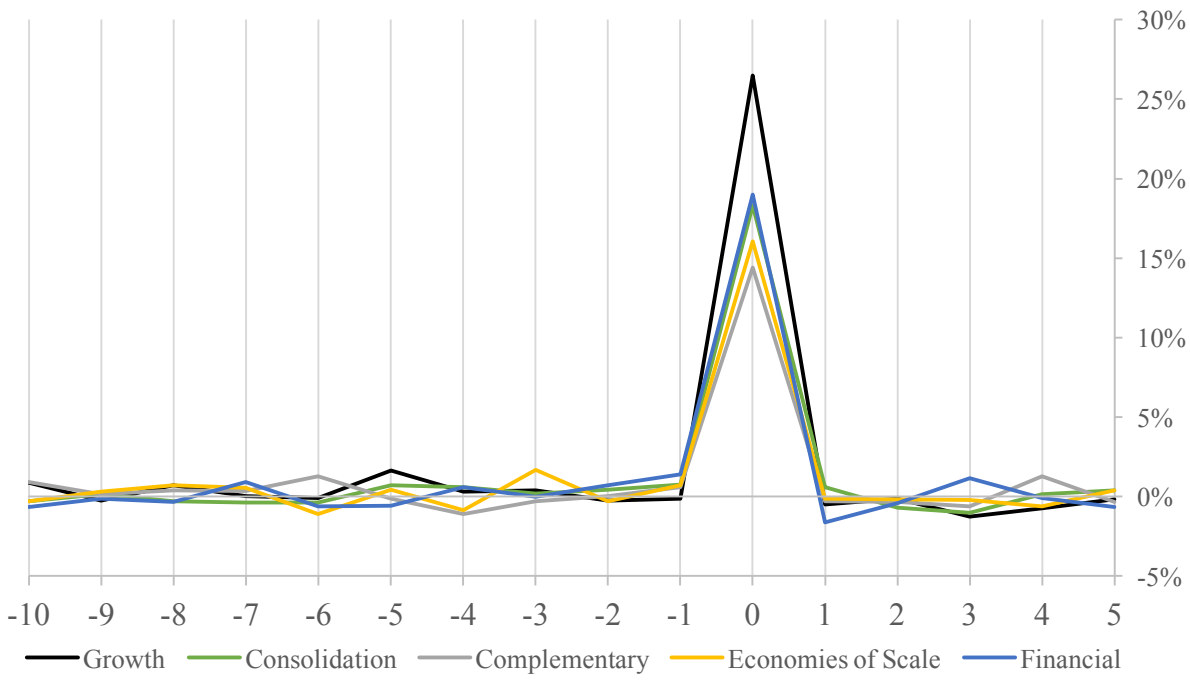

Figure 3: The graph displays the equally averaged percentage daily abnormal returns for the five different deal types within the target sample. The data ranges from 10 days prior to 5 days after the event day, denoted by 0. The event window is defined as the period [-1,+1]. The X- and Y-axis shows the days and percentage returns, respectively.

Figure (6) displays the average daily abnormal return for each deal type group in the target sample and as hypothesized $ACAR$ is positive for all M&A rationale groups. There is a large increase in the average abnormal return across all deal types on the event day. The average abnormal returns for all deal types ranges from around -1% to 1% prior and post the event day. Meanwhile during the event period, the five different deal types experience an average abnormal return between 14% and 27%. The same is observed from figure (7) which shows the five indices increasing substantially during the event window (-1, +1) while trading relatively flat prior and post this period. As can be seen from both from figue (6) and (7), growth deals experiences the largest increase in abnormal returns during the event window. The increase in terms of $ACAR$ for growth deals is 23.72%. Consolidation, financial and complementary deals experiences a $ACAR$ of 19.66%, 18.80%, and 16.65%, respecitevly. The deal type with the lowest $ACAR$ is economies of scale deals which experience an increase of 14.72% during the announcement period.

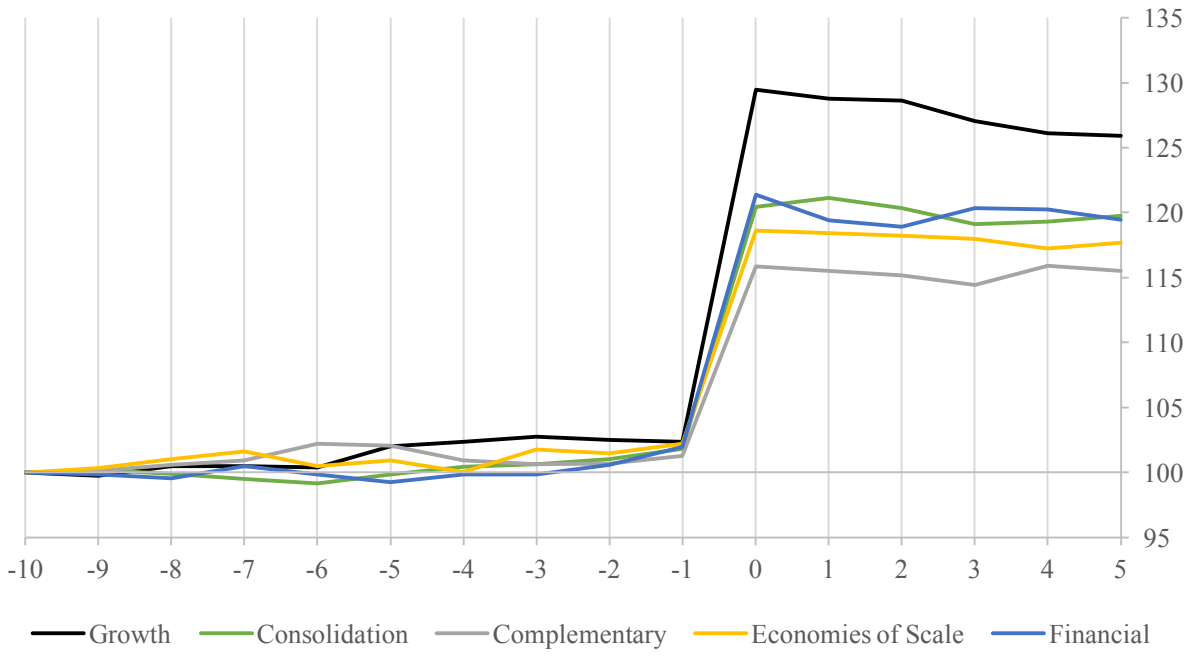

Figure 4: The graph displays the indexed equally averaged daily abnormal returns for the five different deal groups within the target sample. The initial index value is 100 and runs from 10 days prior to the event day until 5 days post the event day, denoted by 0. The event window is defined as the period [-1,+1]. The X- and Y-axis shows the days and percentage returns, respectively

In contrast to the acquisition sample, it can be observed in table (5), that no statistically significant test-statistic is observed. This supports our initial hypothesis that average cumulative abnormal returns for target shareholders should be significantly positive. Furthermore, we observe relatively large test statistics reinforcing this hypothesis. This is true for the parametric test evaluating mean abnormal returns, θ_1, and the test of mean standardized abnormal returns, θ_2. The results are reinforced by figuere (8) which shows that the majority of observations across all deal types experiences a CAR_{ij} between 0% and 50% while the corresponding $\sigma^2_{CAR_{ij}}$ mainly ranges from 1% to 2%.

	N	$ACAR$	θ_1	θ_2	θ_3	θ_4
Growth	76	23.72%	14.89	14.39	4.13	6.35
Consolidation	39	19.66%	8.09	8.98	4.96	8.01
Complementary	37	14.72%	5.97	6.84	3.78	6.29
Economies of Scale	21	16.65%	5.67	5.98	2.84	7.69
Financial	41	18.80%	8.53	9.86	4.22	7.27

Table 5: The table summarizes the results from the event study tests for the target firms. The first column contains the different deal types. Secondly, N stands for number of observations within each sub-sample. The third column shows the average three-day cumulative abnormal return within each M&A rationale group. The remaining columns displays the test results from the parametric test defined in (13) and (14), and the non-parametric sign and rank test defined in (16) and (17) respectively. †, †† and ††† indicates if the test statistic is significant on a 10%, 5% and 1% level (one-sided test.)

Also, both non-parametric tests indicate that M&Atransactions generate positive average cummulative abnormal returns on the announcement day for target shareholders. In conclusion both the parametric and non-parametric tests are unanimous in their results suggesting that M&A creates significantly psotive value for target shareholders. With that said, we fail to reject hypothesis 3.

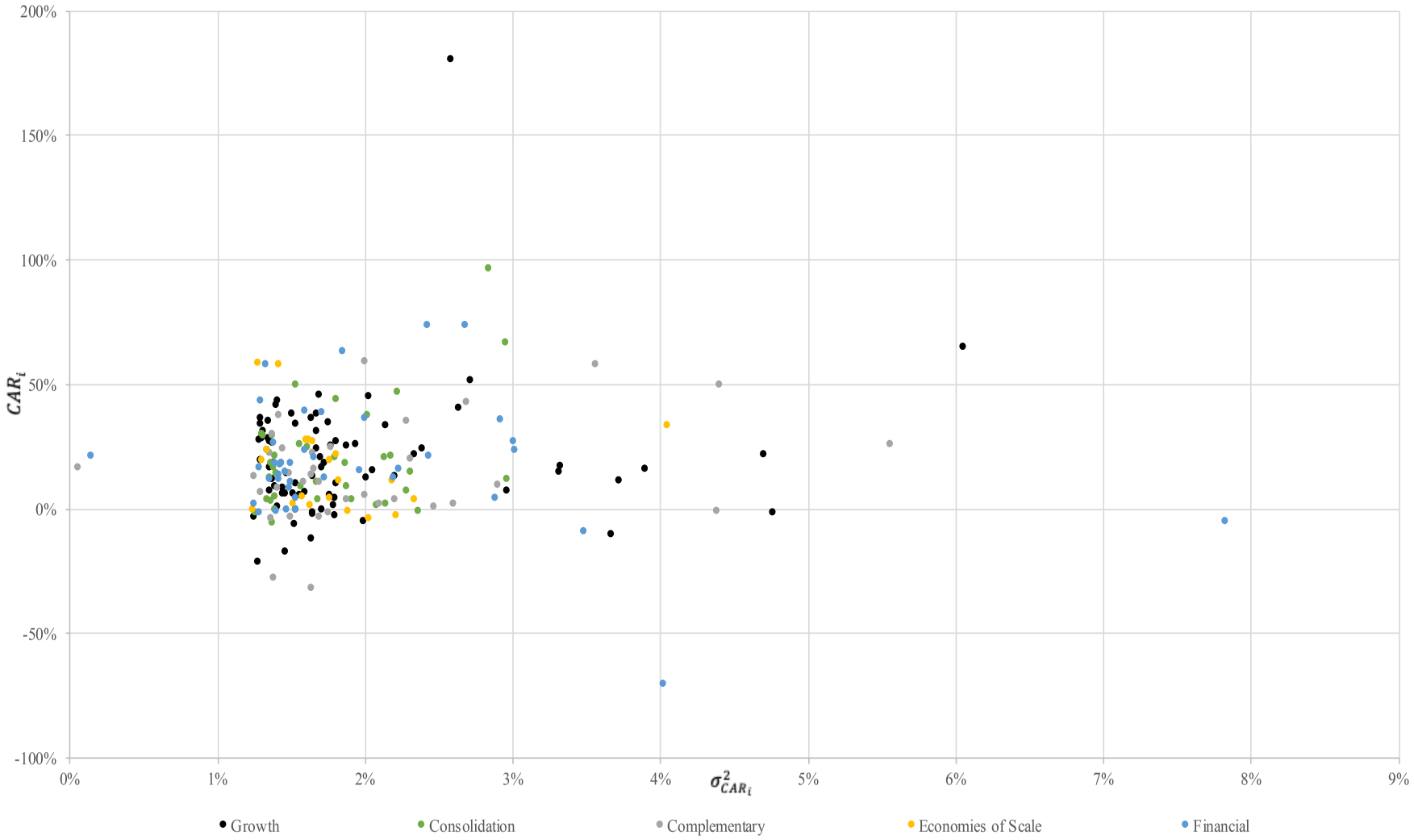

Figure 8: The graph displays the three-day cumulative abnormal return on the Y-axis and the corresponding CAR variance for each target firm, represented by a dot in the graph. The colour of the dot shows which M&A rationale group that the acquiring firm belongs

5.4 Differences in Value Creation Between Deal Types for Target Firms

In order to fully answer the first research question, the final parametric T-test for mean differences as defined in equation (19) is conducted and analysed in order to determine whether the acquires deal rationale impact value creation for the target firm. More specifically, we test null hypothesis 4:

- ***(H_4):*** *No statistically significant difference in average cumulative abnormal returns between deal types, categorized by acquirers deal rationale, for target firms.*

Similarly, to the acquisition sample, the test in equation (19) is applied over the test defined in (21) as the Levenes (1960) test for equal variance indicate no significant deviations in variance between the different deal types. Table (6) presents the differences in average cumulative abnormal returns between the different deal types with the corresponding θ_5 presented in parenthesis.

	Growth	Consolidation	Complementary	Economies of Scale	Financial
Growth	-	4.06%	9.00%	7.07%	4.92%
	-	*(2.16)***	*(4.77)****	*(3.69)****	*(2.74)****
Consolidation	-4.06%	-	4.93%	3.01%	0.86%
	*(-2.16)***	-	*(2.07)***	*(1.19)*	*(0.38)*
Complementary	-9.00%	-4.93%	-	-1.92%	-4.08%
	*(-4.77)****	*(-2.07)***	-	*(0.76)*	*(-1.70)**
Economies of Scale	-7.07%	-3.01%	1.92%	-	-2.15%
	*(-3.69)****	*(-1.19)*	*(0.76)*	-	*(-0.90)*
Financial	-4.92%	-0.86%	4.08%	2.15%	-
	*(-2.74)****	*(-0.38)*	*(1.70)**	*(0.90)*	-

*Table 6: The matrix shows average cumulative abnormal returns differences between the different deal types in the target sample. The ACAR difference is defined as the row group ACAR minus the column ACAR. The corresponding test-statistic from the T-test of mean differences defined in equation (19) is presented in parenthesis below the ACAR. *, ** and *** indicates if the test statistic is significant on a 10%, 5% and 1% level (two-sided test).*

In contrast to acquiring firms, there are statistically significant differences in targets $ACAR$ between the deal types. Growth acquisitions generates between 4.00% to 9.00% more in $ACAR$ for target shareholder in comparison to the other deal types[14]. The largest divergence in value creation is between growth and complementary deals, corresponding to a 9.00% difference in $ACAR$ which is significant on a 1% level. Further, growth deals generate a 7.07% and 4.92% larger $ACAR$ than economies of scale and financial deals, respectively. Both differences are significant at a 1% level. The $ACAR$ difference, 4.06%, between growth and consolidation deals is significant on a 5% significance level.

Furthermore, consolidation deals generate a 4.93% larger $ACAR$ than deals which are motivated by complementary assets and products. The difference is significant on a 5% level. Finally, financial deals generate a 4.08% larger $ACAR$ than complementary deals and the difference is significant on a 10% level. Evidently, there is a significant divergence in value creation for target shareholders between different deal types. The results imply that the acquirers rationale has a significant impact on the degree of value creation for target shareholders. With that said, we reject hypothesis 4.

5.5 Value Drivers Across Different Deal Types for Acquirers

In order to answer the second research question regarding different value drivers within and across deal types for acquiring firms, a cross-sectional regression is carried out as defined in (25) to test hypothesis 5:

- ***(H_5):*** *The defined value drivers; cash payment (+), cross-border deals (±), earning multiple paid (-), deal size (-), and vertical deals (-) have the same relationship with cumulative abnormal returns for acquiring firms across all M&A rationale types.*

Table (7) summarizes the results of the multiple regressions carried out on the acquiring sample. The CASH variable deals with the financing term of the proposed bid by the acquirer. We initially hypothesized that cash bids generally should create superior CAR than stock or mixed payment deals. However, seemingly the opposite relationship seems to exist for all

[14] $ACAR$ differences are stated in percentage points. This is true for the whole section.

deals except deal which are motivated by economies of scale. For consolidation and financial deals, it can be concluded with 10% significance that stock and mixed payment method create superior value in M&A in comparison to cash financed deals.

	Growth	Consolidation	Complementary	Economies of Scale	Financial
Intercept	8.22 *(2.85)****	4.50 *(0.99)*	7.17 *(1.80)**	7.58 *(1.64)*	3.70 *(0.60)*
CASH	-0.82 *(-0.48)*	-3.50 *(-1.34)†*	-1.18 *(-0.48)*	0.67 *(0.23)*	-4.56 *(-1.38)†*
CROSS	-0.53 *(-0.30)*	1.53 *(0.55)*	-0.83 *(-0.32)*	-0.17 *(0.96)*	-0.86 *(-0.19)*
EVEBITDA	0.10 *(1.65)††*	0.02 *(0.40)*	-0.23 *(-1.70)*	0.16 *(0.70)*	-0.14 *(-0.67)*
LOGSIZE	-1.45 *(-2.36)*	-0.43 *(-0.56)*	-0.45 *(-0.68)*	-1.32 *(-1.94)*	0.45 *(0.43)*
VERTICAL	-2.89 *(-1.37)*	-4.17 *(-0.59)*	-1.84 *(-0.46)*	-1.30 *(-0.49)*	0.64 *(0.20)*
N	*66*	*37*	*43*	*44*	*28*
R^2	*0.13*	*0.08*	*0.08*	*0.11*	*0.13*
F	*1.82*	*0.50*	*0.67*	*0.94*	*0.67*

Table 7: The table shows the results from the five regressions carried out in each deal type sample within the acquiring sample. The regression equation is defined as: $CAR_{ij} = \beta_0 + \beta_1 CASH_{ij} + \beta_2 CROSS_{ij} + \beta_3 EVEBITDA_{ij} + \beta_4 LOGSIZE_{ij} + \beta_5 VERTICAL_{ij} + \varepsilon$. *The dependent variable is the three-day cumulative abnormal return expressed in percentage points so that an increase by one unit of* x_{ij} *increases the* CAR_{ij} *by* β_k *percentage points, ceteris paribus. The M&A rationale is displayed in the columns. The first row contains the intercept coefficient which value is derived by the cross-sectional regression. The CASH variable equals 1 if the bid is cash-only or 0 if the bid is stock or mixed. The CROSS variable equals 1 and 0 if the deal is cross-border and domestic, respectively. EVEBITDA represents the earnings multiple proposed by the acquirer on announcement day. LOGSIZE is the natural logarithm of the targets enterprise value. The last independent variable is VERTICAL which equals 1 if the deal is between vertical counterparts and 0 if the deal is horizontal or conglomerate in nature. The N column contains information regarding number of observations in each sub-sample.* R^2 *shows the coefficient of determination for each regression while F states the F-statistic of the overall test of whether the explanatory variables can explain differences in CAR. The coefficients corresponding White's heteroskedasticity-consistent t-statistics is shown in parentheses. *, ** and *** indicates if the test statistic is significant on a 10%, 5%, and 1% level (two-sided test). For the one-sided tests †, †† and ††† indicates if the test statistic is significant on a 10%, 5%, and 1% level.*

When comparing domestic and cross border deals, we initially hypothesized no significant relationship with value creation. With no statistical significance for any of the $CROSS$ coefficients, we fail to reject this hypothesis. When studying the relationship with the earnings multiple paid by the acquirer, $EVEBITDA$, we predicted an inverse relationship with

value creation. For growth deals, this hypothesis is rejected with 5% significance. The results indicate that a larger earnings multiple creates superior value in growth deals. The same relationship cannot be concluded for the other deal types. For the variable $LOGSIZE$, we hypothesized that larger deals create smaller CAR for acquiring firms. In the case of the $VERTICAL$ variable we hypothesized that vertical deals are outperformed by horizontal ones. In both cases, we fail to reject our initial hypothesis and the regression results seems to be in line with previous findings. However, because both the $CASH$ and $EVEBITDA$ variables provide contradictory findings to the initially defined hypothesis and prior literature, we reject hypothesis 5.

5.6 Value Drivers Across Different Deal Types for Targets

In order to fully answer the second research question regarding value drivers within and across deal types, a cross-sectional regression as defined in (25) is carried out on the target firm sample. More specifically, we test hypothesis 6:

- ***(H_6):*** *The defined value drivers; cash payment (±), cross-border deals (±), earning multiple paid (+), deal size (+), and vertical deals (±) have the same relationship with cumulative abnormal returns for target firms across all M&A rationale types.*

As stated in H_6, on the basis of the non-conclusive and unanimous prior literature we hypothesize that the acquirer's choice of payment method does not have any impact on the value creation for target shareholders. However, for deals rationalised by economies of scale, we observe on a 5% significance level that cash deals have a positive impact on value creation. For the other deal types, we cannot conclude on any significant relationship between the $CASH$ variable and the CAR. Also, for the $CROSS$ variable, we initially hypothesized no significant impact on CAR across all deal types. Even though the coefficient sign for the variable is unanimously negative across all deal types, we cannot with any statistical significance reject this hypothesis. For both the $EVEBITDA$ and $LOGSIZE$ variables we initially hypothesized a negative relationship with the value creation for target shareholders, so that a larger earnings multiple paid by the acquirer and a larger deal size should drive value in a positive direction for target shareholders.

	Growth	Consolidation	Complementary	Economies of Scale	Financial
Intercept	17.06 *(1.25)*	40.72 *(2.14)***	14.80 *(0.90)*	4.03 *(0.23)*	33.52 *(1.77)*
CASH	-4.64 *(-0.57)*	-8.12 *(-1.03)*	7.04 *(0.86)*	21.45 *(1.98)***	-5.65 *(-0.62)*
CROSS	-2.14 *(-0.34)*	-3.60 *-(0.55)*	-1.17 *(-0.15)*	-10.93 *(-0.83)*	-6.81 *(-0.71)*
EVEBITDA	0.13 *(0.81)*	-0.03 *(-0.04)*	0.05 *(0.14)*	-0.11 *(-0.28)*	0.10 *(0.19)*
LOGSIZE	0.91 *(0.40)*	-2.75 *(-1.08)*	-1.46 *(-0.55)*	-0.32 *(-0.10)*	-1.15 *(-0.39)*
VERTICAL	4.34 *(0.66)*	3.19 *(2.13)***	5.70 *(0.64)*	-0.76 *(-0.06)*	-8.07 *(-0.98)*
N	*76*	*39*	*37*	*21*	*41*
R^2	*0.03*	*0.16*	*0.05*	*0.26*	*0.07*
F	*0.47*	*1.24*	*0.31*	*1.03*	*0.49*

Table 8: The table shows the results from the five regressions carried out in each deal type sample within the target sample. The regression equation is defined as: $CAR_{ij} = \beta_0 + \beta_1 CASH_{ij} + \beta_2 CROSS_{ij} + \beta_3 EVEBITDA_{ij} + \beta_4 LOGSIZE_{ij} + \beta_5 VERTICAL_{ij} + \varepsilon$. *The dependent variable is the three-day cumulative abnormal return expressed in percentage points so that an increase by one unit of* x_{ij} *increases the* CAR_{ij} *by* β_k *percentage points, ceteris paribus. The M&A rationale is displayed in the columns. The first row contains the intercept coefficient which value is derived by the cross-sectional regression. The CASH variable equals 1 if the bid is cash-only or 0 if the bid is stock or mixed. The CROSS variable equals 1 and 0 if the deal is cross-border and domestic, respectively. EVEBITDA represents the earnings multiple proposed by the acquirer on announcement day. LOGSIZE is the natural logarithm of the targets enterprise value. The last independent variable is VERTICAL which equals 1 if the deal is between vertical counterparts and 0 if the deal is horizontal or conglomerate in nature. The N column contains information regarding number of observations in each sub-sample.* R^2 *shows the coefficient of determination for each regression while F states the F-statistic of the overall test of whether the explanatory variables can explain differences in CAR. The coefficients corresponding White's heteroskedasticity-consistent t-statistics is shown in parentheses. *, ** and *** indicates if the test statistic is significant on a 10%, 5%, and 1% level (two-sided test). For the one-sided tests* †, †† *and* ††† *indicates if the test statistic is significant on a 10%, 5%, and 1% level.*

In both cases, we fail to reject these hypotheses. Finally, in the case of the $VERTICAL$ variable, we predicted no significant relationship between the deal direction and the generated CAR. However, for consolidation deals it can be concluded with 5% significance that vertical deals create superior value in comparison to horizontal ones. The same cannot be concluded for the other deal types. With that said, we reject our initial hypothesis regarding the relationship between the deal direction and CAR. To conclude, the results show that expected relationships between the explanatory variables and the value created during the announcement period for target firms are violated. Moreover, the explanatory variables

seemingly do not have the same relationship with cumulative abnormal returns for target firms across all M&A rationale types. With that said, we reject hypothesis 6.

5.7 Summary of Hypothesis Testing and Results

In Table (9), we summarize the results from the hypothesis testing.

Hypothesis	Clarification of Hypothesis	Research Question	Outcome
H_1	*M&A do not create statistically significant cumulative abnormal returns for acquiring shareholders.*	RQ_1	Reject
H_2	*M&A do create statistically significant positive cumulative abnormal returns for target shareholders.*	RQ_1	Fail to Reject
H_3	*No statistically significant difference in average cumulative abnormal returns between deal types, categorized by acquirers deal rationale, for acquiring firms.*	RQ_1	Fail to Reject
H_4	*No statistically significant difference in average cumulative abnormal returns between deal types, categorized by acquirers deal rationale, for target firms.*	RQ_1	Reject
H_5	*The defined value drivers; cash payment (+), cross-border deals (±), earning multiple paid (-), deal size (-), and vertical deals (-) have the same relationship with cumulative abnormal returns for acquiring firms across all M&A rationale types.*	RQ_2	Reject
H_6	*The defined value drivers; cash payment (±), cross-border deals (±), earning multiple paid (+), deal size (+), and vertical deals (±) have the same relationship with cumulative abnormal returns for target firms across all M&A rationale types.*	RQ_2	Reject

Table 9: The table summarizes the six pre-defined null hypotheses and the related research question to be answered. The last column contains the outcome; we wither reject or fail to reject the null hypothesis.

6. Discussion

The empirical findings of this conducted study on the Nordic M&A arena for the period 1998-2018 provides new insight regarding M&A rationales and their impact on value creation for acquiring and target shareholders. The findings are discussed in relation to prior literature. Firstly, we discuss value creation and whether the bidder's rationale has an impact on shareholder value for acquiring and target firms, respectively.

6.1 Value Creation and Differences between Deal Types in Acquiring Firms

The results of the study show positive average cumulative abnormal around the announcement day for all deal types. This seemingly contradicts the findings of previous studies concluding that M&A deals do not create significant positive value for acquiring firms (e.g. Goergen and Renneboog, 2003; Holl et al., 1996; Lerkerød et al., 2017). Moreover, it can be concluded with statistical significance that growth, economies of scale and to a lower extent that consolidation deals create positive value for acquiring shareholders. With that said, there is no indication that managers are dishonest in their communication of their deal motivation in order to engage in non-value maximizing activities such as empire-building. Neither do we observe results indicating overpayment for the target firm, manager's overestimation of their own ability, or misjudgement of competition policy restraints and antitrust laws. We hypothesize that this would be reflected in a negative stock market reaction.

The stock market reacts positively when a firm announces to buy another firm with intention to grow its current operations into new geographical markets, product segments or other business areas. Value creation arises from cost synergies in the form of advantageous market entries by avoiding to grow organically and internalising the knowledge. Revenue synergies are realised through an increase in distribution channels and related sales (Schoenberg, 2006). Further, value from growth deals can arise from learning-related synergies resulting from being active in several markets (Iversen, 2011). The results of this study shows that on average the stock market values the mix of these synergy effects larger than the premium paid by the acquirer.

Furthermore, Schoenberg (2006) argues that growth M&A is more common among established and mature firms where managers usually are more competent and experienced with adopting M&A as a growth strategy. The results of this study reinforce this statement, suggesting that managers more carefully select the targets and tend to not overpay for them in growth deals. This can seem contradictory to what is displayed in table (1) which shows that the average EV/EBITDA paid by the acquirer in growth deals is 13.32. For the other deal types, this multiple ranges from 10.18 and 12.89. Firstly, due to the nature of growth deals the target firm normally operate in a high growth market and naturally the acquirer has to pay a larger premium to acquire that growth. Secondly, as can be seen from table (7) the relationship between EV/EBITDA and value creation is significantly positive only in growth deals. With that said, it seems that acquiring managers are willing to pay a larger premium in growth M&A to ensure a high-quality target. This is consequently reflected upon by a significantly positive market reaction and a larger degree of value creation.

Another potential reason for why growth deals is value adding for acquiring firms, is that the target firms are normally smaller than in other deals, as can be seen from table (1). The results from the cross-sectional regression summarized in table (7) show a significantly negative relationship between deal size and value creation in growth deals. Smaller targets are less complex in their organization structure and are therefore easier and less costly to integrate (Ravenscraft and Scherer, 1989). Furthermore, as argued by Gorton et al. (2009) in smaller deals the acquirer normally do not overpay for the target firm to the same extent as in larger deals. Seemingly, the market realises these attributes within growth deals explaining the significant results.

Economies of scale transactions are mainly motivated by gains from cost synergies derived by greater production lowering the average unit cost (Langlois, 1999). As a direct consequence revenue synergies can materialise by lowering the sales prices and increasing sales volume. Similar to growth deals the market reacts significantly positive on announcements of deals driven by economies of the combination will be value adding in the long term. The results contradict the findings of Goedhart et al. (2015) wo argues that transactions motivated by economies of scale rarely create value for the acquiring shareholders. The cross-sectional regression shows that value creation has a significantly negative relationship with deal size

which reinforces the hypothesis that smaller deals create superior value also in economies of scale deals. This can seem conflicting as increasing size is the main source of economies of scale related synergies. However, here the important size measure is the relative size of the deal to the size of the acquirer meaning that a small acquiring firm can benefit from the same economies of scale synergies as larger ones. Additionally, smaller deals driving value in economies of scale deals can be because: overpayment is not as common in larger deals, smaller deals are mainly between firms operating in similar markets, and issues arising from the agent-principal problem such as the empire-building problem are less common in smaller M&A (Demsetz and Lehn, 1985; Gorton et al., 2009; Moeller et al., 2004).

With lower statistical significance, consolidation deals also creates value for acquiring firms. Gaughan (2012) explain that these deals are argued to reduce competition and increase market share to accomplish cost and revenue synergies through an increase in bargaining and market power. Consolidating markets through M&A is mainly observed in fragmented markets to avoid costly price competition with many different market players (Gaughan, 2012). The results from this study reinforce that the market views a M&A strategy as beneficial in these set ups to avoid harmful competition and to gain stronger market power. Moreover, the results are in line with the conclusion of Goedhart et al. (2015) whom also identified acquisitions aiming to consolidate markets to gain pricing power as value adding for acquiring shareholders.

An identified and distinctive value driver for consolidation deals is the decided payment method chosen by the acquirer. The results show that stock and mixed payment deals outperform cash financed deals in this specified deal type. As can be seen from table (1) consolidation deals are relatively larger in size in comparison to other deal types. A stock or mixed financing could therefore be considered more conservative as an all cash deal could have a significant impact on the acquirers leverage ratio. From the results of this study it seems that the stock market realizes this relatively large increase in leverage as costly in consolidation deals. The results contradict the findings of prior literature arguing that stock financing has a negative signalling effect in M&A deals (Martynova and Renneboog, 2006). It also contradicts Jensen (1986) argument that that leverage-increasing deals lead to superior stock price reactions in M&A deals.

On the basis of the test results this study, we cannot conclude with statistical significance that complementary and financial deals create value for acquiring firms. Both deal types are theoretically supposed to add value by providing both cost and revenue synergies. However, this is not observed in the empirical findings which can be either because the market does not believe that these M&A rationales are legitimate source of synergies or that they are but the acquirer overbids to realise these. By studying the results of the cross-sectional regression, we observe no noteworthy findings which would explain why complementary deals do not create significant value. However, in financial deals we observe from table (1) that it is relatively more normal to acquire the target using cash as payment. Conflictingly we see from table (7) that all-cash funding has a significantly negative impact on value creation in deals which are financially motivated. This is a potential explanation of why financial deals do not seem to create any significant value for acquiring firms.

Previous literature which has been set up to test whether different acquisition types create significantly different value for the bidder firm have offered conflicting conclusions. The results of this study could not offer any conclusive findings on whether some acquisition types create superior value in relation to other acquisition types. This suggests that the acquirer's rationale for entering a M&A deal do not impact value creation for acquiring shareholders. Noteworthy, from the cross-sectional regression is that different deal types are driven by different factors. However, as differences in value creation between the deal types are not statistically significant we cannot use the differences in the underlying value drivers to explain the differences in cumulative average abnormal returns across the deal types. The conclusion is that acquirer's takeover success seems to be independent of the underlying rationale behind the deal. M&A performance could potentially depend on other factors such as acquiring manager's capability, acquiring firm's profitability and the structure of the marketplace in which the firms are active within. These factors are not accounted for in this study.

6.2 Value Creation and Differences between Deal Types in Target Firms

In contrast to acquiring firms, previous literature consistently agree that M&A create significantly positive value for target firms (e.g. Bergström et al., 1993; Cools et al., 2007; Goergen and Renneboog, 2003; Lerkerød et al., 2017). The different test results obtained in this study demonstrate that irrespective of the acquirers underlying rationale, M&A create significantly positive value for target shareholders. This is also what was hypothesised due to the nature of the deal. The acquirer must normally bid a substantial premium over the targets market value to complete the deal. The premium paid is said to reflect the synergistic gains expected from the deal. Normally, if the nominal amount of this gain is known by both parties the majority of the gain is captured by target shareholders. This is because the acquirer is motivated to pay more to the target as long as the expected synergy value exceeds the proposed premium to be paid. This will eventually lead to an equilibrium where the expected synergistic gain is equal to the proposed premium to the target.

In theory, this would mean that the acquiring shareholders experiences an abnormal return equal to 0% on announcement day in every deal while target shareholders will experience an abnormal return equal to the discounted synergy value (assuming 100% probability of deal completion). However, in practice, the market can differ in their opinion and valuation regarding synergy value. It can also be possible that the firms hold asymmetric information or that they do not agree upon the synergy value expected from the combination. Therefore, the abnormal return on announcement day for the acquirer normally differ from 0%. This is also what we observe in this study. With that said, we still expect target shareholders to gain more from the deal. This study's results reinforce this hypothesis.

More interestingly in the case of target firms is the discussion of whether value creation is affected by the acquirer's rationale of the deal and if some acquisition types create more value than others. As in the case of acquiring firms, previous literature provides no unanimous conclusion on this question. However, the results from this study adds value to the prior discussion as the results provide significant insight on this matter. More specifically we can conclude with statistical significance that:

(1) Growth deals create more value for the target firm than all other deal types.
(2) Consolidation deals create more value for the target firm than deals motivated by complementary assets and products.
(3) Financially motivated deals create more value for the target firm than deals motivated by complementary assets and products.

Growth related synergies, such as avoiding large start-up cost of entering a new product segment or geographical market by M&A, are notably highly regarded and valuable among acquiring firms. Acquiring managers are therefore willing to pay a relatively larger premium for to gain these synergies in comparison to when engaging in other deal types. A possible reason why growth deals seem to deliver substantially and significantly more value than other M&A deals for target shareholders, is the unique relationship with the acquirers multiple paid in terms of EV/EBITDA and the degree of value creation both for the acquirer and the target firm.

In previous section, we concluded from table (7) that acquiring firms are willing to pay a larger EV/EBITDA in growth deals as this have a positive impact on value creation for their shareholders. This is possibly because the larger premium means that they can secure the acquisition of better performing target firms and which have a better fit. Similarly, for target firms, table (8) shows that EV/EBITDA has a positive relationship with value creation for target shareholders. Here, the value arises as a larger EV/EBITDA paid normally translates into a larger bid premium by the acquirer which in turn increases the announcement period cumulative abnormal return gained by target shareholders. As a consequence, growth deals become relatively more successful for both acquiring and target firms. This is also what we empirically observe as growth deals generates the first and second largest average cumulative average abnormal return in the acquiring and target sample, respectively.

Acquirers in consolidation and financial deals are seemingly more certain that the acquisition will generate synergies and thus create value for their shareholders. They are therefore willing to pay a larger bid premium, in relation to complementary deals. As a consequence, target shareholders in these deals experience a significantly larger cumulative average abnormal return compared to the target shareholders in deals which are motivated by complementary

products and assets. The cross-sectional regression does not provide any significant or conclusive explanation on why complementary deals seem to underperform consolidation and financial deals in terms of value generated to the target firm. However, we can on a general note, conclude that acquirers underlying M&A rationale have a significant impact on value creation for targets and that differences in value drivers can possibly explain why growth deals outperform other deal types.

7. Conclusion

To conclude, M&A has historically and in recent time been a popular strategic tool deployed by corporate managers in order to create value for shareholders (Albersmeier et al., 2019). Consequently, a lot of literature has been attributed to investigate whether M&A creates value and if some deal types create superior value than others for acquiring and target shareholders. Seemingly less research has focused on acquirers M&A rationale as defined in this paper and its impact on value creation. Moreover, limited research has been attributed to the Nordic M&A market. With that said, the purpose this paper is to add to the previous literature by examining the first research question (RC_1) of whether the acquirer's rationale for entering a M&A deal affect value creation for both acquiring and target shareholders and the second research question (RC_2) which concerns the important factors in explaining value creation for acquirers and targets within and across the different acquisition types. The different deal types are categorized by the acquirer's rationale for entering a deal, and can more specifically be divided into growth, consolidation, complementary, economies of scale, and financially motivated deals. The study is carried out on M&A deals in the Nordic M&A market between the years 1998 - 2018. The acquiring and target sample consist of 218 and 214 deals, respectively.

In order to answer RC_1 we conduct an event study with related parametric and non-parametric tests to investigate the significance of M&A announcement period cumulative abnormal returns. Firstly, we can conclude that M&A create value for acquiring shareholders in growth, economies of scale and consolidation deals. However, we cannot with any statistical significance determine if some acquisition types create relatively superior value to others. Therefore, we cannot conclude that the acquirer's rationale for entering a transaction affect

value creation for acquirers. For target shareholders, M&A is consistently and significantly value adding across all deal types. Furthermore, we can conclude that growth deals create relatively more value than all other deal types and that consolidation and financially motivated deals create superior value relatively to complementary deals for target shareholders. With that said, we can conclude that the acquirer's rationale for entering a M&A deal have a significant impact on value creation for target firms.

To answer RC_2 we conduct a cross-sectional regression across all deal types in both the acquiring and target sample. The dependent variable is the firms cumulative abnormal return during the announcement period. The explanatory variables are the payment method, deal geography, earnings multiple paid by the acquirer, deal size and deal direction. The results show that for the acquiring firms, the value drivers differ in their relationship with value creation depending on the deal type. For example, acquiring shareholders and their degree of value creation in growth deals is significantly and positively affected by the paid EV/EBITDA.

Further, their obtained value from the deal is significantly and negatively impacted by the size of the deal. In consolidating deals a significant value driver is the payment method which indicates that cash financed deals have a negative impact on value creation. The EV/EBITDA is a significant value driver in complementary M&A, as it has a significantly negative relationship with value generated. In economies of scale deals, an important value driver for acquiring shareholders is the size of the deal, where smaller deals create superior value than larger ones. In financially motivated deals the significant value driver is as in the cash of consolidation deals the payment method, where cash financing has a negative relationship with value creation. Also for the target shareholders do the different value drivers differ in their significance and relationship with value creation. The findings show that vertical deals in transactions which aim to consolidate a market outperform horizontal ones, and that cash-funding has a significantly positive impact on value generated for target shareholders in economies of scale deals.

8. Limits and Further Studies

The purpose of this study is to answer the defined research questions and maybe more importantly serve as a foundation for further studies on M&A rationales and their effect on value creation. It is imperative that further studies on the topic, differing in data samples, methodology and structure, is carried out to validate or critically oppose the findings of this study. Furthermore, the adoption of the event study methodology and the shareholder approach relies on expected synergy values to be determined by the stock market on the announcement day. However, some scholars (e.g. Porter, 1987; Ravenscraft and Scherer, 1987) critically voice their belief that the acquirers and the targets short-term stock market performance reflects whether the acquisition strategy is successful or not. They believe that stock markets are biased in their value estimation of M&A deals. Therefore, it would be interesting in future studies to examine the long-term actual performance of the acquirer post M&A by adopting an accounting approach.

Additionally, it would be interesting to more in-depth investigate manager's role and their rationale for pursuing acquisition possibilities pre-M&A and later how managers realise the communicated synergies post-M&A across the different deal types. Another limitation of this study is that we cannot be certain that the managers communicated rationale behind the proposed deal is in fact the true motive underlying the deal. A divergence between the communicated and actual motive will cause bias and affect the validity of the results. It would therefore in the future be valuable to critically examine whether such a divergence exist and deal with it in the classifications of the different deal types.

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10. Appendices

10.Appendix 1

Ann. Date	Target firm	Acquiring Firm	M&A Rationale	Payment Method	Deal Type	EV/EBITDA	Deal Value EUR(m)	M&A Direction	CAR
12/04/2018	Royal Ravintolat Oy	NoHo Partners Plc	Complementary Assets & Products	Stock	Domestic	12.80	90	Horizontal	15.09%
17/04/2018	Evimeria EMR AB	Apptix ASA	Growth	Mix	Cross Border	13.29	8	Horizontal	8.74%
19/06/2017	Lemminkainen Oyj	YIT Corporation	Economies of scale	Mix	Domestic	7.56	771	Horizontal	0.56%
15/05/2017	Bringwell AB	Midsona AB	Economies of Scale	Mix	Domestic	9.64	26	Vertical	3.69%
19/04/2017	Midt Norsk Havbruk AS	NTS ASA	Consolidation	Stock	Domestic	N/A	189	Horizontal	20.97%
24/03/2017	Farstad Shipping ASA	Solstad Offshore ASA	Consolidation	Stock	Domestic	27.72	1559	Horizontal	0.12%
09/02/2017	Comptel Corporation	Nokia Oyj	Complementary Assets & Products	Cash	Domestic	20.65	347	Horizontal	1.34%
23/10/2017	Avega Group AB	Tieto Corporation	Complementary Assets & Products	Cash	Cross Border	12.14	44	Horizontal	0.58%
24/08/2017	Weifa ASA	Karo Pharma AB	Complementary Assets & Products	Cash	Cross Border	19.02	168	Horizontal	-12.93%
27/04/2017	Com Hem AB (18.61% Stake)	Kinnevik AB	Financial	Cash	Cross Border	12.12	390	Vertical	-2.52%
15/12/2016	Matse Holding AB	Axfood AB	Growth	Cash	Domestic	N/A	52	Horizontal	1.87%
07/11/2016	Macro International AB	Svedbergs i Dalstorp AB	Consolidation	Cash	Domestic	10.53	19	Horizontal	2.20%
06/10/2016	Teki Solutions AS (53.94% Stake)	Techstep ASA	Consolidation	Stock	Domestic	N/A	14	Horizontal	2.37%
23/09/2016	SpareBank 1 Notteroy-Tonsberg	SpareBank 1 BV	Economies of scale	Stock	Domestic	N/A	46	Horizontal	6.15%
26/08/2016	PhenixID AB (69.9% Stake)	Clavister AB	Complementary Assets & Products	Stock	Domestic	41.07	6	Horizontal	-7.09%
28/07/2016	Rem Offshore ASA	Solstad Offshore ASA	Economies of scale	Cash	Domestic	6.82	441	Horizontal	16.21%

02/06/2016	HAVFISK ASA	Leroy Seafood Group ASA	Complementary Assets & Products	Cash	Domestic	10.50	440	Horizontal	-4.01%
18/04/2016	Vivoline Medical AB	Xvivo Perfusion AB	Complementary Assets & Products	Mix	Domestic	N/A	10	Horizontal	1.60%
08/02/2016	Ganger Rolf ASA (37.34% Stake)	Bonheur ASA	Growth	Stock	Domestic	N/A	56	Horizontal	9.83%
22/12/2016	Wallenius Lines AB	Wallenius Wilhelmsen ASA	Economies of scale	Stock	Cross Border	8.44	1442	Horizontal	2.23%
14/11/2016	Lindorff Group	Intrum AB	Economies of scale	Stock	Cross Border	22.03	4120	Horizontal	4.50%
07/09/2016	Topdanmark AS (7.76% Stake)	Sampo plc	Growth	Cash	Cross Border	N/A	181	Horizontal	3.18%
08/07/2016	Jarl Timber AB	Bergs Timber AB	Growth	Cash	Cross Border	N/A	11	Horizontal	1.00%
03/05/2016	Edvard Grieg field (15% Stake)	Lundin Norway AS	Financial	Cash	Cross Border	N/A	442	Horizontal	-2.54%
28/01/2016	Zymetech ehf (99.5% Stake)	Enzymatica AB	Complementary Assets & Products	Stock	Cross Border	N/A	8	Horizontal	4.88%
14/01/2016	Lundin Petroleum AB (11.93% Stake)	Equinor ASA	Growth	Cash	Cross Border	N/A	496	Horizontal	-1.23%
30/10/2015	Uutechnic Oy	Plc Uutechnic Group Oyj	Complementary Assets & Products	Stock	Domestic	27.40	6	Horizontal	18.60%
20/10/2015	Tribona AB	Catena AB	Financial	Mix	Domestic	14.29	534	Horizontal	-1.26%
25/08/2015	Hemtex AB (31.5% Stake)	ICA Gruppen AB	Complementary Assets & Products	Cash	Domestic	19.05	34	Horizontal	0.93%
09/11/2015	Segermo Entreprenad Aktiebolag	NRC Group ASA	Growth	Mix	Cross Border	7.95	24	Horizontal	-1.26%
25/05/2015	PartnerTech AB	Scanfil Oyj	Growth	Cash	Cross Border	N/A	76	Horizontal	7.18%
07/05/2015	Svensk Jarnvagsteknik AB	NRC Group ASA	Growth	Cash	Cross Border	3.24	22	Horizontal	34.50%
04/03/2015	Dovre Group Projects AS	Dovre Group Plc	Economies of scale	Mix	Cross Border	17.37	16	Horizontal	25.28%
19/12/2014	Norresundby Bank	Nordjyske Bank A/S	Consolidation	Cash	Domestic	N/A	272	Horizontal	-3.79%
08/07/2014	Staff Invest Oy (Labour hire service operations)	NoHo Partners Plc	Complementary Assets & Products	Cash	Domestic	N/A	8	Vertical	0.20%
09/06/2014	Connecta AB	Acando AB	Growth	Stock	Domestic	20.24	59	Horizontal	-5.94%
24/02/2014	BRFkredit a/s	Jyske Bank	Complementary Assets & Products	Mix	Domestic	N/A	992	Horizontal	6.87%

24/11/2014	Pswincom AS	Link Mobility Group AS	Complementary Assets & Products	Mix	Cross Border	8.52	10	Horizontal	6.25%
07/07/2014	Altona Mining Limited (Kylylahti Copper Mine)	Boliden AB	Growth	Cash	Cross Border	N/A	74	Horizontal	0.40%
22/01/2014	Rautaruukki Oyj	SSAB	Consolidation	Stock	Cross Border	11.06	1858	Horizontal	9.49%
11/11/2013	DiBa Bank A/S	Sydbank A/S	Growth	Cash	Domestic	N/A	64	Horizontal	-1.25%
20/08/2013	Brinova Logistik AB	Catena AB	Financial	Cash	Domestic	N/A	438	Vertical	14.50%
10/06/2013	Kymen Puhelin Oy (50.4% Stake); Telekarelia Oy (33.2% Stake)	Elisa Oyj	Complementary Assets & Products	Stock	Domestic	N/A	29	Horizontal	0.04%
06/02/2013	Norway Pelagic AS (56.7% Stake)	Austevoll Seafood ASA	Economies of scale	Cash	Domestic	16.19	173	Horizontal	0.84%
06/12/2012	Cortus AB	CleanTech East Holding AB	Growth	Stock	Domestic	N/A	12	Vertical	1.14%
18/10/2012	Epsilon AB	AF AB	Growth	Mix	Domestic	9.78	198	Horizontal	0.31%
18/09/2012	Sparbank A/S	Spar Nord Bank A/S	Growth	Stock	Domestic	N/A	46	Horizontal	-3.04%
20/06/2012	Korsnas AB	BillerudKorsnas AB	Complementary Assets & Products	Mix	Domestic	15.24	1296	Horizontal	14.59%
25/04/2012	NRC Group ASA (92.4% Stake)	Skandinaviska Enskilda Banken AB; Folketrygdfondet; MP Pensjon; Akershus fylkeskommunale pensjonskasse	Financial	Cash	Domestic	N/A	46	Vertical	-5.11%
07/05/2012	Traen A/S	Formpipe Software AB	Growth	Cash	Cross Border	7.33	40	Horizontal	-3.33%
12/01/2012	Aspiro AB (80.41% Stake)	Schibsted ASA	Growth	Stock	Cross Border	N/A	19	Vertical	4.12%
07/11/2011	Seco Tools AB	Sandvik AB	Economies of scale	Stock	Domestic	12.64	848	Vertical	0.13%
27/07/2011	Ventelo Sverige AB	A3 Allmanna IT - och Telekomaktiebolaget	Economies of scale	Mix	Domestic	N/A	8	Horizontal	25.61%
17/03/2011	SaekI AB	Investment AB Latour	Financial	Stock	Domestic	N/A	398	Conglomorate	0.49%
16/12/2011	LEAF AB	Cloetta AB	Consolidation	Mix	Cross Border	9.03	745	Horizontal	3.98%
03/09/2011	NORAK Holding AS	DNO International ASA	Growth	Stock	Cross Border	N/A	186	Horizontal	5.46%

13/12/2010	Cardo AB	ASSA ABLOY AB	Complementary Assets & Products	Cash	Domestic	14.50	1245	Horizontal	2.12%
27/09/2010	Modul 1 Data AB (82.1% Stake)	Softronic AB	Complementary Assets & Products	Mix	Domestic	17.08	7	Horizontal	1.01%
20/07/2010	Norway Pelagic AS (32.27% Stake)	Austevoll Seafood ASA	Financial	Cash	Domestic	7.73	37	Horizontal	-3.58%
30/06/2010	Konsumentkredit i Sverige AB	Nordnet AB	Consolidation	Mix	Domestic	N/A	26	Horizontal	-5.07%
08/06/2010	HQ Fonder AB	Investment AB Oresund	Financial	Cash	Domestic	N/A	89	Horizontal	-4.72%
07/06/2010	ErgoGroup AS	EVRY ASA	Consolidation	Stock	Domestic	5.01	319	Horizontal	3.06%
02/06/2010	HL Display AB (68.98% Stake)	Ratos AB	Financial	Cash	Domestic	11.91	108	Vertical	-0.90%
30/05/2010	Unison Forsikring ASA	Protector Forsikring ASA	Economies of scale	Cash	Domestic	N/A	16	Horizontal	0.02%
17/09/2010	Marine Farms ASA (67.05% Stake)	Morpol ASA	Growth	Cash	Cross Border	10.48	135	Vertical	0.54%
24/08/2010	Goodtech Intressenter AB	Goodtech ASA	Complementary Assets & Products	Cash	Cross Border	4.62	29	Horizontal	11.68%
07/12/2009	Fastighets AB Fosema	Brinova Fastigheter AB	Growth	Mix	Domestic	21.37	32	Horizontal	1.60%
05/11/2009	Swedish Orphan International AB	Swedish Orphan Biovitrum AB	Economies of scale	Mix	Domestic	17.41	335	Horizontal	7.05%
05/11/2009	Tamfelt Oyj (97.18% Stake)	Metso Oyj	Complementary Assets & Products	Stock	Domestic	6.71	199	Vertical	4.96%
15/10/2009	Larox Corporation	Outotec Oyj	Consolidation	Stock	Domestic	7.79	126	Horizontal	1.96%
14/10/2009	Skanditek Industrifoervaltning AB	Bure Equity AB	Financial	Stock	Domestic	N/A	185	Conglomorate	-2.21%
10/08/2009	Talentum Oyj (67.82% Stake)	Alma Media Oyj	Complementary Assets & Products	Cash	Domestic	6.41	58	Horizontal	9.69%
26/06/2009	Din Bostad Sverige AB	Fastighets AB Balder	Economies of scale	Stock	Domestic	17.72	445	Horizontal	0.29%
19/05/2009	MYDATA automation AB	Mycronic AB	Economies of scale	Stock	Domestic	N/A	27	Vertical	6.31%
28/04/2009	Hemtex AB (68.3% Stake)	ICA Gruppen AB	Financial	Cash	Domestic	6.30	59	Vertical	3.06%
23/04/2009	Emesco AB	Kinnevik AB	Financial	Stock	Domestic	N/A	118	Horizontal	7.31%
17/04/2009	Annehem Fastigheter AB (93.1% Stake)	Peab AB	Complementary Assets & Products	Mix	Domestic	N/A	43	Vertical	-2.26%

30/03/2009	Technor Group	Simtronics AS	Economies of scale	Mix	Domestic	9.68	33	Horizontal	8.81%
13/01/2009	Carrier ARW	Beijer Ref AB	Economies of scale	Stock	Cross Border	N/A	99	Vertical	6.18%
10/11/2008	Peab Industri AB	Peab AB	Financial	Stock	Domestic	N/A	573	Vertical	-5.99%
21/10/2008	PanAlarm AB (78.83% Stake)	Panaxia Security AB	Economies of scale	Cash	Domestic	34.23	19	Horizontal	5.15%
14/10/2008	Leroy Seafood Group ASA (31.53% Stake)	Austevoll Seafood ASA	Economies of scale	Cash	Domestic	9.69	118	Vertical	1.35%
29/09/2008	Bonusbanken A/S	Vestjysk Bank A/S	Financial	Cash	Domestic	N/A	33	Horizontal	-7.98%
24/10/2008	Fortum Service AS; Infra Service Vaast AB; Infra Service Oest AB; Finnish Substation Service Oy	Infratek ASA	Growth	Stock	Cross Border	N/A	25	Horizontal	1.66%
27/08/2008	Brostrom AB	A.P. Moller - Maersk A/S	Consolidation	Cash	Cross Border	7.05	776	Horizontal	10.81%
28/01/2008	Qt Software	Nokia Oyj	Complementary Assets & Products	Mix	Cross Border	N/A	92	Vertical	-0.89%
21/12/2007	Aker Drilling ASA (55.03% Stake)	Converto AS	Financial	Cash	Domestic	N/A	639	Vertical	1.77%
12/11/2007	Arrow Seismic ASA	Petroleum Geo-Services ASA (PGS)	Growth	Cash	Domestic	105.41	260	Horizontal	14.76%
01/11/2007	Malaa Geoscience Forvaltnings AB	Guideline Technology AB (Publ)	Growth	Cash	Domestic	19.90	9	Horizontal	13.15%
22/10/2007	AcadeMedia AB (73.7% Stake)	Bure Equity AB	Financial	Cash	Domestic	44.34	48	Conglomorate	-2.86%
09/10/2007	Aker BP ASA	Pertra ASA	Consolidation	Stock	Domestic	N/A	447	Horizontal	-5.61%
05/09/2007	Tryggingamidstodin HF (39.8% Stake)	Glitnir banki hf	Financial	Mix	Domestic	N/A	229	Horizontal	1.14%
30/05/2007	Takoma Oyj	Panostaja Oyj	Growth	Cash	Domestic	12.11	19	Vertical	4.19%
14/05/2007	Stavanger Aftenblad ASA (41.67% Stake)	Schibsted ASA	Consolidation	Cash	Domestic	17.28	137	Horizontal	-4.01%
11/05/2007	Reka Kaapeli Oy	Neo Industrial Plc	Financial	Cash	Domestic	2.75	19	Vertical	3.29%
02/04/2007	Swedish Tool Holding AB	Duroc AB	Growth	Mix	Domestic	N/A	12	Horizontal	1.24%
26/03/2007	Inwarehouse AB	Komplett AS	Growth	Cash	Domestic	17.50	16	Horizontal	1.01%

26/02/2007	Veststar Holding As	Leroy Seafood Group ASA	Economies of scale	Stock	Domestic	N/A	134	Horizontal	-1.88%
29/01/2007	DOF ASA	DOF Subsea AS	Growth	Stock	Domestic	N/A	153	Horizontal	0.96%
15/10/2007	Biolipox AB	Orexo AB	Economies of scale	Stock	Cross Border	N/A	77	Horizontal	-13.18%
01/10/2007	Lindex AB	Stockmann plc	Consolidation	Cash	Cross Border	8.97	972	Horizontal	-1.74%
24/09/2007	All Cards Service Center ACSC AB	XPonCard Group AB	Growth	Stock	Cross Border	5.76	20	Horizontal	9.52%
03/09/2007	SPP Liv AB	Storebrand ASA	Economies of scale	Cash	Cross Border	N/A	1935	Horizontal	-3.59%
20/08/2007	SalusAnsvar AB	DNB ASA	Growth	Cash	Cross Border	13.20	80	Horizontal	1.02%
11/06/2007	Component Software Group AS	Affecto Oyj	Growth	Mix	Cross Border	13.02	47	Horizontal	12.77%
08/06/2007	Roxar ASA	Roxar	Consolidation	Cash	Cross Border	184.86	275	Horizontal	3.52%
24/05/2007	Kemira GrowHow Oyj	Yara International ASA	Consolidation	Cash	Cross Border	15.83	879	Horizontal	0.75%
22/05/2007	eQ Corporation	ALMC hf.	Growth	Cash	Cross Border	N/A	256	Horizontal	1.61%
24/04/2007	Cardinova AB; Validus NnP AS	Bringwell AB	Growth	Cash	Cross Border	5.71	17	Vertical	-3.68%
17/04/2007	Svensk Fastighetsformedling AB	DNB ASA	Consolidation	Cash	Cross Border	N/A	48	Horizontal	1.92%
26/02/2007	Ericsson Television AS (88.3% Stake)	Ericsson AB	Consolidation	Cash	Cross Border	17.18	839	Horizontal	-1.48%
05/02/2007	FIM Oyj	Glitnir banki hf	Growth	Mix	Cross Border	N/A	341	Horizontal	-2.73%
18/12/2006	Norsk Hydro ASA (Oil and Gas Activities)	Equinor ASA	Economies of scale	Mix	Domestic	3.28	22154	Horizontal	-4.89%
08/12/2006	Independent Oil Tools AS	Petrolia Shashin AS	Growth	Cash	Domestic	N/A	54	Vertical	0.65%
10/11/2006	Swedish Meats ek.for	HKScan Corporation	Growth	Mix	Domestic	10.52	298	Vertical	1.45%
17/10/2006	Atrium Fastigheter AB	Atrium Ljungberg AB	Growth	Mix	Domestic	N/A	996	Horizontal	10.23%
26/06/2006	NOS Clearing ASA (79.88% Stake)	Imarex ASA	Growth	Mix	Domestic	N/A	57	Horizontal	0.88%

09/06/2006	Lounet Oy (53% Stake)	Elisa Oyj	Economies of scale	Mix	Domestic	N/A	14	Horizontal	-1.47%
09/06/2006	Active 24 ASA (60.1% Stake)	Mamut ASA	Complementary Assets & Products	Cash	Domestic	11.91	16	Horizontal	-4.27%
05/06/2006	Netwise AB	Ericsson AB	Growth	Cash	Domestic	12.50	34	Vertical	-4.01%
31/05/2006	Sentera Plc	Digia Oyj	Growth	Mix	Domestic	10.19	38	Horizontal	1.67%
24/05/2006	Ikast Byggeindustri A/S	Sjaelso Gruppen A/S	Growth	Mix	Domestic	N/A	111	Horizontal	-1.53%
09/05/2006	JC Jeans Company	RNB Retail and Brands AB	Consolidation	Mix	Domestic	14.54	222	Horizontal	2.00%
03/04/2006	Gambro AB (80.1% Stake)	Investor AB; EQT Partners AB	Financial	Cash	Domestic	11.77	2674	Vertical	4.25%
22/03/2006	Kogun hf	365 hf	Financial	Stock	Domestic	14.14	267	Vertical	1.95%
13/03/2006	Potagua FLS A/S	FLSmidth & Co. A/S	Economies of scale	Stock	Domestic	N/A	828	Vertical	-0.73%
31/01/2006	Analyste Oyj	Basware Corporation	Growth	Mix	Domestic	N/A	27	Horizontal	10.38%
09/01/2006	Resco AB	Acando AB	Growth	Cash	Domestic	14.97	19	Horizontal	18.04%
09/01/2006	Voice Norge AS	Gresvig ASA	Economies of scale	Stock	Domestic	7.78	125	Horizontal	2.14%
15/11/2006	Midelfart & Co AS	Midsona AB	Complementary Assets & Products	Stock	Cross Border	N/A	52	Horizontal	5.02%
09/11/2006	3M Company (Pharmaceutical Operations in Europe)	Meda AB	Complementary Assets & Products	Cash	Cross Border	N/A	668	Horizontal	15.89%
19/10/2006	Eignarhaldsfelagid Verdbrefathing hf	OMX AB	Consolidation	Stock	Cross Border	N/A	29	Horizontal	1.31%
12/09/2006	P4 Radio Hele Norge ASA (31.2% Stake)	Modern Times Group MTG AB	Growth	Cash	Cross Border	11.43	37	Horizontal	-2.22%
07/06/2006	Rica Hotels AS (39.3% Stake)	Home Properties AB	Growth	Cash	Cross Border	12.74	68	Horizontal	0.63%
29/05/2006	Intelecom AS	Intelecom Group AS	Complementary Assets & Products	Mix	Cross Border	6.56	11	Horizontal	12.98%
16/05/2006	NextGenTel AS	Telia Company AB	Growth	Cash	Cross Border	13.97	239	Horizontal	-2.15%
01/05/2006	Capinordic AS (33% Stake)	Keops A/S	Growth	Mix	Cross Border	N/A	90	Vertical	2.52%
12/04/2006	NEMI Forsikring ASA	Tryggingamidstodin HF	Growth	Cash	Cross Border	N/A	107	Horizontal	1.38%

08/02/2006	Trio Enterprises AB	Teligent Telecom AB	Complementary Assets & Products	Stock	Cross Border	28.17	29	Horizontal	-10.78%
28/12/2005	Offrig Drilling (previously Offshore Rig Services ASA) (38% Stake)	Awilco Offshore ASA	Growth	Stock	Domestic	N/A	61	Horizontal	-0.43%
23/12/2005	Fastighets AB Tornet	Fabege AB	Complementary Assets & Products	Mix	Domestic	4.56	1112	Horizontal	1.00%
13/12/2005	Opticom ASA (90% Stake)	FAST Search & Transfer ASA	Complementary Assets & Products	Stock	Domestic	N/A	341	Vertical	-1.60%
05/12/2005	Aktiv Gruppen Holding A/S	EuroTrust A/S	Financial	Stock	Domestic	N/A	170	Horizontal	29.12%
17/10/2005	Gamers Paradise Holding AB	CISL Gruppen AB	Economies of scale	Stock	Domestic	N/A	38	Vertical	2.44%
27/06/2005	Cross Pharma AB	BioPhausia AB	Growth	Cash	Domestic	N/A	5	Horizontal	8.55%
16/06/2005	Andvord AS	Andvord Tybring-Gjedde ASA (formerly C. Tybring-Gjedde ASA)	Consolidation	Stock	Domestic	N/A	38	Horizontal	18.82%
13/04/2005	Focal Point AB	Telelogic AB	Complementary Assets & Products	Stock	Domestic	11.91	12	Horizontal	-0.87%
09/02/2005	Departments & Stores Europe AB	RNB Retail and Brands AB	Complementary Assets & Products	Mix	Domestic	6.81	19	Horizontal	-5.39%
04/02/2005	Bergman & Beving MediTech AB	Addtech AB	Growth	Cash	Domestic	N/A	19	Vertical	8.56%
10/01/2005	Elkem ASA	Orkla ASA	Financial	Cash	Domestic	5.86	1364	Conglomorate	1.67%
26/09/2005	Findexa AS	Eniro AB	Growth	Mix	Cross Border	13.59	1144	Horizontal	-3.91%
25/04/2005	Privatbanken ASA	Skandinaviska Enskilda Banken AB	Financial	Cash	Cross Border	N/A	156	Horizontal	0.89%
17/02/2005	Schibsted Mobile A/S	Aspiro AB	Growth	Stock	Cross Border	32.24	21	Horizontal	11.12%
10/02/2005	Hydro Extruded Solutions AS (26% Stake)	Orkla ASA	Financial	Cash	Cross Border	7.52	195	Conglomorate	2.33%
17/01/2005	Elsam AS (35% Stake)	Vattenfall AB	Consolidation	Mix	Cross Border	16.26	1139	Horizontal	0.24%
22/12/2004	TurnIT AB	IAR Systems Group AB	Economies of scale	Stock	Domestic	N/A	27	Vertical	-2.97%
03/11/2004	Advium Corporate Finance Ltd	eQ Corporation	Financial	Mix	Domestic	N/A	10	Horizontal	5.10%
07/10/2004	Gorthon Lines AB~	Viking Supply Ships AB	Economies of scale	Stock	Domestic	4.47	30	Horizontal	1.51%

06/09/2004	SQS Security Qube System AB	CashGuard AB	Economies of scale	Stock	Domestic	N/A	25	Horizontal	2.17%
06/05/2004	RKS AB	Sigma AB	Complementary Assets & Products	Stock	Domestic	N/A	10	Horizontal	-3.52%
26/04/2004	Custos AB	Investment AB Oresund	Financial	Stock	Domestic	N/A	60	Horizontal	1.15%
29/03/2004	Yomi Plc	Elisa Oyj	Economies of scale	Stock	Domestic	4.37	49	Vertical	-1.89%
30/12/2004	North Atlantic Natural Resources AB (63% Stake)	Lundin Mining Corporation	Growth	Cash	Cross Border	3.19	21	Horizontal	0.20%
01/12/2004	Copenhagen Stock Exchange A/S	OMX AB	Economies of scale	Mix	Cross Border	9.46	130	Horizontal	1.56%
08/11/2004	Orkla Confectionery & Snacks Finland Ab	Orkla ASA	Consolidation	Mix	Cross Border	11.26	464	Horizontal	1.06%
12/12/2003	NEG Micon A/S	Vestas Wind Systems A/S	Economies of scale	Stock	Domestic	10.02	613	Horizontal	-1.39%
15/10/2003	Photonyx Ltd	Ignis ASA	Growth	Stock	Domestic	N/A	17	Vertical	-0.31%
13/06/2003	Fastighets AB Celtica	Atrium Ljungberg AB	Financial	Stock	Domestic	N/A	15	Horizontal	5.04%
26/05/2003	Kommersiella Fordon Europa AB (KFAB)	AB Volvo	Economies of scale	Stock	Domestic	N/A	416	Vertical	1.44%
15/05/2003	Acando	Acando AB	Complementary Assets & Products	Stock	Domestic	N/A	14	Horizontal	3.87%
18/03/2003	Gjensidige NOR Holding ASA	DNB ASA	Economies of scale	Mix	Domestic	N/A	2567	Horizontal	-0.16%
25/10/2003	Boliden (Fabrication and Technology Sales units)	Outokumpu Oyj	Growth	Stock	Cross Border	N/A	50	Vertical	-3.27%
25/08/2003	Mefjorden AS	Visma Software Holding AB	Complementary Assets & Products	Cash	Cross Border	N/A	15	Horizontal	-0.23%
13/02/2003	Raisio (Diagnostics unit)	Raisio Group Plc	Growth	Cash	Cross Border	N/A	17	Horizontal	-3.11%
19/06/2002	Rautakirja Oy	Sanoma Oyj	Economies of scale	Mix	Domestic	6.56	178	Horizontal	-2.32%
20/05/2002	Partek Corporation	Kone Oyj-B	Consolidation	Cash	Domestic	8.83	1674	Horizontal	-15.80%
11/04/2002	JOT Automation Ltd.	Bittium Oyj	Economies of scale	Stock	Domestic	N/A	87	Horizontal	14.82%
01/03/2002	JMC Tools	Incap Corporation	Complementary Assets & Products	Stock	Domestic	3.99	60	Horizontal	0.16%

18/02/2002	Egnsbank Fyn A/S (39.57%)	Sydbank A/S	Economies of scale	Stock	Domestic	N/A	27	Horizontal	-4.18%
27/11/2002	Innopoli Oy	Technopolis Plc	Complementary Assets & Products	Cash	Cross Border	N/A	25	Horizontal	-0.78%
05/07/2002	Hydro Extruded Solutions AS	Elkem ASA	Consolidation	Cash	Cross Border	5.71	631	Horizontal	0.76%
01/07/2002	AvestaPolarit	Outokumpu Oyj	Growth	Cash	Cross Border	15.37	1113	Horizontal	1.62%
26/03/2002	Sonera Oyj~	Telia Company AB	Consolidation	Stock	Cross Border	7.68	9914	Horizontal	2.10%
11/09/2001	Spar Finland plc	Axfood AB	Growth	Cash	Domestic	9.18	24	Vertical	-3.29%
20/04/2001	Riihimaen Puhelin Oy	Elisa Oyj	Consolidation	Stock	Domestic	N/A	41	Horizontal	3.60%
21/03/2001	Soon Communications oyj	Elisa Oyj	Complementary Assets & Products	Stock	Domestic	7.37	228	Horizontal	-0.71%
16/02/2001	Riihimaen Puhelin Oy	Elisa Oyj	Economies of scale	Stock	Domestic	N/A	34	Vertical	13.58%
20/11/2001	Scandinavia Online AB (SOL)	Eniro AB	Growth	Cash	Cross Border	N/A	56	Horizontal	-8.96%
06/11/2001	Birka Energi AB	Fortum Oyj AB	Consolidation	Cash	Cross Border	12.04	4859	Horizontal	-0.78%
03/09/2001	Direktia Ltd (directories business)	Eniro AB	Growth	Cash	Cross Border	N/A	90	Horizontal	-3.63%
11/04/2001	Midtbank	Svenska Handelsbanken AB	Consolidation	Cash	Cross Border	N/A	283	Horizontal	-0.93%
29/12/2000	SPP Liv AB	Svenska Handelsbanken AB	Financial	Mix	Domestic	N/A	820	Horizontal	5.86%
04/12/2000	Mandatum & Co Ltd	Sampo plc	Complementary Assets & Products	Stock	Domestic	N/A	375	Horizontal	-0.35%
16/10/2000	Christiania Bank og Kreditkasse ASA	Nordea AB	Consolidation	Mix	Domestic	24.02	3353	Horizontal	-0.47%
02/10/2000	RealDanmark A/S	Danske Bank A/S	Consolidation	Stock	Domestic	N/A	3600	Horizontal	14.74%
15/05/2000	Entra Data AB	Tieto Corporation	Complementary Assets & Products	Stock	Domestic	50.66	289	Horizontal	-5.81%
04/05/2000	Navia ASA	Kongsberg Gruppen ASA	Economies of scale	Cash	Domestic	12.26	109	Vertical	-3.94%
15/03/2000	TV 1000 Sverige AB (TV 1000, TV 1000 Cinema)	Modern Times Group MTG AB	Economies of scale	Stock	Domestic	N/A	138	Horizontal	-10.03%
06/03/2000	Epact Technology AB	Enea AB	Economies of scale	Mix	Domestic	N/A	118	Horizontal	3.51%

28/02/2000	Svenska Cellulosa Aktiebolaget SCA (Forestry holdings)	Graninge AB	Growth	Stock	Domestic	N/A	179	Horizontal	-0.24%
16/02/2000	Kauppakaari Oyj	Talentum Oyj	Consolidation	Stock	Domestic	N/A	88	Horizontal	-6.84%
07/02/2000	Hotellus International AB	Pandox AB	Complementary Assets & Products	Mix	Domestic	N/A	93	Horizontal	-3.40%
14/01/2000	Joensuun Energia Oy	Fortum Espoo Oyj (formerly E.ON Finland Oyj)	Growth	Cash	Domestic	N/A	74	Horizontal	1.39%
29/09/2000	Avesta Sheffield AB	Outokumpu Oyj	Complementary Assets & Products	Stock	Cross Border	7.28	1284	Horizontal	-13.73%
31/08/2000	Hoffmann & Sonner	Veidekke ASA	Economies of scale	Stock	Cross Border	N/A	53	Horizontal	-1.38%
23/06/2000	NetCom ASA	Telia Company AB	Growth	Cash	Cross Border	53.21	2751	Horizontal	-7.00%
21/06/2000	Svedala Industri AB	Metso Oyj	Complementary Assets & Products	Cash	Cross Border	11.76	1660	Horizontal	-6.26%
06/03/2000	Unidanmark A/S	Nordea AB	Consolidation	Stock	Cross Border	N/A	5198	Horizontal	-3.56%
28/02/2000	Avenir AS	Atea ASA	Growth	Cash	Cross Border	44.62	365	Horizontal	-5.60%
31/05/2000	Carlsberg	Carlsberg Breweries A/S	Consolidation	Cash	Cross Border	N/A	1604	Horizontal	1.91%
16/11/1999	Celsius AB	Saab AB	Economies of scale	Cash	Domestic	N/A	562	Horizontal	8.43%
01/10/1999	Suunto Oyj	Amer Sports Oyj	Economies of scale	Cash	Domestic	N/A	48	Horizontal	8.68%
10/05/1999	Saga Petroleum	Norsk Hydro ASA	Consolidation	Mix	Domestic	N/A	4717	Vertical	-3.12%
23/03/1999	Postbanken	DNB ASA	Consolidation	Mix	Domestic	N/A	532	Horizontal	-6.50%
07/01/1999	Storebrand Bank ASA	Storebrand ASA	Complementary Assets & Products	Cash	Domestic	N/A	184	Horizontal	0.45%
20/09/1999	Christiania Bank og Kreditkasse ASA	Nordea AB	Growth	Cash	Cross Border	N/A	2975	Horizontal	0.42%
14/09/1999	FIH A/S	Swedbank AB	Consolidation	Cash	Cross Border	N/A	888	Horizontal	4.44%
03/03/1999	Enator AB	Tieto Corporation	Growth	Stock	Cross Border	N/A	952	Horizontal	7.87%

Table 10: The table show all deals in the acquiring sample. The date of the announcement is provided together with information regarding the target firm, the acquiring firm, the acquirers M&A rationale behind the deal, the payment method, whether the deal is domestic or cross-border, the EV/EBITDA multiple paid by the acquirer, the deal value, whether the deal is vertical, horizontal or conglomerate and finally the 3-day cumulative abnormal return of the acquirer.

10.2 Appendix 2

Ann. Date	Target Firm	Acquiring Firm	M&A Rationale	Payment Method	Deal Type	EV/EBITDA	Deal Value EUR(m)	M&A Direction	CAR
12/02/2018	TDC A/S	DK Telekommunikation A/S	Financial	Cash	Domestic	7.72	8551	Horizontal	11.75%
08/02/2018	Nordax Group AB (69.96% Stake)	NDX Intressenter AB	Financial	Mix	Domestic	N/A	471	Vertical	17.68%
18/04/2017	AB Hogkullen (48.4% Stake)	Samhallsbyggnadsbolaget i Norden AB	Financial	Mix	Domestic	N/A	31	Horizontal	-1.31%
25/09/2017	Nets A/S	Evergood 5 AS	Growth	Cash	Cross Border	20.59	5575	Horizontal	7.20%
26/04/2017	Hafslund ASA (46.27% Stake)	City of Oslo	Complementary Assets & Products	Cash	Cross Border	9.24	969	Vertical	13.25%
07/06/2017	DGC One AB (publ)	EQT Partners AB	Economies of Scale	Cash	Domestic	13.80	243	Vertical	58.94%
21/12/2016	Transcom WorldWide AB (75.67% Stake)	Altor Equity Partners AB	Growth	Cash	Domestic	8.86	200	Vertical	38.17%
25/10/2016	Nordnet AB (32.5% Stake)	NNB Intressenter	Growth	Cash	Domestic	N/A	225	Vertical	28.09%
10/11/2016	Nordic Camping & Resort AB	Norvestor VII L.P.	Growth	Cash	Cross Border	10.83	30	Vertical	27.21%
20/09/2016	Aurora LPG Holding ASA (70.17% Stake)	BW LPG Limited	Financial	Mix	Cross Border	5.08	299	Horizontal	12.66%
07/06/2016	BoConcept Holding A/S	Layout Bidco A/S	Complementary Assets & Products	Cash	Cross Border	11.68	188	Horizontal	-1.64%
29/02/2016	Nordic Service Partners Holding AB	Etib Holding II AB	Financial	Mix	Cross Border	7.24	50	Vertical	20.73%
28/01/2016	Agrinos AS (37.98% Stake)	Havfonn AS; Manor Investment S.A.; EuroChem Group AG	Financial	Cash	Cross Border	N/A	19	Horizontal	-8.74%
30/11/2015	Industrial & Financial Systems AB	IGT Holding IV AB	Financial	Cash	Domestic	17.49	959	Vertical	1.96%
30/11/2015	Proffice AB	Randstad Nordic AB	Consolidation	Cash	Domestic	11.12	184	Horizontal	29.65%
02/11/2015	Cybercom Group AB (54.8% Stake)	Viltor AB	Growth	Cash	Domestic	4.78	34	Vertical	28.57%
21/08/2015	Molslinjen A/S (48.95% Stake)	Polaris Private Equity IV	Complementary Assets & Products	Cash	Domestic	9.54	142	Horizontal	-3.31%
19/08/2015	Stylepit A/S (75.1% Stake)	Bestseller A/S	Complementary Assets & Products	Cash	Domestic	N/A	25	Vertical	58.30%
29/10/2015	Berlin IV A/S (94.82% Stake)	Immeo Dansk Holding ApS	Economies of Scale	Cash	Cross Border	7.10	329	Horizontal	19.36%
09/09/2015	Autoliv, Inc (brake control business); Nissin Kogyo Co., Ltd. (4-wheel brake control and brake apply businesses)	Autoliv Inc/Nissin Kogyo Co Ltd JV	Growth	Cash	Cross Border	N/A	238	Horizontal	6.32%

15/07/2015	yA Holding ASA	Resurs Bank AB	Consolidation	Cash	Cross Border	N/A	177	Horizontal	23.52%
03/12/2014	Pure E&P AS (48.34% Stake)	EPSI AS	Economies of Scale	Cash	Domestic	N/A	62	Horizontal	3.60%
29/10/2014	Hurtigruten AS	Silk Bidco AS	Financial	Cash	Domestic	8.98	608	Vertical	63.29%
22/09/2014	Stendorren Fastigheter AB	#Header Compression Sweden Holding AB	Growth	Stock	Domestic	N/A	96	Vertical	15.71%
26/06/2014	ACAP Invest AB	North Investment Group AB	Complementary Assets & Products	Cash	Domestic	20.79	16	Horizontal	25.84%
13/05/2014	Availo Networks AB	IP-Only AB	Growth	Cash	Domestic	35.00	63	Horizontal	20.74%
01/04/2014	Hedson Technologies International AB	Mellby Gard AB	Financial	Cash	Domestic	5.70	14	Horizontal	21.54%
29/10/2014	DIBS Payment Services AB	Nets A/S	Complementary Assets & Products	Cash	Cross Border	19.92	83	Horizontal	43.08%
24/10/2014	Flex LNG Limited (34.98% Stake)	Geveran Trading Co., Ltd.	Growth	Cash	Cross Border	0.63	38	Horizontal	7.33%
12/09/2014	Vacon Oyj	Danfoss A/S	Growth	Cash	Cross Border	19.34	1044	Horizontal	12.08%
21/07/2014	AGR Petroleum Services Holdings AS	Mirror Bidco AS	Growth	Cash	Cross Border	9.03	196	Vertical	11.66%
16/05/2014	Solvtrans AS	Silver Holdings AS	Growth	Cash	Domestic	9.69	167	Vertical	45.02%
17/06/2013	Trygga Hem Skandinavien AB	Sector Alarm AB	Complementary Assets & Products	Cash	Domestic	N/A	22	Horizontal	13.63%
20/02/2013	Sigma AB (71.68% Stake)	Danir AB	Growth	Cash	Domestic	17.74	58	Horizontal	27.70%
11/02/2013	Hoganas AB	H Intressenter AB	Complementary Assets & Products	Cash	Domestic	9.96	1412	Vertical	22.69%
25/11/2013	Songa Offshore ASA (39.47% Stake)	Perestroika AS	Complementary Assets & Products	Cash	Cross Border	N/A	39	Horizontal	-31.52%
22/11/2013	Nordic Shipholding A/S (76.03% Stake)	Nordic Maritime S.a r.l.	Financial	Stock	Cross Border	37.76	44	Horizontal	27.23%
16/09/2013	Bridge Energy ASA	Spike Exploration Holding AS	Financial	Stock	Cross Border	N/A	162	Horizontal	38.63%
26/06/2013	Infratek ASA (79.5% Stake)	Triton Partners	Growth	Cash	Cross Border	3.96	57	Horizontal	-20.99%
04/09/2013	Vestfyns Bank	Svendborg Sparekasse A/S	Complementary Assets & Products	Stock	Domestic	N/A	235	Horizontal	-27.63%
17/12/2012	Morpol ASA (87.1% Stake)	Marine Harvest ASA	Complementary Assets & Products	Mix	Domestic	7.90	408	Horizontal	37.49%
31/01/2012	Fornebu Utvikling ASA (82.1% Stake)	OBOS Nye Hjem AS	Growth	Stock	Domestic	168.92	358	Horizontal	43.79%
17/02/2012	Capilon AB	Verdane Capital VII Intressenter AB	Financial	Cash	Cross Border	N/A	16	Horizontal	12.81%

21/02/2012	Oral Hammaslaakarit Plc (69.99% Stake)	Atine Group Oy	Complementary Assets & Products	Cash	Domestic	12.49	25	Horizontal	8.54%
15/10/2012	Avonova Halsa AB	Stamina Helse AS	Consolidation	Cash	Cross Border	8.86	19	Horizontal	37.63%
03/12/2012	AKVA Group ASA (71.58% Stake)	Egersund Group AS	Complementary Assets & Products	Cash	Domestic	6.40	40	Vertical	11.11%
19/12/2011	Itiviti AB	Orc Group Holding AB	Growth	Cash	Domestic	11.64	224	Vertical	34.20%
06/12/2011	Dagon AB	Klovern AB	Consolidation	Cash	Domestic	N/A	558	Horizontal	18.15%
16/09/2011	EMS Seven Seas ASA (95% Stake)	Nordic Trustee AS	Financial	Mix	Domestic	14.44	123	Horizontal	73.74%
22/06/2011	ElektronikGruppen BK AB (66% Stake)	Kamic Group AB	Economies of Scale	Cash	Domestic	7.50	26	Horizontal	27.02%
29/09/2011	Polaris Media ASA (36.3% Stake)	Norrkopings Tidningars Media AB ; Nya Wermlands-Tidningens Aktiebolag; Helsingborgs Dagblad AB; Franklin Enterprises Inc.	Growth	Cash	Cross Border	8.70	55	Horizontal	-0.39%
15/02/2011	Simtronics AS (57.36% Stake)	Autronica Fire and Security AS	Growth	Cash	Cross Border	11.89	28	Horizontal	10.50%
11/04/2011	BioPhausia AB	Medivir AB	Growth	Mix	Domestic	N/A	70	Horizontal	36.28%
28/04/2011	Tretti AB	Qliro Group AB	Economies of Scale	Cash	Domestic	11.06	34	Horizontal	23.40%
27/12/2010	NetOnNet AB (69.86% Stake)	Siba AB	Consolidation	Cash	Domestic	8.26	30	Horizontal	16.66%
20/09/2010	Morso Bank AS (65.65% Stake)	Morso Sparekasse	Economies of Scale	Stock	Domestic	N/A	14	Horizontal	-3.54%
20/09/2010	Scanworld TravelPartner AB	Etraveli AB	Complementary Assets & Products	Cash	Domestic	19.05	30	Horizontal	14.50%
28/04/2010	AcadeMedia AB	Svensk Utbildning Intressenter Holding AB	Financial	Mix	Domestic	15.18	333	Vertical	13.84%
22/04/2010	Rorvik Timber AB (57.6% Stake)	Meerwind AB	Growth	Cash	Cross Border	N/A	100	Horizontal	-1.48%
05/01/2010	Ticket Travel Group AB (68% Stake)	Braganza AS	Growth	Cash	Cross Border	N/A	16	Horizontal	25.33%
24/11/2009	TeleComputing ASA	Seco Invest AS	Growth	Cash	Domestic	6.59	81	Horizontal	-0.26%
12/11/2009	SinOceanic Shipping ASA (33.33% Stake)	Sector Omega ASA	Growth	Cash	Domestic	7.13	32	Vertical	4.31%
12/10/2009	Agility Group AS (60.8% Stake)	HVS Invest AS	Growth	Cash	Domestic	3.82	26	Vertical	31.36%
28/09/2009	MRC Global Norway AS ; Bjorge Naxys AS; Align AS	Bokn Invest AS	Growth	Cash	Domestic	N/A	43	Vertical	38.02%
13/07/2009	Synnove Finden ASA	Scandza AS	Growth	Cash	Domestic	8.66	75	Horizontal	40.60%

21/04/2009	Luxo ASA (98.6% Stake)	Glamox AS	Growth	Cash	Domestic	6.78	16	Horizontal	15.03%
17/04/2009	Carl Lamm Holding AB	Ricoh Sverige AB	Complementary Assets & Products	Cash	Cross Border	8.20	63	Horizontal	15.81%
19/01/2009	Terveystalo Healthcare Oyj	Star Healthcare Oy	Growth	Cash	Cross Border	10.92	312	Horizontal	180.89%
07/11/2008	Komplett AS (59.97% Stake)	Canica Invest AS	Growth	Cash	Domestic	6.47	56	Vertical	10.47%
04/11/2008	Intelecom Group AS	Scandinavian Telecom Invest AS	Complementary Assets & Products	Mix	Domestic	7.75	29	Vertical	5.61%
28/10/2008	DOF Subsea AS (42.83% Stake)	First Reserve ; DOF ASA	Growth	Cash	Domestic	12.86	210	Horizontal	21.79%
29/09/2008	Glitnir banki hf (75% Stake)	Government of Iceland	Financial	Cash	Domestic	N/A	600	Vertical	-69.97%
15/09/2008	Forstaedernes Bank (99.11% Stake)	Nykredit Realkredit A/S	Financial	Mix	Domestic	N/A	244	Horizontal	74.07%
05/09/2008	Ocean Heavy Lift ASA##	Spencer Energy AS	Economies of Scale	Cash	Domestic	19.66	196	Vertical	1.89%
18/08/2008	SuperOffice AS (67.83% Stake)	SuperInvest AS	Growth	Cash	Domestic	7.66	47	Horizontal	13.38%
01/08/2008	VLT AB (37.52% Stake)	Liberala Tidningar i Mellansverige AB	Economies of Scale	Cash	Domestic	3.45	56	Horizontal	57.99%
22/07/2008	Gunnebo Industrier AB	Segulah Stellata Holding AB	Financial	Cash	Domestic	8.72	250	Vertical	58.06%
23/06/2008	STX Europe AS (60.8% Stake)	STX Norway AS	Financial	Cash	Domestic	28.27	691	Horizontal	16.29%
17/04/2008	HEDEGAARD foods A/S (87.87% Stake)	Dan Agro Holding	Growth	Cash	Domestic	62.25	87	Vertical	18.16%
01/02/2008	Boss Media AB	GEMed AB	Financial	Cash	Domestic	9.93	112	Horizontal	36.73%
30/09/2008	Arena Personal AB	Arena Group	Financial	Cash	Cross Border	10.56	16	Vertical	23.59%
07/07/2008	EG A/S	#Cidron IT A/S	Financial	Cash	Cross Border	7.62	74	Vertical	18.61%
16/06/2008	Fazer Konfektyr Service AB (51.9% Stake)	Oy Karl Fazer AB	Consolidation	Cash	Cross Border	11.19	217	Horizontal	14.29%
16/05/2008	DeepOcean Group, Inc	Trico Shipping AS	Growth	Mix	Cross Border	10.33	524	Horizontal	24.21%
04/03/2008	Catella AB	Tech Data AB	Growth	Mix	Cross Border	20.76	20	Horizontal	14.49%
26/02/2008	AGR Group ASA (76.58% Stake)	Altor Oil Service Invest	Growth	Cash	Cross Border	14.48	377	Horizontal	25.44%
13/11/2007	Verisure Holding AB (84.5% Stake)	ESML Intressenter	Growth	Cash	Domestic	15.26	859	Vertical	31.07%
29/10/2007	KMT Group AB (57.58% Stake)	Nordstjernan Ventures Investment AB	Growth	Cash	Domestic	14.34	119	Horizontal	34.09%
17/09/2007	Tryggingamidstodin HF (39.8% Stake)	Stodir hf	Financial	Mix	Domestic	N/A	227	Horizontal	-0.13%
17/09/2007	Norgani Hotels ASA	Oslo Properties AS	Consolidation	Cash	Domestic	N/A	478	Horizontal	3.72%
29/08/2007	Trainers' House Oy	Trainers House Oyj	Growth	Mix	Domestic	11.74	67	Horizontal	19.63%
27/08/2007	Nefab AB (53.48% Stake)	NPNC Intressenter AB	Growth	Cash	Domestic	10.84	136	Horizontal	25.97%

02/07/2007	Steen & Strom ASA (44.05% Stake)	Canica AS	Growth	Cash	Domestic	12.52	610	Horizontal	8.52%
21/06/2007	Altinex AS	Norwegian Energy Company ASA	Consolidation	Cash	Domestic	8.59	238	Horizontal	3.60%
14/06/2007	Goodtech Intressenter AB	Rolf Tannergard (Private Investor)	Complementary Assets & Products	Cash	Domestic	10.73	32	Horizontal	0.74%
29/05/2007	Expert ASA	A Wilhelmsen Capital AS	Growth	Cash	Domestic	13.20	673	Vertical	16.40%
09/03/2007	Captura ASA (36.13% Stake)	JCE Group AB	Financial	Cash	Domestic	N/A	9	Horizontal	10.90%
08/03/2007	Birka Line Oy Ab (58% Stake)	Eckero Line Ab Oy	Complementary Assets & Products	Cash	Domestic	5.75	162	Horizontal	9.59%
20/11/2007	Spaencom AS (50.01% Stake)	Consolis Denmark SA	Growth	Cash	Cross Border	2.07	25	Horizontal	-2.73%
22/10/2007	STX Europe AS (39.2% Stake)	STX Norway AS	Growth	Cash	Cross Border	9.58	564	Horizontal	21.87%
26/04/2007	Moderna Finance AB	Milestone ehf	Growth	Cash	Cross Border	N/A	601	Horizontal	26.61%
19/02/2007	Sardus AB (98.6% Stake)	Atria Meat & Fast Food	Complementary Assets & Products	Mix	Cross Border	11.82	204	Horizontal	16.55%
15/01/2007	Pergo AB	Pfleiderer Sweden AB	Financial	Cash	Cross Border	14.42	330	Vertical	12.21%
14/12/2007	Gymgrossisten Nordic AB	Qliro Group AB	Economies of Scale	Cash	Domestic	13.42	21	Horizontal	33.43%
07/12/2006	Component Software Group AS (66.1% Stake)	Norvestor Equity AS	Consolidation	Cash	Domestic	N/A	17	Horizontal	1.81%
30/11/2006	Rieber & Son ASA (51.86% Stake)	Atlantis Vest AS	Economies of Scale	Cash	Domestic	12.48	419	Horizontal	-0.17%
02/10/2006	Semcon AB	JCE Group AB	Financial	Mix	Domestic	9.61	126	Conglomorate	14.79%
01/09/2006	Capio AB	Opica AB	Financial	Cash	Domestic	14.05	2473	Horizontal	39.34%
06/07/2006	Color Print A/S	PCP 2006 Holding A/S	Complementary Assets & Products	Cash	Domestic	N/A	131	Horizontal	-3.84%
29/06/2006	Nera Networks AS (89.32% Stake)	Eltek AS	Economies of Scale	Stock	Domestic	26.08	358	Horizontal	4.32%
29/05/2006	Gresvig ASA (40.64% Stake)	ONS Invest AS	Financial	Cash	Domestic	18.00	67	Horizontal	43.29%
16/05/2006	Allianse ASA	ErgoGroup AS	Complementary Assets & Products	Mix	Domestic	15.42	106	Horizontal	29.97%
27/03/2006	Technor Group	CET Holding AS	Financial	Cash	Domestic	44.48	69	Vertical	18.37%
14/03/2006	Stralfors AB	PostNord AB	Economies of Scale	Cash	Domestic	9.64	241	Horizontal	28.05%
24/11/2006	Rica Hotels AS (39.3% Stake)	JGR Holding AS	Growth	Cash	Cross Border	12.70	67	Horizontal	16.97%
04/05/2006	Consafe Offshore AB	ProSafe SE	Economies of Scale	Cash	Cross Border	59.44	492	Horizontal	11.59%
26/04/2006	Fjord Seafood ASA (32.95% Stake)	Marine Harvest ASA	Growth	Cash	Domestic	9.52	208	Vertical	-1.53%

21/03/2006	LBI International N.V.	Framfab AB	Economies of Scale	Stock	Domestic	13.44	195	Horizontal	4.82%
12/09/2005	Pohjola Insurance Ltd	OP Corporate Bank plc	Complementary Assets & Products	Cash	Domestic	N/A	2042	Horizontal	6.95%
26/08/2005	Kvaerner ASA (85% Stake)	Aker ASA	Complementary Assets & Products	Cash	Domestic	14.01	906	Horizontal	3.56%
19/08/2005	Via Travel Group ASA	FSN Capital Partners AS	Growth	Cash	Domestic	8.86	69	Vertical	-1.88%
12/07/2005	Karlshamns AB (69% Stake)	BNS Industrier AB	Consolidation	Stock	Domestic	20.22	218	Horizontal	3.81%
07/07/2005	Saunalahti Group Oyj	Elisa Oyj	Consolidation	Mix	Domestic	13.46	309	Horizontal	18.27%
20/06/2005	Unitor ASA (90% Stake)	Wallenius Wilhelmsen ASA	Complementary Assets & Products	Cash	Domestic	32.14	310	Horizontal	24.22%
04/05/2005	Rocksource Geotech AS (80% Stake)	Ecuanor Geotech AS	Complementary Assets & Products	Cash	Domestic	N/A	17	Vertical	-0.60%
30/11/2005	TDC A/S	Nordic Telephone Company ApS	Growth	Cash	Cross Border	7.77	11753	Horizontal	5.65%
22/11/2005	OptiMail AB (79% Stake)	Norwegian Mail International AB	Growth	Cash	Cross Border	9.84	13	Horizontal	35.34%
05/09/2005	Catch Communications ASA	Gandhara Capital Limited; Ventelo Invest 2 AS	Growth	Cash	Cross Border	20.29	102	Horizontal	13.47%
20/07/2005	Keops A/S (30% Stake)	Baugur Group hf	Consolidation	Cash	Cross Border	9.35	76	Horizontal	1.96%
12/07/2005	Aarhus United A/S (53% Stake)	BNS Industrier AB	Consolidation	Stock	Cross Border	20.22	328	Horizontal	-0.16%
24/06/2005	Nordic Choice Hotels AS (61.7% Stake)	Home Invest AS	Financial	Cash	Cross Border	12.69	135	Vertical	-0.32%
29/03/2005	ISS A/S	EQT Partners AB; Goldman Sachs (private equity operations)	Consolidation	Cash	Cross Border	10.54	4063	Horizontal	30.13%
17/02/2005	Fazer Konfektyr Service AB (76% Stake)	Oy Karl Fazer AB	Consolidation	Stock	Cross Border	N/A	436	Horizontal	10.80%
30/01/2005	Kompan Danmark A/S	Cidron II A/S	Growth	Cash	Cross Border	10.76	99	Vertical	6.15%
24/01/2005	Alma Media Oyj	Almanova Oy	Consolidation	Cash	Cross Border	8.97	302	Horizontal	12.20%
09/11/2005	Hands ASA	Kogun hf	Growth	Cash	Cross Border	16.94	21	Horizontal	24.30%
15/11/2004	Bulten AB	Nordic Capital	Growth	Mix	Domestic	7.24	340	Vertical	36.24%
19/11/2004	Falck A/S	Cidron A/S	Growth	Cash	Cross Border	N/A	431	Vertical	15.90%
15/11/2004	Glitnir Bank ASA	Glitnir banki hf	Consolidation	Cash	Cross Border	N/A	409	Horizontal	3.13%
22/09/2004	BHJ A/S	LGI Denmark ApS	Financial	Cash	Cross Border	5.74	75	Vertical	8.32%
14/09/2004	TDC Song	TDC A/S	Consolidation	Mix	Cross Border	32.36	544	Horizontal	50.21%
24/08/2004	Frango AB	Cognos AB	Complementary Assets & Products	Cash	Cross Border	19.64	40	Horizontal	59.45%
19/07/2004	Fabege AB (58% Stake)	Wihlborgs Fastigheter AB	Consolidation	Mix	Domestic	N/A	1795	Horizontal	-1.29%
28/04/2003	Leif Hoegh & Co Limited	Aequitas Holdings AS	Economies of Scale	Cash	Domestic	7.69	1132	Horizontal	27.73%

20/03/2003	Mandamus AB (72.5% stake)	LRF Fastigheter AB	Consolidation	Cash	Domestic	N/A	136	Horizontal	20.79%
12/03/2003	Realia AB (54%stake)	Welkins Intressenter AB	Financial	Cash	Domestic	N/A	543	Vertical	23.41%
28/01/2003	Awilco Offshore ASA	Anders Wilhelmsen & Company A/S	Economies of Scale	Cash	Domestic	9.16	71	Horizontal	19.50%
21/01/2003	Allgon AB~	LGP Telecom	Consolidation	Stock	Domestic	N/A	89	Horizontal	7.10%
09/01/2003	Epsilon AB	Danir AB	Complementary Assets & Products	Cash	Domestic	26.41	33	Vertical	24.59%
06/01/2003	Chemitalic A/S	GPV International A/S	Growth	Cash	Domestic	2.75	16	Horizontal	45.57%
18/12/2003	Frontier Drilling ASA (60% Stake)	FDR Holdings Limited	Growth	Mix	Cross Border	N/A	108	Vertical	64.84%
04/11/2003	Pandox AB	APES Holding AB	Consolidation	Mix	Cross Border	12.81	612	Horizontal	12.38%
29/10/2003	Digia Oyj	WM-Data Novo AB	Complementary Assets & Products	Mix	Cross Border	N/A	189	Horizontal	-3.09%
29/09/2003	Norvestia Oyj (30.35% Stake)	Kaupthing Bank hf	Growth	Cash	Cross Border	N/A	63	Horizontal	0.85%
21/08/2003	Eimo Oyj	Foxconn Finland Invest Oy	Consolidation	Cash	Cross Border	5.61	112	Horizontal	18.21%
14/08/2003	Graninge AB	E.ON Sverige AB	Consolidation	Cash	Cross Border	13.74	1140	Horizontal	-5.39%
16/04/2003	Sense Communications International ASA	Reitangruppen A/S	Economies of Scale	Cash	Cross Border	8.31	35	Horizontal	-0.86%
07/04/2003	BW Gas Limited	World Nordic ApS	Consolidation	Cash	Cross Border	15.85	1958	Vertical	25.84%
17/02/2003	Scandiaconsult AB	Ramboll Group A/S	Consolidation	Cash	Cross Border	7.97	90	Horizontal	-0.68%
12/03/2002	Jeld-Wen Holding Aps	Door Holding A/S; Akina Ltd	Financial	Cash	Domestic	7.87	233	Vertical	4.64%
18/11/2002	Utfors AB	Telenor Business Solutions Holding AS	Growth	Cash	Cross Border	N/A	19	Horizontal	-9.99%
29/08/2002	Kaupthing Bank Sverige AB	Kaupthing hf ~	Growth	Cash	Cross Border	N/A	57	Horizontal	27.15%
10/12/2001	AU-System Aktiebolag	Teleca AB	Complementary Assets & Products	Stock	Domestic	5.72	149	Horizontal	20.06%
10/10/2001	AssiDoman AB	Sveaskog Forvaltnings AB	Consolidation	Mix	Domestic	5.74	3126	Horizontal	21.07%
13/06/2001	Conventum Corporate Finance Limited	Pohjola Insurance Ltd	Growth	Stock	Domestic	N/A	275	Horizontal	33.83%
01/06/2001	Platzer Fastigheter AB	Ernststromgruppen	Consolidation	Cash	Domestic	N/A	335	Horizontal	9.09%
14/05/2001	Lindab AB	Lindab International AB	Financial	Cash	Domestic	8.76	501	Horizontal	18.34%
01/05/2001	Spendrups Bryggeri AB	Spendrup Invest AB	Financial	Cash	Domestic	5.90	72	Vertical	26.84%
23/04/2001	Mosvold Shipping Ltd	Frontline Ltd	Economies of Scale	Cash	Domestic	N/A	45	Horizontal	21.93%
22/03/2001	Martin Professional A/S	Schouw & Co A/S	Financial	Cash	Domestic	6.76	23	Vertical	35.64%
22/03/2001	Perstorp Holding AB	IK Investment Partners Limited	Consolidation	Cash	Domestic	7.25	856	Horizontal	8.97%
12/03/2001	Inwear Group A/S	Carli Gry International A/S	Economies of Scale	Stock	Domestic	N/A	88	Horizontal	-2.55%

27/02/2001	Svenska Brand	Lansforsakringar Wasa	Growth	Cash	Domestic	N/A	22	Horizontal	34.92%
21/02/2001	E.ON Sverige AB	E.ON Nordic AB	Economies of Scale	Cash	Domestic	6.97	814	Horizontal	1.56%
07/02/2001	SPCS-Gruppen ASA	Visma AS	Complementary Assets & Products	Stock	Domestic	62.77	102	Horizontal	2.04%
03/09/2001	Vision Park Entertainment AB	KF Media AB	Growth	Cash	Cross Border	N/A	12	Horizontal	17.16%
15/06/2001	Jamo A/S	Audio Holding A/S	Growth	Cash	Cross Border	7.45	69	Vertical	6.68%
02/05/2001	Moelven Industrier ASA	Finnforest Corporation	Consolidation	Cash	Cross Border	3.56	165	Horizontal	44.27%
26/04/2001	Sanitec Oy	Pool Acquisition Helsinki Oy	Growth	Cash	Cross Border	7.87	988	Vertical	12.83%
19/02/2001	Atle Industri AB	Woodrose Invest AB	Complementary Assets & Products	Cash	Cross Border	N/A	911	Horizontal	22.31%
05/02/2001	PC Lan ASA	Catella AB	Consolidation	Stock	Cross Border	N/A	38	Horizontal	20.89%
22/12/2000	Royal Scandinavia A/S (51% Stake)	Axcel Management A/S	Growth	Cash	Domestic	N/A	179	Horizontal	1.40%
20/11/2000	Damgaard AS	Navision A/S	Complementary Assets & Products	Stock	Domestic	N/A	318	Vertical	2.09%
31/10/2000	Stena Line AB	Stena AB	Economies of Scale	Cash	Domestic	N/A	26	Horizontal	11.57%
26/09/2000	Anders Dios AB	AP Fastigheter AB	Consolidation	Cash	Domestic	N/A	224	Horizontal	29.32%
13/09/2000	Arete AB	TurnIT AB	Growth	Cash	Domestic	N/A	53	Horizontal	18.16%
11/09/2000	Albani Bryggerierne A/S	Royal Unibrew A/S	Complementary Assets & Products	Cash	Domestic	N/A	69	Horizontal	10.73%
21/08/2000	Fastighetsaktiebolaget Norrporten	NS Holding AB	Financial	Cash	Domestic	N/A	140	Horizontal	16.49%
15/06/2000	Lifco AB (80% Stake)	Carl Bennet AB	Financial	Cash	Domestic	N/A	37	Vertical	15.31%
13/06/2000	Industrifinans Forvaltning ASA	Alfred Berg Asset Management Holding Ab	Consolidation	Cash	Domestic	N/A	99	Horizontal	24.74%
09/06/2000	Navis ASA	Fred Olsen Energy ASA	Growth	Cash	Domestic	N/A	70	Horizontal	-5.16%
09/05/2000	Folkebolagen AB	Lindab Sverige AB	Complementary Assets & Products	Cash	Domestic	N/A	18	Horizontal	49.67%
20/03/2000	Diligentia AB	Livforsakringsaktiebolaget Skandia	Consolidation	Cash	Domestic	N/A	664	Horizontal	21.56%
29/02/2000	Ledstiernan AB	Empire AB	Growth	Stock	Domestic	N/A	787	Horizontal	51.70%
28/02/2000	Inwear Group A/S	IW Holding A/S	Growth	Cash	Domestic	1.12	59	Horizontal	-11.68%
21/02/2000	Norsk Lotteridrift	NLD Forvaltning AS	Financial	Cash	Domestic	N/A	117	Vertical	4.61%
08/02/2000	Cell Network AB	Cell Network AB	Consolidation	Stock	Domestic	N/A	535	Horizontal	46.74%
17/12/1999	Maldata	Teleca AB	Growth	Stock	Domestic	N/A	47	Horizontal	-17.43%
03/12/1999	Guide Konsult AB	Framfab AB	Consolidation	Stock	Domestic	N/A	174	Horizontal	96.57%
16/11/1999	N&T Argonaut	Simbel Investment AB	Complementary Assets & Products	Cash	Domestic	N/A	198	Horizontal	35.38%
13/09/1999	Oriflame Cosmetics AG	IK Investment Partners Limited	Financial	Cash	Domestic	N/A	382	Vertical	-0.88%
01/09/1999	Elisa Oyj	HPY Holding	Financial	Stock	Domestic	3.85	738	Vertical	-4.86%

17/08/1999	Aker RGI	The Resource Group Trg AS	Growth	Stock	Domestic	N/A	378	Horizontal	5.75%
10/08/1999	Thule AB	EQT Partners AB	Financial	Cash	Domestic	N/A	251	Vertical	21.20%
15/06/1999	Louis Poulsen Lighting A/S	LPC Holding	Growth	Cash	Domestic	N/A	163	Vertical	6.36%
19/03/1999	Marius Pedersen A/S	WM Miljoe Service	Growth	Cash	Domestic	N/A	66	Vertical	41.72%
12/03/1999	Tryg-Baltica Forsikring A/S	Unidanmark A/S	Consolidation	Stock	Domestic	N/A	1182	Horizontal	4.91%
22/01/1999	SE Labels	Rieber & Son ASA	Consolidation	Cash	Domestic	N/A	51	Vertical	67.12%
17/12/1999	Danisco A/S (Danisco Distillers A/S)	Vin & Sprit AB	Growth	Stock	Cross Border	N/A	269	Horizontal	-3.30%
10/08/1999	NetCom ASA	TDC A/S	Growth	Cash	Cross Border	N/A	324	Horizontal	-6.30%
08/04/1999	Zeteco AB	Partek Corporation	Growth	Cash	Cross Border	N/A	183	Horizontal	9.32%
15/02/1999	Kongsberg Automotive Holding ASA	IK Investment Partners Limited	Complementary Assets & Products	Cash	Cross Border	6.01	53	Vertical	3.74%
04/01/1999	Wenaas ASA	Fristads Kansas	Consolidation	Cash	Cross Border	N/A	78	Horizontal	15.01%
06/04/1998	Seateam Technology (80%)	Det Soendenfjelds-Norske Dampskibsselskab	Complementary Assets & Products	Cash	Domestic	16.52	167	Horizontal	24.86%

Table 11: The table show all deals in the target sample. The date of the announcement is provided together with information regarding the target firm, the acquiring firm, the acquirers M&A rationale behind the deal, the payment method, whether the deal is domestic or cross-border, the EV/EBITDA multiple paid by the acquirer, the deal value, whether the deal is vertical, horizontal or conglomerate and finally the 3-day cumulative abnormal return of the target.

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10.3 Appendix 3

	CASH	CROSS	EVEBITDA	LOGSIZE	VERTICAL
CASH	1.00				
CROSS	0.32	1.00			
EVEBITDA	0.17	0.10	1.00		
LOGSIZE	-0.03	0.26	0.03	1.00	
VERTICAL	-0.02	-0.13	-0.05	-0.12	1.00

Table 12: The table is a correlation matrix demonstrating the correlation between the different explanatory variables. The results indicate no significant correlation between the variables and therefore econometrical issues arising from multicollinearity should not be a problem in the multiple regressions carried out in the acquiring sample and the respective sub-sample categorized by M&A rationale.

10.4 Appendix 4

	CASH	CROSS	EVEBITDA	LOGSIZE	VERTICAL
CASH	1.00				
CROSS	0.11	1.00			
EVEBITDA	-0.19	-0.03	1.00		
LOGSIZE	-0.24	0.00	0.08	1.00	
VERTICAL	0.16	-0.11	-0.01	-0.10	1.00

Table 13: The table is a correlation matrix demonstrating the correlation between the different explanatory variables. The results indicate no significant correlation between the variables and therefore econometrical issues arising from multicollinearity should not be a problem in the multiple regressions carried out in the target sample and the respective sub-sample categorized by M&A rationale.