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THE ANNOUNCEMENT EFFECT OF MERGERS AND ACQUISATIONS ON SHAREHOLDERS' VALUE: EVENT STUDY ON FINNISH PUBLIC COMPANIES

Master of Science Thesis

Examiner: Prof. Juho Kanniainen
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ABSTRACT

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Effects of M&A announcements on shareholder's value has been broadly researched area in past decades. However, there are inconsistent results, hardly any studies include Finnish market and daily returns are most commonly used to measure abnormal returns. This study sheds light to the Finnish market and uses intra-day price data to capture immediate intra-day market reactions.

This study focused on examining effects of M&A announcements for acquirer's shareholders. The data set included M&A announcements published as stock exchange releases with exact timestamps and stock price data with 5-minute time intervals from 2006 to 2009 for companies listed in Helsinki Stock Exchange. The thesis focused on short-term returns, and event study with 10-day estimation window and 3-day event window was conducted for measuring intraday returns. Standardized cumulative abnormal returns (SCAR) was chosen as a metric for shareholder returns and statistical significance was examined by J_2 test statistics. Additionally, effects of transaction-specific attributes on returns were researched by conducting a multivariate regression on 3-day SCAR.

Acquirer's shareholders received positive SCAR of 0.37% in 3-day event window, and the result was significant at 99% confidence level. The market reaction to an announcement was immediate, and SCAR reached the maximum 35 minutes after announcement, followed by a slight negative drift. A multivariate regression on SCAR revealed that use of stocks as a payment method compared to cash payment yielded lower returns. This result was statistically significant at 95% confidence level. The study also suggested that vertical transactions yielded lower returns compared to horizontal transactions and target being a public company was a negative factor. However, these suggestions did not reach statistical significance.

TIIVISTELMÄ

SALMIJÄRVI VALTTERI: Yrityskauppailmoitusten vaikutus omistaja-arvoon: tapahtumatutkimus suomalaisista pörssiyhtiöistä
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Yrityskauppailmoituksien vaikutuksia omistaja-arvoon on tutkittu laajasti viime vuosikymmeninä. Saadut tulokset ovat kuitenkin ristiriitaisia, tutkimukset eivät juurikaan käsittele Suomen markkinoita, ja epänormaalin tuoton mittaamiseen on tyypillisesti käytetty päiväkohtaisia tuottoja. Tämä tutkimus valottaa tuottoja Suomen markkinoilla ja käyttää päivänsisäistä dataa välittömien markkinareaktioiden tarkasteluun.

Tutkimus keskittyi tarkastelemaan yrityskauppailmoituksien vaikutuksia ostavan yrityksen osakkeenomistajien tuottoon. Aineistona käytettiin pörssitiedotteina julkaistuja tarkan aikaleiman omaavia yrityskauppailmoituksia, sekä osakkeiden hintadataa 5 minuutin aikaintervalleilla vuosina 2006-2009 Helsingin pörssiin listatuille yhtiöille. Lyhyen aikavälin tuotot olivat tarkastelun kohteena, ja tuottojen tarkasteluun käytettiin tapahtumatutkimusta 10 päivän estimointi-ikkunalla ja 3 päivän tapahtumaikkunalla. Tuottojen metriikaksi valittiin standardoitu kumulatiivinen epänormaali tuotto ja tilastollista merkitsevyyttä mitattiin J_2 testisuureella. Lisäksi tutkittiin transaktiokohtaisten tekijöiden vaikutusta tuottoon toteuttamalla monimuuttujaregressio, jonka selitettävänä muuttujana oli standardoitu kumulatiivinen epänormaali tuotto 3 päivän aikaikkunassa.

Ostavan yrityksen osakkeenomistajat saivat positiivisen 0.37% standardoidun kumulatiivisen epänormaalin tuoton 3 päivän aikaikkunassa, ja tulos oli tilastollisesti merkitsevä 99%:n merkitsevyystasolla. Yrityskauppailmoitus sai aikaan välittömän markkinareaktion, standardoidun kumulatiivisen epänormaalin tuoton maksimi saavutettiin 35 minuuttia ilmoituksen jälkeen, jota seurasi vähäinen lasku. Monimuuttujaregression tuloksena osakkeiden käyttäminen maksuvälineenä aikaansai negatiivisen standardoidun kumulatiivisen epänormaalin tuoton verrattuna käteisellä maksettuihin transaktioihin. Tämä tulos oli tilastollisesti merkitsevä 95%:n merkitsevyystasolla. Vertikaaliset transaktiot tuottivat heikommin verrattuna horisontaalisiin transaktioihin, ja julkinen yhtiö ostokohteena oli vaikutukseltaan negatiivinen. Nämä tulokset eivät olleet kuitenkaan tilastollisesti merkitseviä.

PREFACE

Master's thesis is the last assignment that I need to finish before graduation. This study has taught me a lot about M&A theory, event studies and conducting a scientific research. I am confident that the thesis combined with other courses have provided me the necessary skills to move forward, however, keeping in mind that success is quite often based on continuous learning in academic environment, in working life and in life in general.

I want to thank professor Juho Kanniainen for examining this thesis and for valuable feedback. I also want to thank personally Milla Siikanen for helping me with the data set, Eriika Martimo for her insights on M&A event studies, Mikael Postila for fruitful discussions regarding multivariate regression modelling, and Tuomas Vaulanen for his thoughts about conducting a scientific report. Additionally, I thank my family and friends for supporting me.

Special thanks go to approximately 140 people who have pushed me forward by asking me the following question about 3000 times during the last three years that I have spent in working life:

"Valtteri, when will you graduate?"

In Helsinki, 23 May 2018

Valtteri Salmijärvi

TABLE OF CONTENTS

1. INTRODUCTION

This chapter provides background for M&A studies, briefly discusses earlier studies on the topic, describes the study questions and research methodology, illustrates M&A transaction process and presents the contents of following chapters.

1.1 Background and earlier research

Mergers and acquisitions ("M&A") are a tool for companies to look for growth, economies of scale, synergies and diversification. In 2006 global M&A deal value was 3.9 trillion $, approximately 5% of global GDP (Christerna *et al.*, 2017). Even though M&A may result to significant value creation for shareholders, there are also several reasons why M&A can fail and destroy value instead of creating it.

Effects of M&A announcements on shareholder's value has been broadly researched area in past decades. In this thesis M&A studies on shareholder's value are divided to the following five categories:

- General
- Cross-border
- Target's legal form
- Target's positioning in value chain
- Payment method

Some of the studies are could be described as general studies, which aim to determine the impact of announcement effect on acquirer's or target's shareholders returns, or combined returns. For example, Alexandridis et al. (2012) researched domestic deals in US markets from 2003 to late-2007 and reported negative returns for acquirer's shareholders. Ma et al. (2009) examined returns in Asia and found positive returns.

One angle is to research cross-border transactions. On one hand, there are some difficulties in cross-border transactions, such as cultural integration, which may affect the returns. On the other hand, another common idea state that higher level of corporate governance leads to higher returns, and thus M&A returns effected by proportional level of a corporate governance in acquirer's and target's home country (Martynova and Renneboog, 2008). Wübben (2007) concentrated on German acquirers executing domestic deals and cross-border deals in Europe and the US and reported positive returns in domestic deals, and negative returns for cross-border transactions.

Legal form of a target is a commonly researched factor of M&A performance. Theories related to legal form of the target rely on valuation and asymmetric information-based frameworks. It is suggested that on average acquirers get better price on private companies, and this is explained by illiquidity. (Fuller et al., 2002) Capron and Shen (2005) reported positive returns for acquirer when target was a private company and negative return when target was a public company. Fuller et al. (2002) shown similar results.

Transactions can be categorized to horizontal, vertical and conglomerate transactions based on positioning of target in relation to acquirer in value chain. In horizontal mergers two companies are competitors and synergies are achieved by combining two companies. (Wübben, 2007) From this perspective it could be argued that horizontal transactions yield to higher returns compared to two other type of transactions. Bris and Cabolis (2004) reported negative returns for non-horizontal mergers, and Fan & Goyal (2006) found positive returns for horizontal and vertical transactions compared to total sample.

Payment method is one of the most researched areas of M&A transactions. It can be seen as a one of significant general characteristics of a transaction. Typical studies compare impact of use of cash, use of stocks or a combination of stocks and cash as a payment method. For example, Eckbo and Thorburn (2000) reported that transactions paid with stocks performed worst, and Loughran & Anand (1997) showed similar results.

M&A process

M&A process can be divided to three different main phases: pre-transaction phase, transaction phase, and post transaction phase (Bösecke, 2009). Overview of transaction process can be seen below:

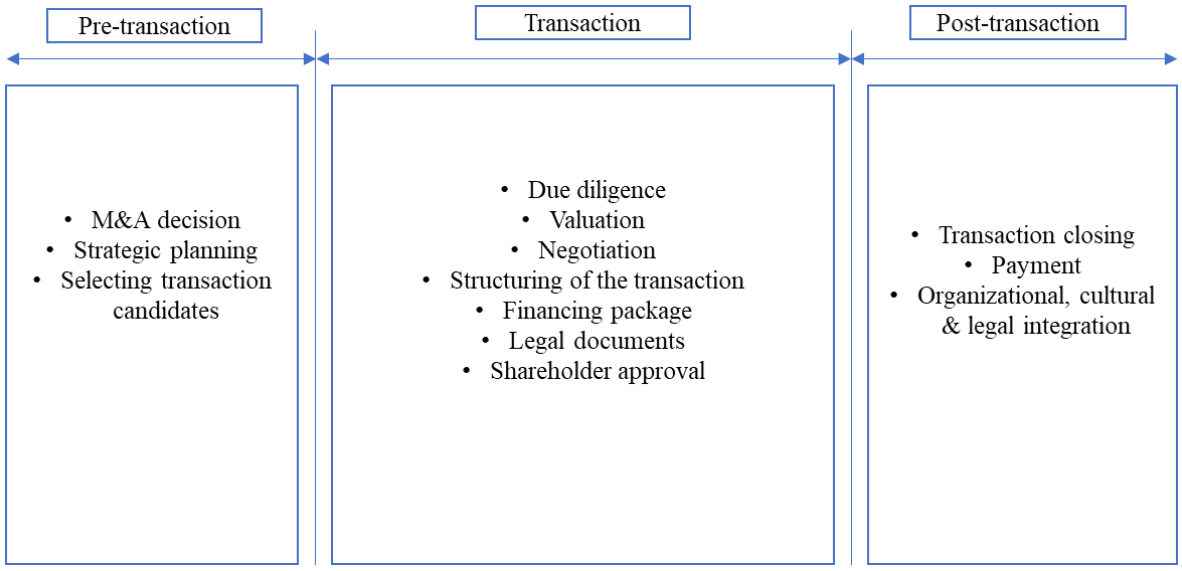

Figure 1. *Overview of M&A transaction process (Bösecke, 2009; Rosenbaum and Pearl, 2009; Caiazza and Volpe, 2015).*

There are several reasons for companies to look for M&A. One reason is to accelerate growth, as sales growth rate is typically significantly higher when executing M&A transaction compared to organic growth. A company can expand to new geographic areas by acquisition or expand vertically in the value chain. Second main rationale for M&A is cost synergies, as combined company can restructure its resources, and achieve cost savings. (Bösecke, 2009) When the decision to make an acquisition is done, acquiring company starts preparation of a transaction. Main parts of preparation phase are strategic planning and selection of transaction candidates. M&A strategy must be aligned with overall strategy of a company, including for example decisions of growth rate, geographical presence and broadness of operations relative to value chain. Transaction candidates selection includes observes potential candidates, gathering and screening information about the observed companies and analyzing results of potential transaction. (Meckl, 2004) This work is typically done by designated traction team, company management and potentially external financial advisor. (Iannotta, 2010)

Transaction phase requires most of the resources in a transaction process and is executed typically according to predetermined process schedule. Wangerin (2011) has categorized due diligence process to 5 different outcomes, which are:

1. Deal premiums paid
2. Post-acquisition performance
3. Long term equity returns
4. Measurement of assets and liabilities
5. Likelihood of future goodwill impairment

As can be seen from the list above, due diligence focuses on financial rationale and risks of a transaction. Another approach is to categorize due diligence process based on specialties of different advisors, for example to financial, commercial, legal and technical steam of due diligence. (Wangerin, 2011)

Valuation is typically based on actual financial performance of a company, and estimations of financial performance in future. Most typical valuation methods are comparable companies analysis, precedent transaction analysis, discounted cash flow analysis. Comparable companies analysis is based on the idea that similar companies trade at similar price levels. Similar peer group companies are selected criteria such as industry sector, products and services, customers, company size, profitability and geography. Trading multiples, for example EV/EBITDA, EV/EBIT and P/E are defined and valuation is based on these multiples. Precedent transactions analysis is similar to comparable companies analysis, but current market information (stock prices) are replaced by multiples of historical precedent transactions. Discounted cash flow analysis is based on estimation of future financial performance of the company. Free cash flow per each year is determined and cash flows are discounted to present value. Because estimations about distant future are often inaccurate, cash flows are typically estimated for 5-10 years and cash flow after

that are replaced with terminal value. Unlike comparable companies and precedent transaction analysis are market based, discounted cash flow analysis captures intrinsic value of the company. (Rosenbaum and Pearl, 2009)

Negotiations and preparations are closely linked together. Negation schedule varies from transaction to another, but the main idea is that as process goes forward, level of details shifts from general to more specific, and level of available information increases. Legal documents include confidentiality agreements, non-disclosure agreements, letters of intent and sales and purchase agreements. (Bösecke, 2009) Transaction structuring includes for example defining the acquiring entity and corporate structure which is used to implement transaction. Financing package is concerning both acquirer and seller, typically acquirer analyses financial structure of equity and debt to be used, and in some cases, seller prepares for example bank debt to be used to fund the transaction. (Wangerin, 2011)

Typically, transaction is paid in a closing event. After closing starts combining of two companies. Most often integration focuses on organizational, cultural and legal aspects. After integration phase business turns to routine management. (Bösecke, 2009) Challenges of integration are typically shutting down duplicate operations of two companies, getting economies of scale, and combining capabilities, technology, and intellectual capital. (Caiazza and Volpe, 2015)

1.2 Study questions and research methodology

There are inconsistent results about effects of M&A announcements on acquirer's shareholder value. Some of the studies suggest that effect is slightly positive, and some on contrary report slightly negative returns. Thus, the main question in this is study is set as follows:

- How do M&A announcements effect on acquirer's shareholders returns?

In addition to capturing the returns, earlier studies have tried to explain returns by several factors, again, with inconsistent results. Based on this, second study question is:

- How do transaction-specific characteristics effect on acquirer's shareholders returns?

The availability of intra-day stock price data set an opportunity to conduct a research on short term returns. Event study methodology has been in a variety of study fields, such as finance, accounting, economics and law (MacKinlay, 1997). Event study is described to be a common practice when conducting a study based on stock price returns (Krivin *et al.*, 2003). Additionally, event study methodology has been applied successfully when utilizing intra-day data, for example, Velassquez *et al.* (2016) used it to determine effects of layoffs announcements. For these reasons it was natural to select event study as a research methodology.

The data set included M&A announcements published as stock exchange releases and stock price data for companies listed in Helsinki Stock Exchange. Event study methodology was applied by first determining event window for capturing normal market returns and estimation window for calculation of abnormal returns of an event. These metrics of each announcement were aggregated to the level of whole sample. Secondly, effects of announcement-specific characteristics on returns were researched by conducting a multivariate regression to explain returns.

Constrains of event study methodology are related to data. Maybe there is not a propriate amount of sufficient observations available, and there may be some errors in data. Secondly, event study methodology assumes assumption of efficient markets (Fama, 1970) to hold, which is not necessarily the case.

1.3 Contents

In second chapter a literature review and theoretical background are presented. Sections 2.1-2.5 present results in earlier studies and describes theories relating to them. Sections 2.6-2.9 are theoretical in nature. They do not provide results of earlier studies, but they are rather providing background information. Firstly, general studies on M&A are presented. Secondly, cross-border studies and related theories are gone through. Third section describes studies and theories on public and private target studies, fourth section presents studies on different transaction types and fifth section focuses on payment method studies. End of the second chapter presents M&A value creation theories, signaling effect and market efficiency.

Third chapter describes M&A market environment by presenting M&A activity and development of key macroeconomic drivers. Fourth chapter presents the data set used in this thesis. Announcement data and stock price data are described. Study hypothesis are formalized, and study methodology is gone through in fifth chapter. Sixth chapter presents the results and seventh chapter concludes.

2. LITERATURE REVIEW AND THEORETICAL BACKGROUND

When researching effect of M&A on shareholder value, it is essential to understand key concepts of theoretical background. In the second chapter scope is to present key concepts relating to value creation and to report study results from previous studies. The focus is on short term event studies on M&A announcement effect on acquirer's shareholder value. Results on target shareholder values are shown in tables for illustrative purposes, but those results are not furtherly discussed. Positive, negative and mixed short-term acquirer returns are reported in the studies, and target returns are reported to be positive with no exception. In this thesis different branches of M&A studies are categorized as follows: Cross-border transactions, transaction types and payment method studies are gone through in specific sections, and other studies are presented in this general studies chapter.

2.1 General studies

This section sheds light general studies on M&A effect on shareholder value. Some of the studies have focused for example on merger waves and valuation. The following table summarizes general studies on M&A shareholder value. Acquirer returns are presented first, beginning from recent studies to oldest and target returns follows. Target returns are presented for illustrative purposes in the table and they are not furtherly discussed. Summarizing tables that follow in this chapter are constructed in similar manner.

Table 1. *Summary of general studies on M&A shareholder value.*

Author	Year	Role	Return
Alexandridis	2011	Acquirer	Negative
Ma et al.	2009	Acquirer	Positive
Martynova & Renneboog	2007	Acquirer	Mixed
Moeller et al.	2005	Acquirer	Negative
Goergen & Rennebook	2002	Acquirer	Positive
Andrade & Mitchell	2001	Acquirer	Negative
Mulherin & Boone	2000	Acquirer	Negative
Schwert	1996	Acquirer	Negative
Bradley et al.	1988	Acquirer	Positive
Jensen	1984	Acquirer	Mixed
Akipudos	2011	Target	Positive
Bösecke	2009	Target	Positive
Martynova & Renneboog	2007	Target	Positive
Andrade & Mitchell	2001	Target	Positive
Mulherin & Boone	2000	Target	Positive
Bradley et al.	1988	Target	Positive
Eckbo	1986	Target	Positive

Alexandridis et al. (2012) a merger wave starting in 2003 lasted to late-2007 by examining domestic US deals. They reported mean cumulative abnormal returns (CAR) of -1.50% in 3 days event window and CARs of -2.05% in 21-day event window for acquirer. Cash transactions had slightly positive CARs. It was also noted that the observation period was characterized by less overvalued targets and cash was used often as a payment method. Martynova and Renneboog (2008b) also noted that different waves are characterized by different attributes. Moeller et al. (2005) found negative CARs for US M&A announcements and pointed out that losses where much larger on the time period from 1998 to 2001 compared to 1980s, pointing out the differences of different periods. Andrade et al. (2001) reported acquirer returns of -0.3%, -0.4%, -1.0% and -0.7% for periods of 1973-79, 1980-89, 1990-88 and 1973-98. This study was also executed for U.S data: companies were listed in New York Stock Exchange, American Stock Exchange and Nasdaq. Mulherin and Boone (2000) used the same sources of data for U.S firms for time period from 1990 to 1999 and reported -0.37% CARs for acquirer. Thus, the results are very similar with the study of Andrade et al. Schwert (1996) reported also negative CARs for the US companies, however, the study was examining long term returns.

Ma et al. (2009) examined M&A returns in Asia. They reported mean CARs of 0.96%, 1.28% and 1.70% for event windows of (0,1), (-1,1) and (-2, +2). These findings are an example of insignificance of minor changes in event window – results are consistent with each event window setup. Yearly CARs were negative in 8 cases out of 60 observations,

yearly CARs were reported for 10 companies from 2000 to 2005. This study also suggested that there is leakage of information as days -1 and -2 have also statistically significant positive CARs. Georgen and Renneboog (2002) reported 0.7% positive CAR for European transactions. This result is very similar to findings of Ma et al. in Asian environment. Mulherin and Boone (2000) reported 0.79% CAR for 10 days event window, however, power of the test was greater with event window from -5 to +20, producing CAR of 1.70%. The research shed light also to competition of bidder in transaction process and noted that returns are decreased as number of bidders increase.

2.2 Cross-border transactions

Cross-border M&A is a tool for companies aiming for strategic expansion. Globalization has increased number of international transactions. Fifth merger wave in 1990s was a period of international M&A, and acquisitions in 1997 alone exceeded transaction value in 1980s (Hitt, 2001; see also Shimizu *et al.*, 2004). International transactions have been studied from three perspectives, as a tool of market entry, learning process, and finally, from perspective of value creation. Transaction is typically categorized as cross-border transaction, if headquarters of bidder and target are located in different countries. However, same challenges of for example cultural integration occur in domestic transaction, if participants have operations located abroad. (Shimizu *et al.*, 2004) Vice versa, headquarters can be located in different counties, but operations are mainly located in same countries, and thus characteristics of the transactions are more comparable to domestic M&A.

Majority of M&A studies have focused on US and UK, and scope has been on domestic transactions. As an example, Georgen and Renneboog (2002) published Europe-wide M&A study focusing also on value creation of cross-border transactions. Different tax treatment in foreign countries is suggested to be motivator for international M&A. Also, companies with international operations may exploit exchange rate movements by moving operations. (Georgen and Renneboog, 2002)

Corporate governance can be defined as a controls, regulations, and incentives created to prevent fraud. (Berk and DeMarzo Peter, 2011) Level of corporate governance varies between different companies, industries, and countries. In international M&A content corporate governance is in an essential role related to value creation for shareholders of bidder and target. Three key hypotheses on corporate governance are presented in the table below:

Table 2. *Three hypotheses on corporate governance in cross-border M&A (Martynova and Renneboog, 2008b)*

Hypotesis	Description
Positive spillover by law	Better corporate governance is applied to the bidder compared to the targer
Negative spillover by law	Worse corporate governance is applied to the bidder compared to the targer
Bootstrapping	Bidder voluntarily chooces to apply higher level of corporate governance

Full takeover in cross-border transaction results to change of nationality. When companies are merged, combined entity will start to apply corporate governance of the bidder company. If corporate governance in the home country of bidding company is on higher level than target company's home country, outcome will be higher level of corporate governance for merged company. Thus, value is created for target and bidder shareholders. Negative spillover by law hypotheses is same phenomena as opposite: Bidding company is exposed to more limited corporate governance, and this level will be applied to merged company. Total outcome is negative in terms of shareholders value creation, because level of corporate governance of merged company is lower. Finally, bootstrapping theory suggests that in some cases bidder starts to apply stricter corporate governance than it should. (Martynova and Renneboog, 2008b) If company management is assumed to maximize shareholder value, it will increase level of corporate governance applied in company over the level required by law, if it is assumed to lead higher valuation for the company shares. Table 3 summarizes studies of cross-border transactions.

Table 3. *Summary of international M&A -related studies on shareholder return.*

Author	Year	Role	Return
Yilmaz & Tanyeri	2016	Acquirer	Positive
Martynova & Renneboog	2008	Acquirer	Positive
Wubben	2007	Acquirer	Mixed
Georgen & Renneboog	2004	Acquirer	Positive
Bris & Cabolis	2004	Acquirer	Negative
Yilmaz & Tanyeri	2016	Target	Positive
Martynova & Renneboog	2008	Target	Positive
Georgen & Renneboog	2004	Target	Positive
Bris & Cabolis	2004	Target	Positive

Yilmaz and Tanyeri (2016) studied 253,461 transactions globally. Positive CAR of 1.4% was reported for the acquirer. It was also found that both, acquirers and targets, received higher CARs in emerging markets compared to transactions in developed countries. Martynova and Renneboog (2008b) reported 0.57% CAR for acquirer in cross-border deals in 3 days event window, and 0.83% CAR for domestic M&A transactions. Same metrics for targets were 12.55% and 11.52%. Wübben (2007) concentrated on German

acquirers executing domestic deals and cross-border deals in Europe and the US. In 3 days event window CAR of 0.63% was reported for domestic German deals, and negative CAR of -0.18% was reported for German acquirers in European cross-border transactions. Georgen and Renneboog (2004) found 0.7% CAR for acquirers and 9% CAR for targets in total sample in European deals. -0.1% CAR was reported for acquirers in event window of 5 days in domestic deals, and 3.01% for acquirers in cross-border deals. These results are somewhat inconsistent with typical cross-border studies, which indicate higher returns for domestic deals. Bris and Cabolis (2004) studied international transaction from the point of view of investor protection. They reported approximately -4% CAR for acquirer in cross-border transaction, and CAR for domestic acquirer was -6%. Major finding of this study was that the better shareholder regulation in acquirer's origin country yields higher profits for the acquirer.

2.3 Public and private target studies

The target of an acquisition can be either public company or privatively held company. Research suggests that transactions on private targets yield to positive abnormal return for acquirer (Officer et al. 2009, see also Chang 1998, Fuller at al. 2002, Moeller et al. 2004, Faccio et al. 2006) Legal form of a target is a commonly researched factor of M&A performance. Theories related to legal form of the target rely on valuation and asymmetric information-based frameworks. It is suggested that on average acquirers get better price on private companies, and this is explained by illiquidity. Private companies are not as liquid as publicly traded companies, resulting to illiquidity discount. It is also suggested that use of stock as a payment method for private target will result for higher returns, because new owners who received stocks are in good position to monitor the acquirer and are willing to pay more. (Fuller et al., 2002)

Table 4. *Summary of public and private target -related studies on shareholder return.*

Author	Year	Role	Return
Officer et al.	2008	Acquirer	Mixed
Martynova and Renneboog	2008	Acquirer	Positive
Capron & Shen	2005	Acquirer	Mixed
Fuller et al.	2002	Acquirer	Mixed
Chang	1998	Acquirer	Mixed
Martynova and Renneboog	2008	Target	Positive

Officer et al. (2009) reported 3.8% CAR for acquirers where target was a private company from 1995 to 2004 observation period. The median was 2.4%, and high losses were concentrated on few large deals. This result is compared to previous studies, which report significantly lower CARs for acquirers, and no empirical evidence on public targets is presented. Martynova and Renneboog (2008b) tested target's legal type as an explanatory in an international context and reported CARs between -0.77% and -0.34% for acquirer

in several different model specifications. Capron and Shen (2005) found approximately +4% CAR for acquirer in event window from -20 to +10 days when acquirer a private company and return for public target transactions was -1%. They also implemented a survey and found that if there was not enough information to valuate private target's assets, deal was not likely to occur based on information asymmetry between acquirer and target. Fuller et al. (2002) reported CARs of 2.11% for private targets and -1.07% for public targets. Private targets purchased with cash yielded 2.47% CARs, as Fuller et al. suggested as a hypothesis. Used event window length was 2 days. Chang (1998) reported 0.09% CAR for private targets acquired by cash, and 2.64% for private target transactions acquired by stocks. Equivalent metrics for public target transactions were -0.02% and -2.46%.

2.4 Different transactions types

After understanding the transaction process, it is essential to make distinction between different kind of transaction. Theories on shareholder value of mergers and acquisitions rely partly on transaction type. Transactions can be categorized by their technical nature to mergers and acquisitions, by value chain positioning to vertical, horizontal and conglomerate transaction, and by target board role to friendly and hostile transactions.

2.4.1 Merger & acquisition

Merger and acquisition as terms arise often confusion. Merger is a combination of two companies, where assets and liabilities of the target company are absorbed by the byer company. The byer company remains as a same legal entity after the merger. (Sherman, 2010) An example of merger is merger of two Finnish construction companies, YIT and Lemminkäinen. YIT published in June 2017 an offer of 3.6146 new YIT shares for each of Lemminkäinen, resulting that after the merger YIT shareholders will own 60% and Lemminkäinen 40% of the combined company after the merger. (YIT, 2017) Structure of the transaction:

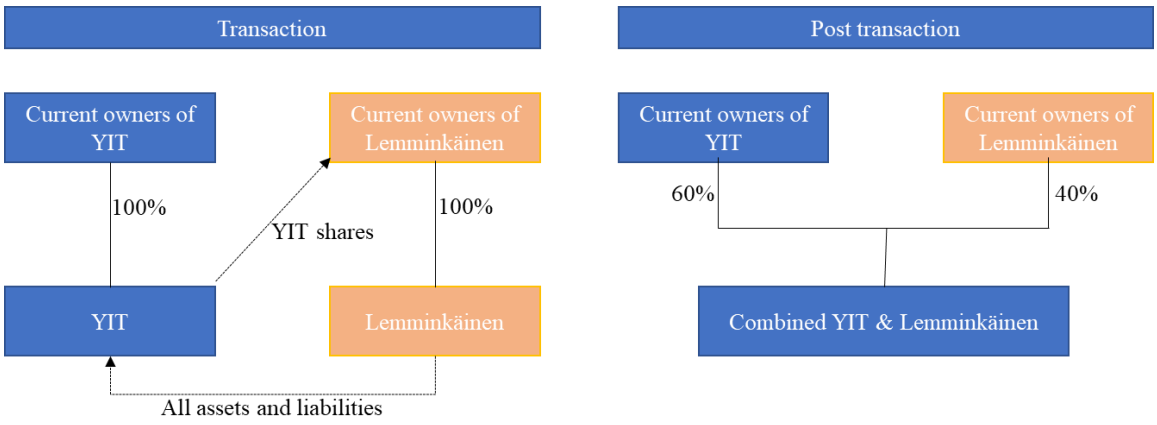

Figure 2. *Structure of YIT-Lemminkäinen merger (YIT, 2017)*

YIT issued new shares to buy for Lemminkäinen's shares. This kind of transaction is called stock swap. Another common payment method is cash. Additionally, acquire may use for example debt instruments and options. If cash is used as a payment method, payment will generate tax liability for target shareholders. In stock swap tax liability will be generated in future, when target shareholders sell their stocks that were received in transaction. (Berk and DeMarzo Peter, 2011)

In acquisition, buyer acquires an asset, for example a machine, a plant, a division, or entire company. (Sherman, 2010) For example, Konecranes, a Finnish crane manufacturer, acquired Material Handling & Port Solutions of Terex Corporation, US-based global manufacturing company. Konecranes created new stock series with some restrictions to pay for this acquisition, and as a part of the transaction, Terex will have right to appoint to Konecranes board members. (Konecranes, 2016) Unlike in acquisition, Terex will remain as a legal entity.

Terms merger and acquisition are typically used together, because often net result is often identical. Two companies operating together will end up to becoming one. In stock purchase, acquired company may operate on its' own as a subsidiary or division. (Sherman, 2010) In this thesis acquisition refers to all acquisitions that are published by stock exchange release, as discussed in chapter 5. No distinction between different targets are made, so target universe includes for example plants, divisions and companies.

2.4.2 Horizontal, vertical & conglomerate merger

If target company is in same industry as acquirer, merger is typically called as horizontal merger. In vertical merger the target is positioned before or after the acquirer in value chain. Conglomerate merger refers to transaction, where target operates in different industry than the acquirer (Berk and DeMarzo Peter, 2011) Another factors categorizing merger types are products and technologies of target and acquirer (Wübben, 2007) Merger type segmentation by markets and products:

Table 5. *Merger types categorized by market and products (Wübben, 2007).*

		Products/Technology	
		Similar	**New**
Market	**Target is supplier / customer**	Vertical	Vertical
	Identical	Horizontal	Market-concentric
	New	Technology-concentric	Conglomerate

In horizontal merger two competitors are combined, and rationale is often based on economies of scale and synergies. Synergy potential is significant, because two companies have similar operations. If acquirer stays in the same market but acquires new technology by a transaction, the deal can be categorized as market-concentric. (Wübben, 2007) YIT-Lemminkäinen transaction described above is an example of horizontal transaction, as both companies are operating in Finnish construction markets with relatively similar offerings.

Merger is categorized as vertical, if target is positioned below or above bidder in value chain, in other words, target is supplier or customer of the acquirer (Wübben, 2007). Idea in vertical integration is that management will have control over larger part of supply chain, and efficiency gains are achieved. (Berk and DeMarzo Peter, 2011) It is suggested that vertical mergers increase collusion between competitors and create higher barriers to enter a market. (Comanor and Rey, 2004) Oil industry is classical example of vertical integration, as same company might operate in oil production, refinery, and sales of gasoline. (Berk and DeMarzo Peter, 2011)

In technology-concentric merger target and acquirer are offering same products but are operating in different markets. Entering a new market may be easier by transaction, compared to extending existing operations. (Wübben, 2007) In conglomerate deal acquirer operates in different market with different products and technology compared to the target. Private equity transactions are an example of conglomerate deals. Value creation is harder to achieve in conglomerate deals because synergies cannot be achieved, and thus another factors are essential in private equity deal. (Berk and DeMarzo Peter, 2011) Characteristic of a good target for private equity company are strong cash flow, stable market

position, revenue growth, efficiency improvement opportunities, low capital expenditure, strong asset base, and talented management team (Rosenbaum and Pearl, 2009)

Wübben (2007) reported that non-related transactions (vertical and conglomerate) yielded higher returns compared to horizontal transactions, as non-related transactions had 1.99% CAR in 3-days event window and CAR for horizontal transactions was 0.27%. When horizontal transactions were specified into sub-categories, result was that when acquirer and target were closer to each other business-wise, the CARs increased. Fan and Goyal (2006) suggested that vertical and horizontal mergers generate equally positive wealth effects and are more profitable than conglomerate mergers. The study reported 2.5% combined CAR for acquirer and target for vertical mergers, and analogous metric for total sample was 1.9%. However results for acquirer wealth effects were not presented. Bris and Cabolis (2004) reported minus-signed coefficient for non-horizontal mergers, however, without statistical significance. Non-horizontal returns appeared to be higher in cross-border deals compared to domestic transactions. Eckbo (1983) researched merger proposals and antitrust complaints announcements and announcement effects on rivals in the same industry. Eckbo reported statistically significant positive CAR for horizontal mergers, vertical transactions CAR was also positive-signed but no statistically meaningful. To conclude, there are inconsistent results about the effects of vertical, horizontal and conglomerate mergers. However, most presented result is that horizontal merger yields higher returns compared to non-horizontal mergers.

2.4.3 Friendly & hostile takeover

Board of directors of both companies need to approve a merger. Depending on the greatness of the impact, transaction may need also shareholder approval in general meeting. In a friendly takeover, the acquirer contacts target board and achieves board approval to the transaction. Target board negotiates with acquirer and potential other acquirers and agrees on the price that is offered for the target. After approval, transaction conditions and price are presented to the shareholder for voting purposes. (Berk and DeMarzo Peter, 2011)

In hostile takeover, target's board and senior management do not agree with the transaction and they try to prevent it. (Berk and DeMarzo Peter, 2011) Situation may end up to a proxy fight, where target board and potential acquirer try to collect enough proxies from shareholders, to get their suggestion approved. Hostile takeover is often facilitated by a tender offer. In tender offer potential acquirer publishes an offer for all target shareholders. (Ross, Westerfield and Jordan, 2010) It is suggested that a tender offer leads often to auction-like process to generate several competitive bids, and thus leading to higher premium offered for the target stocks. (Wübben, 2007) Potential acquirer has also alternative to purchase target stocks from markets, in order to have more votes (Berk and DeMarzo Peter, 2011)

An example of a tender offer is a case where Investors House, a Finnish real estate company published a tender offer in August 2017 in order to purchase stocks of Orava Residential Reit, a Finnish real estate fund. 2 Investors House shares and 0.21EUR cash was offered for 3 Orava Residential REIT shares. (Investors House, 2017) Thus, the offer was a combination of cash and stocks. The Board of Directors of Orava Residential REIT published an intention to seek for other alternatives for the tender offer (Orava Residential REIT, 2017) It was published in September 2017 that Elite Varainhoito Oyj made competitive offer (Orava Residential REIT 2, 2017) In October 2017 Orava Funds plc, management company of Orava Residential REIT, made third competitive bid (Orava Residential REIT 3, 2017) Initial tender offer generated 2 alternative suggestions. First offer made by Investors House was most successful and Investors House gained ownership of 25.2 % of Orava Residential REIT plc's share and votes (OravaResidentialREIT 4, 2017)

Holderness and Sheehan (1985) presented three theories related to hostile takeovers. Study concentrated on so called corporate riders, who aim to profit themselves by capturing value from other shareholders. Term rider is used for bidding company which is assume to gain control to the company, pillage it, and leave only shell of the company left (Jensen, 1984) Three theories of corporate riders are presented below:

Table 6. *Hypothesis on corporate raiders (Holderness and Sheehan, 1985).*

Hypothesis	Description	Effect on value
Raiding hypothesis	Raider gains access to corportate assets by benefiting from other shareholders	Positive
Management hypothesis	Raider has the ability to improve target management	Positive
Analysis hypothesis	Raider has superior analysing skills and only undervalued stocks are acquired	Positive

Raiding hypothesis argues that some strong market players have ability to access corporate control and to create value by benefiting from other stockholders. Theoretically this conclusion is not valid, because if it becomes possible that one stockholder is preparing to buy 51% or more of the stocks, other stakeholders would react by preparing their own bid. Thus, market mechanism would make raiding unprofitable. Empirical evidence is also against raiding hypothesis. If we assume that some identified raiders (For example, Sheehan and Holderness focus their empirical study on 6 investors known for their corporate raiding behavior: Carl Icahn, Irwin Jacobs, Carl Lindner, David Murdock, Victor Posner, and Charles Bluhdorn) have benefitted so that they benefited from other stockholders, stock price would go down when it is announced that a raider have starter to buy a certain company. (Holderness and Sheehan, 1985) Typically a flagging notification must be published if ownership of a stockholder exceeds a threshold. However, event day returns were actually higher (+1.8%) if raider made a flagging notification, compared to average flagging notification (+0.4%).

Improved management hypothesis relies on the idea that a corporate rider has skills to improve target management. Two main activities for corporate riders are identified:

1) Change of corporate personnel (for example CEO)
2) Change of corporate policy (for example preventing acquisition which was earlier approved) (Holderness and Sheehan, 1985)

Empirical evidence is in line with management hypothesis. Introduced management team chances are resulted with positive wealth gains for announcement day (+13.0%), whereas withdrawn management team changes had negative announcement day wealth effect (-3.4%) (Holderness and Sheehan, 1985) Is discussed earlier, flagging notification from known corporate rider resulted to positive return for announcement day. This could be explained by management hypothesis.

Analysis hypothesis assumed that corporate rider has superior skill to analyze and identify undervalued stocks. This could be possible either by analyzing publicly available information, or gaining access to insider information. (Holderness and Sheehan, 1985) This can be seen as a subset of valuation-based theories, which partially rely on an idea that bidder understand the target better than average investor. Valuation-based theories of merger motives are discussed in section "M&A value creation theories".

2.5 Payment method

Typical payment methods for transactions are cash, equity, or combination of cash and equity. Also, debt and for example options can be used as a payment method, however, most of the theories are concentrating on the choice between cash and equity. There are several factors that are affecting on the financing method of a transaction:

- Taxation
- Wealth transfer
- Tax efficiency of internal financing (Bruner, 1988)
- Liquidity (Berk and DeMarzo Peter, 2011)

Modigliani and Merton (1958) argued that market value of a firm is independent of use of equity and debt, and there is optimal level of leverage to maximize expected return. As interests on debt are tax deductible items, in that sense it is beneficial for a company to increase level of leverage. (Modigliani and Merton, 1958; Bruner, 1988) Wealth transfer refers to correlation of returns of two merging companies. If correlation is not perfect, variance of returns of the combined company will be lower and thus lead to lower WACC. (Bruner, 1988) Berk and DeMarzo Peter (2011) notes that timing mismatch can be used to tax benefits from operative result. It is argued that acquisitions and internal financing are more effective use of excessive cash compared to dividends and stock buybacks from the personal taxation point of view. Liquidity of bidder company stock is also one aspect

determining how much equity will be used as a funding. Low liquidity will pose a risk for target. On contrary, if target is a private company, taking a shift from private stocks to public stocks will offer a way to realize holdings in future. (Berk and DeMarzo Peter, 2011) In empirical research several other factors, such as nationality and existence of competing bids have influence in financing decision. (Fischer, 2017)

Transactions that are financed with equity are expected to result to lower results for bidder shareholders compared to cash offer. It is beneficial for bidder to use equity as a payment method, if management considers stock overvalued. Thus, market reaction should be negative. On the contrary, use of cash should lead to positive market reaction, as bidder stock is not considered overvalued. If debt financing is needed in addition to generated cash, typical way to raise debt is from a bank. Banks are considered capable evaluators for a transaction, and it be argued, that banks gives financing only for reasonable transactions. Thus, use of debt will also trigger positive reaction. (Martynova and Renneboog, 2009)

Payment method studies

Payment method is one of the most researched areas of M&A transactions. It can be seen as a one of significant general characteristics of a transaction. Next table summarizes studies that focus on payment method.

Table 7. *Summary of payment method -related studies on shareholder return.*

Author	Year	Role	Return
Fischer	2016	Acquirer	Positive
Ismail & Krause	2010	Acquirer	Negative
Martynova & Renneboog	2009	Acquirer	Positive
Delcoure & Hunsader	2006	Acquirer	Positive
Eckbo & Thorburn	2000	Acquirer	Mixed
Loughran & Anand	1997	Acquirer	Mixed
Eckbo et al.	1990	Acquirer	Positive
Ismail & Krause	2010	Target	Positive
Martynova & Renneboog	2009	Target	Positive
Delcoure & Hunsader	2006	Target	Positive

Acquirer returns are reported to be positive in three studies, negative in one, and two studies reported negative returns for acquirers. Thus, results in the payment method research are inconsistent. Fischer (2017) examined different financing sources and their short-term effect on shareholder value. He found that debt-financed transactions yielded larger stock returns compared to transactions financed by stock issues. The study reported 2.15% short-term abnormal returns for fully credit-financed transactions (1% significance level), -0.92% for stock issues (statistically insignificant), -0.05% for debt-issues (statistically insignificant), and 1.22% for use of internal funds 10% significance level). Fischer (2017) argued that abnormal returns where higher, if a bank there was a bank participating

in the transaction process. Professional screening of a bank increases creditability and transparency of a transaction.

Ismail and Krause (2010) reported -4.2% cumulative abnormal return for acquirer, using sample of publicly listed US companies between 1985 and 2004. Use of cash as a payment method was statistically meaningful factor of abnormal returns. Factors to determine the payment form were also studied. Only meaningful factor was management entrenchment: for example, existence of staggered boards or poison pills lead to more probable use of cash. It was argued that acquirer can overcome protection set by management more easily with cash offer. It was also found that asymmetric information, budget limits or tax issues did not significantly affect the selection of payment method. (Ismail and Krause, 2010)

(Martynova and Renneboog (2009) created a study to examine both, financing decision and payment method. Usually studies concentrate on the payment method, and internal use of funds is not covered. CARs of 0.94%, 1.09%, and -0.16% were reported for cash payments, mixed payment and equity payment. Post announcement period in the study was from day 2 to day 60, and post announcement CARs of -2.21%, -4.11%, and -5.15% was reported. Eckbo and Thorburn (2000) reported that transactions paid with stocks performed worst, however, study period was month 0, and months from 13 to 60 relative to the reported transaction. Loughran and Anand (1997) reported -25% CARs for stock payments and 61.7% CARs for cash payments on 5 year post acquisition period. Eckbo et al. (1990) found that mixed payment leads to significant positive performance on one-month period compared to both, only cash and only stock payments.

2.6 Merger waves

Merger activity has taken peaks in history, called as merger waves. In the US merger wave have occurred in early 1900s, the 1920s, the 1960s, the 1980s, and the 1990s. Merger waves comes as a result of economic, political, and legal changes. (Martynova and Renneboog, 2008a) Merger waves tend to also correlate with bull market (Berk and DeMarzo Peter, 2011). A Figure illustrating merger activity by plotting share of companies taken over quarterly is presented below:

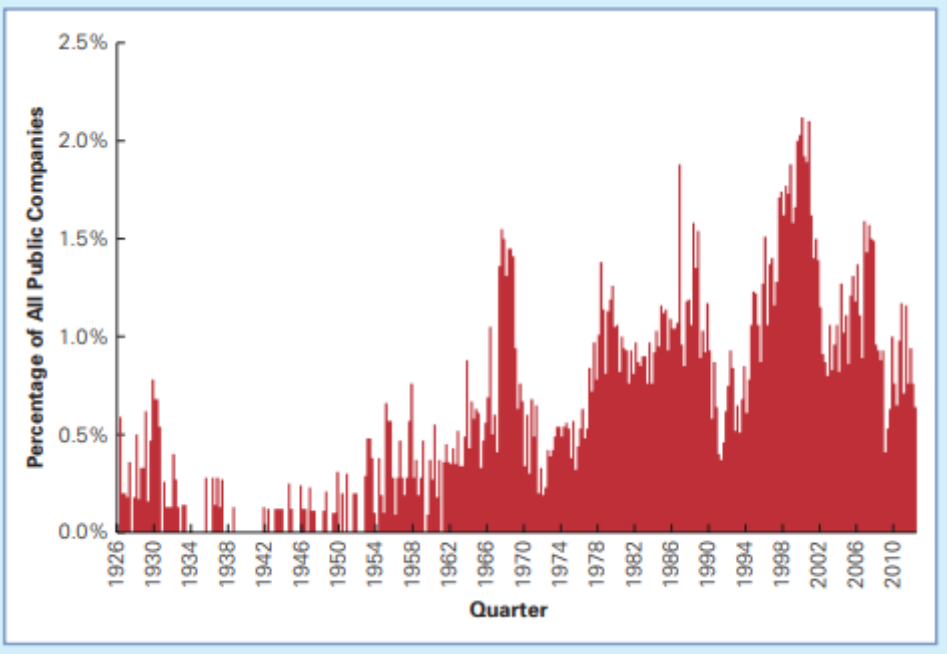

Figure 3. *Percentage taken over companies of all public companies per quarter from 1926 to 2011 (Berk and DeMarzo Peter, 2011).*

Each of the merger waves have certain characteristics. In 1960s great portion of deals were conglomerate deals, and the idea was that deals managerial skills can be utilize in completely different industries. 1980s was golden age of hostile conglomerate deals: inefficient companies were acquired and sold in pieces. In 1990s globalization accelerated, and companies expanded to new markets, and the idea was to create companies strong enough to become global players. 1990s merger wave ended to dot-com bubble. (Berk and DeMarzo Peter, 2011) The wave was characterized with overpayment, mega-deals, overvaluation of acquiring companies (Alexandridis, Mavrovitis and Travlos, 2012).

Another active period, also driven by globalization deals, started in 2003 ended to credit crash in late-2007 (Berk and DeMarzo Peter, 2011) The period is especially interesting because half of the data sample used in this thesis is included in this wave. Sixth merger wave was triggered by large amount of liquidity, and deals were often explained by synergy benefits. The market was not as competitive compared to 1990s merger wave, and premiums payed were significantly lower. In late-2007 dealmakers began to doubt state of credit market and economic environment. When crisis started, financing for M&A deals tightened and effected significantly activity. M&A deal value peaked to more than $1 trillion in 2006 in the US (Alexandridis et al., 2012)

2.7 M&A value creation theories

There are several theories about rationale of mergers and acquisitions. They can be categorized to general, valuation, and agency problem-based theories. General theories suggest positive value creation, valuation theories provide positive and negative results, and

agency problem -based theories suggest negative value creation. Several different phenomena that are present in these theories are present in typical transactions.

2.7.1 General theories

Three general value creation theories are synergy, efficiency, and monopoly theory. General value creation theories are presented in a table below:

Table 8. *General M&A value creation theories (Berk and DeMarzo Peter, 2011).*

Theory	Description	Effect on value
Synergies	Operating and financial synergies create value	Positive
Efficiency	Two companies are ran more efficiently combined	Positive
Monopoly	Merger of two rivals will decrease competition and increase profitability	Positive

Synergies

On one hand, merger can lead to lower price for capital, as two loan portfolios are combined. Secondly, merger decreases systematic risk of company's investment portfolio. Finally, third tool to achieve financial synergies is facilitation of internal capital markets operating on information advantage. Financial-like synergy could be also achieved by tax savings, as in conglomerate merger profits of one company could be off-set by losses of another company. Operational synergies could occur by combining for example sales or R&D functions as two companies merge. (Trautwein, 1990) Porter and Millar (1985) that information transformation between two merger functions is also a source of synergy. This is aligned with the technology-driven transactions described in section 2.4.2. Damoraran (2005) lists economies of scale, pricing power, functional strengths, and higher market growth as sources of operational synergies.

Efficiency

Efficiency synergies rely on the idea that when two companies are combined, they are easier to managed by same directors. Additionally, if management of a company is inefficient, it can be replaced by acquirers more efficient management. Difficulty in this approach is that even if inefficient company is identified, it may be extremely challenging to improve performance. (Berk and DeMarzo Peter, 2011) Baker *et al.*, (1988) note that company management can be more efficiently motivated, if management ownership is structured to a transaction. This is especially true in low growth environment, when salary-based compensation is not as effective as equity-based.

Monopoly

If a company merges with competitor, on one hand combined company achieves greater market power. On the other hand, there is less competition in the market and profits will increase. This phenomenon is known as monopoly theory. (Berk and DeMarzo Peter, 2011)In synergy-based theories created value is captured by either acquirer, target, or both, and idea is that either total value is increased, or transaction destroys value for some of the transaction counterparties. This is a distinction compared to monopoly theory, which suggest that society as a whole will pay for value captured by acquirer and target. These arguments fit better for horizontal transactions. There are also several monopoly-based reasons for conglomerate transactions identified:

1) Companies will gain option to cross-subsidize products between different markets. If one market is greatly profitable and another is in a phase where gaining market share is essential, profits gained from first market can be used for market share increasing actions in the latter one. (Trautwein, 1990)
2) Operating in several markets can be used to limit competition in more than on market. For example, a company can enter to a new market where its' main competitor is active, and thus gain better negotiation position. (Edwards, 1955; Trautwein, 1990)
3) Companies can use transaction as a tool to prevent new market entrants. One example of this behavior is a congeneric merger initiated by strong market player (Trautwein, 1990)

As monopolies are not value creating for society, antitrust laws are introduced in many counties to prevent monopolistic mergers. Extend of government participation varies over county, time, and policymakers in power in transaction time. (Berk and DeMarzo Peter, 2011) Antitrust merger control has been criticized from several points of views: control is anticompetitive, synergistic gains are lost by control, real motive is really protectionism, and they are not efficient for technological development. (Duso, Gugler and Yurtoglu, 2011)

S Group, a large Finnish retail co-operative acquired Stockmann Herkku, a chain of high-end food stores from Stockmann in 2017. Finnish Competition and Consumer Authority approved the transaction on a condition that Stockmann Herkku must keep same supplier, Tuko, to the end of 2018. S Group increased its market share in Helsinki, Tapiola, and Tampere, and the market share exceeded 40% in every market segment except Turku. This is an example of antitrust presence in merger environment. (Talouselämä, 2017) In this case Finnish Competition and Consumer Authority took action to act on supplier-side, rather than on food retail market itself.

2.7.2 Valuation-based theories

Stock valuation is often debated subject in merger and acquisition context. Related to merger motives, theories can be divided to two main categories:

Table 9. *Valuation-based theories of merger motives.*

Theory	Description	Effect on value
Overvaluation	Acquirers uses overvalued stock as a payment method	Positive
Undervaluation	Target shares are undervalued	Positive

Valuation based theories rely mostly on the idea that bidder has better understanding of the target, and thus has an advantage over average market participants (Steiner, 1976; Holderness and Sheehan, 1985; Ravenscraft and Scherer, 1987; Trautwein, 1990). This information-based advantage is referred as information asymmetry in academic publications. Asymmetric information be related to several different factors.

1) First, only bidder has the ability to see coming synergies when two companies are combined.
2) Secondly, company can be more valuable when sold in parts.
3) Thirdly, bidder may observe that if the target's operations are ran differently, value will be higher. (Trautwein, 1990)

These hypotheses are in conflict with efficient market hypotheses presented in section 2.9. If markets where strong-form efficient, no such information asymmetry would occur. On the other hand, if bidder has private information, it must be published at the same time with the bid. If markets are assumed to be semi-strong form efficient, markets will immediately take advantage of new information and it would be reflected in the price, and no value is created for acquirer. (Trautwein, 1990)

One can argue that this argumentation has too theoretic approach. In reality, the bidder studies multiple of possible scenarios it would end up the transaction, and after that defines the price it is willing to pay. Other possible bidders go through the same process and end up with a valuation for the target. As full detailed strategy related to transaction is not revealed to other participants, there are some differences in valuations. There is always some private information that some market participants hold, it should be noted that not the target or any bidder have full information about components driving the target valuation. (Wensley, 1982) Making a bid always signals information that the target is tempting and valuable for someone, and this increases market activity, and possible returns for the bidder.

In a research conducted in 1984, 32 percent of managers of a public company thought that stock market valuation is justified, 60 percent kept company's stock undervalued, and 2 felt that company is overvalued. On one hand, mergers are often justified by argumentation based on undervaluation of the target, which can be seen in this result. On the other hand, overvaluation of acquirers stock is not viable on majority of cases, as only 2 percent of managers kept the stock overvalued. (Ravenscraft and Scherer, 1987)

Majority of discussion has concentrated on value creation caused by undervaluation of the target. Alternative approach is to consider overvaluation of the bidder. Jensen (2004) suggested that stock overvaluation is a source of value destruction, and typically managers and board members do not have observed risks related to stock over valuation. Overvaluation situation occurs when market capitalization of a company is greater than intrinsic value of the company. Typical form of equity overvaluation is overrated expectations for company's financial performance. For example, Enron's market value was USD 70billion at highest, when company's intrinsic value was around USD 30billion. This led management of Enron to manipulation of accounting and overstating new business lines of the company, in order to meet expectations of shareholders. Management behavior ended up to losing also the intrinsic value of the company. (Jensen, 2004)

Similar results are also found in research of accrual behavior. Kothari et al., (2006) presented that agency theory of overvalued equity is the reason behind low accruals, as working hypothesis was that it is results on investors' expectations on accruals. Evidence of value destruction can be found also from m&a contexts. Moeller et al., (2005) found evidence that acquiring companies' shareholders lost around USD 216billion from 1991 to 2001. As a comparison, the lost was USD 4billion from 1980 to 1990, and companies used 6 times to transactions in the later period. The losses resulted from few highly negative value transactions, and weighted abnormal returns were positive. On the positive side, in the later period use of stock options became more common, and as a result managers' interest are more aligned with stockholders. Secondly, there might have been more operational synergies to be captured by acquirer's shareholders by transaction.

2.7.3 Agency problem -based theories

Agency problem occurs when two parties have different goals and motives. First party, the principal, delegates duties and work for the other party, the agent. Agency theory has been researched in various fields of science, such as finance, marketing, political science, organizational behavior, and sociology. Principal-agent setup generates two problems:

1) How to align goals and motives of the two parties?
2) How principal can efficiently secure that the agent is performing tasks that are delegated? (Eisenhardt, 2017)

From finance point of view, two agency problem related theories are relevant. These theories are described in the table below:

Table 10. *Agency problem -based theories of merger motives (Trautwein, 1990; Ross, Westerfield and Jordan, 2010).*

Theory	Description	Effect on value
Hubris	Managers of the bidding company are overconfident	Negative
Empire building	Managers aim to maximize their own benefits by acquisitions	Negative

Whereas general (synergies, efficiency, managerial motives) and valuation-based (over-valuation of acquirer's stock, undervaluation of the targets stock) theories are suggesting that mergers create value, hubris and empire building theories suggest that mergers destroy value.

Hubris theory

Hubris hypothesis is based on the idea of management overconfidence. If over confident management and efficient markets are assumed, there are three outcomes.

1) First, managers of a company believe that their company is under-valuated as a risky asset in capital markets.
2) Secondly, positive net present value projects may be rejected by overconfident company management.
3) Thirdly, internal corporate projects are overvalued, and investments may be made to negative net present value projects (Heaton, 2002)

From value perspective, hubris hypothesis suggests that if bid price is under true company value, the bid is always rejected. In the cases that the bid price exceeds company value, target decision makers will accept the bid and transaction will be executed. As a result, bidder will always pay too much for the target, and targets are paid extra compared to the true company value. (Roll, 1986) Hubris hypothesis is aligned with semi-strong market efficiency that will be presented in section 2.9. As a result of hubris hypothesis, the price of target company should rise, and the price of bidder company should fall. Roll (1986) reports that values of targets and bidders have decreased and increased in different empirical studies. Several issues on examining effects of the hubris hypothesis are presented. First, announcing the bid may contain information that is not related to transaction itself but can affect stock prices – for example information of financial performance of the bidding company. Secondly, as bidders are usually much larger than targets, capturing the effect of the bid is challenging, as overall performance of the bidder company has much more weight on bidder company's price formation. Finally, the hubris hypothesis is against the assumption that company management always aim to maximize long term value of the company. (Roll, 1986) When comparing the hubris hypothesis to assumptions Grossman & Hart, frame-works are aligned if the bidder company's management aims to

do their best to maximize shareholder value, but management is inefficient in their evaluation of target company's true value, and they are willing to pay extra.

Empire building theory

Empire building theory as a merger motive is broadly researched area compared to other motives. The theory compares several phenomena and is it sometimes used as a umbrella term for several agency problem -related theories. Empire building theory is based on the claim that company management maximizes own benefits, rather than maximizing equity value for shareholders. (Trautwein, 1990)

Managers try to maximize their own benefits with constraints set by capital markets and shareholders. Baumol (1959) suggested that managers maximize revenue rather with minimum profit constraint. Marris (1964) argues that managers aim to generate financially sustainable growth rate of assets. Variables such as company cars and over-staffing have been used to study empire building. Rhoades (1983) analyzed 1960s merger waves conglomerate mergers from the point of growth maximization. Finding was that growth maximization and power found as a merger motives, but profits also had also essential role. In the beginning of 1960s merger wave the profit was present first, but a shift to power motive was observed.

One approach to empire building theory is to examine CEO compensation in relation to mergers. In can be argued, that if CEO owns 1% of company shares, he will lose 1% of equity value if nonprofitable is made, but will receive 100% of increased compensation (Berk and DeMarzo Peter, 2011) CEO compensation has taken a shift from stocks options to large cash compensations. This has resulted in a situation where CEO and stockholder interests are not as aligned as they are used to be. It is found that cash compensation gives CEOs an incentive to execute transactions in order to reach their maximal wealth. Typically, CEO salary is renegotiated if a merger occurs, and compensation is often tied with revenue and profit growth, not to actual performance of the merger. Thus, CEO will improve the compensation even if a bad transaction is made, and situation is opposite for stockholder. (Harford and Li, 2005)

When company is looking for growth, typical decision-making situation is between internal investment and merger. Therefore, relevant point of view to is to compare internal investments to mergers. It is found that typically internal investment does not lead to higher compensation for CEO. As mentioned, a merger is a catalyst to renegotiate CEO compensation. Overall, it is argued that cash-based compensation for CEO does not align incentives for management and owners, and leads to value-destroying mergers from shareholders' point of view. (Harford and Li, 2005)

2.8 Signaling effect

Grossman and Hart (1981) divided bids to two categories. On one hand, company has several small shareholders with limited resources to monitor market conditions and company's performance and announcements. On the other hand, there are some large shareholders, who in opposite to small owners have enough resources for monitoring the company. As a result, company performance monitoring is left for large owners. Another assumption in Grossman's and Hart's framework is that company management will do their best to maximize shareholder value in long term, but there may be some inefficiencies.

Large shareholder with monitoring responsibilities may acquire a company based on discovery that current management is inefficient. This kind of bid is called allocational bid. Another type of bid is called acquisitional bid. In acquisitional bid company is took over by large market player based on information about target company's performance. (Grossman and Hart, 1981) In case of allocational and acquisitional bids signaling effect is demonstrated. Small stockholders, which can be seen as markets in this case, get informed about inefficient management or target company's better than assumed performance, when information about the bid is published. If there were not inefficiencies in management or performance was not better than markets assumed, no such a bid would have been occurred.

In addition of signaling effect on the target and the bidding company's value, there are also theories about signaling effect on other industry players. On one hand, positive signaling effect could occur because other players in the industry would more likely to become targets in future. On the other hand, the new larger entity resulting from transaction would have competitive advantage on the market based on its' size, which is seen as a negative signal. (Funke, 2008)

2.9 Market efficiency

Eugene Fama published his first paper about research of market efficiency in 1970. Capital market can be seen primarily as a tool for capital and resource allocation for investors and companies. In theory, prices of securities reflect all information that is known about companies at the time, and investor can choose to which securities one wants to invest. Empirical research relating market efficiency have assumed market equilibrium, so that expected market return does not vary between market players. (Fama, 1970) Market equilibrium can be defined as a state where marginal benefits of trading do not exceed marginal costs (Fama, 1991). As a result of Fama's research, forms of market efficiency were divided to three categories (Fama, 1970):

Table 11. *Three forms of market efficiency (Fama, 1970).*

Stage of market efficiency	Description
Weak form	Historical information is fully reflected in securities prices
Semi-strong form	Publicly available information is immediately reflected in securities prices
Strong form	Insider information does not exist: all information is available for all market players and fully reflected in securieties prices

Weak form of market efficiency means that historical information is reflected in stock prices. Empirical tests strongly support a claim that capital markets are efficient as stated in weak form of market efficiency. In model where time period is a day or longer, stock prices seems to act as a random walk. Empirical evidence shows that there is dependency between price changes and stock returns in a way that it could be used as a slightly profitable trading rule. (Fama, 1970) These results suggest that weak form of market efficiency clearly exists in capital markets, and there is some evidence that semi-strong form does not exists. Strong form cannot exist without semi-strong form holding. Additionally, one can observe that insider information exists, for example, management of public companies have much more price-reflecting information compared to other investors (Jaffe, 1974).

Market efficiency is essential theoretical framework for this thesis, because event study method relies on the assumption that efficient market hypothesis holds. Especially, when short time period for abnormal return estimation is used, the more depended the research is on the assumption that new information will be immediately reflected on securities prices. Fama (1991) points out that there are large amounts of literature on event studies, were for example investment choices, dividend announcements and changes in capital structure and mergers and acquisition news are quickly reflected to stock prices. In that light the assumption of efficient markets seems to be realistic. Additionally, event study allows one to examine securities prices reactions in time, as event time is exactly known.

Efficient market hypothesis has faced some critics. If market were fully efficient, there were not any incentive for finance and other professionals to gather and investigate information, because securities would have right prices all the time (Grossmann and Stiglitz, 1980). Another key point for critics is that some market participants are not rational as efficient market hypothesis assumes, and as investors tend to act as a group, this could lead to inefficiencies in asset prices for some periods of time (Malkiel, 2003)

3. M&A MARKET ENVIRONMENT

The sample period from 2006 to 2009 included financial crisis. For that reason, it is essential to be familiar with the M&A market environment during the sample period. This chapter describes the M&A market with its characteristics, and illustrates key drivers effecting the M&A activity, such as stock market conditions and other macro economical drivers.

3.1 M&A activity in Finland

In late-2007 dealmakers began to doubt state of credit market and economic environment. When crisis started, financing for M&A deals tightened and effected significantly activity. M&A deal value peaked to more than $1 trillion in 2006 in the US (Alexandridis et al., 2012), which can be seen as a proxy for global M&A development. Figure 4 illustrates deal activity by deal count and total value of the deals from 2003 to 2013. Figures in this chapter are based on deals where ownership of the acquirer exceeds 50% of target's shares, canceled deals and IPOs are left out from the statistics.

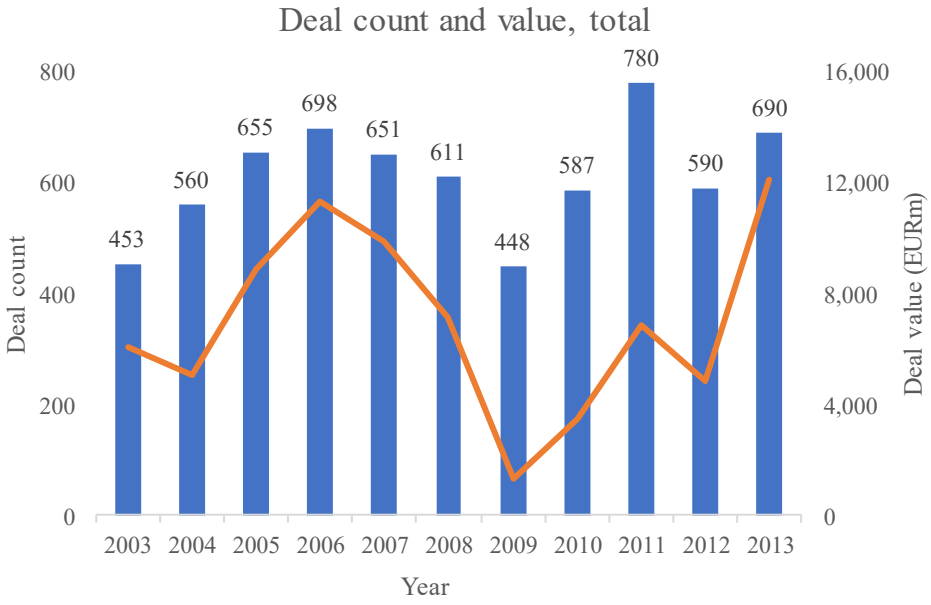

Figure 4. *Total deal count and value in Finland from 2003 to 2013 (Jalonen and Suomalainen, 2014).*

Market peak before financial crisis was in 2006 with 698 deals totaling EUR 11.3B. Year 2009 was the market bottom with 448 deals totaling EUR 1.3B. Market turmoil effected Finnish market with a lag. These figures are in line with M&A deals executed by public companies. The sample deals are described in "Data"-chapter. In took 4 years from 2009

to 2013 to reach pre-crisis levels in deal count and values. Figure 5 describes deal count and value in Finnish deals, where target is international, and acquirer is Finnish.

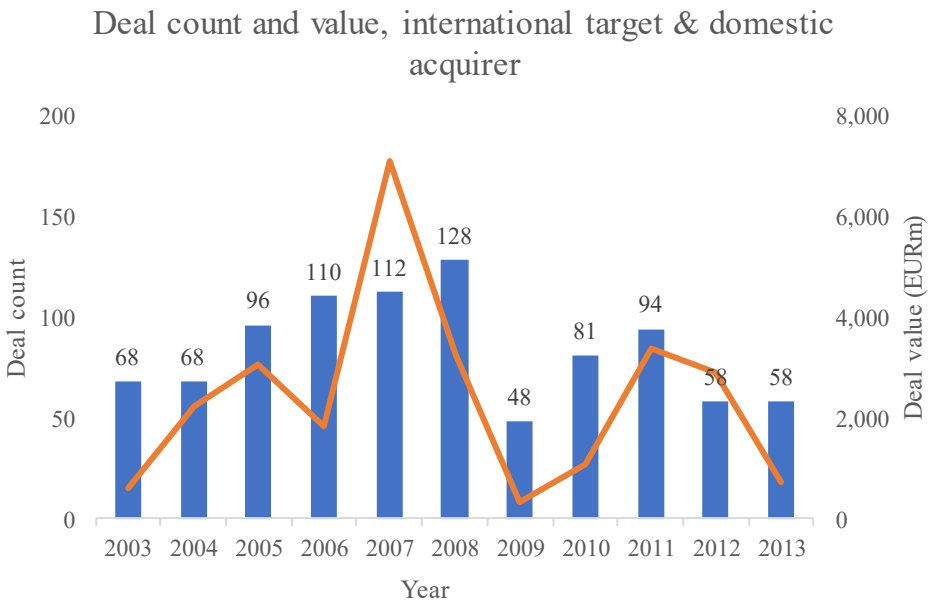

Figure 5. *Deal count and value, international target and domestic acquirer, in Finland from 2003 to 2013 (Jalonen and Suomalainen, 2014).*

Number of deals with international target and Finnish acquirer peaks in 2008 with 128. Cross-border deals may be process-wise more time consuming, resulting financial crisis effect to kick in later. Figure 6 describes deal count and value in Finnish domestic deals.

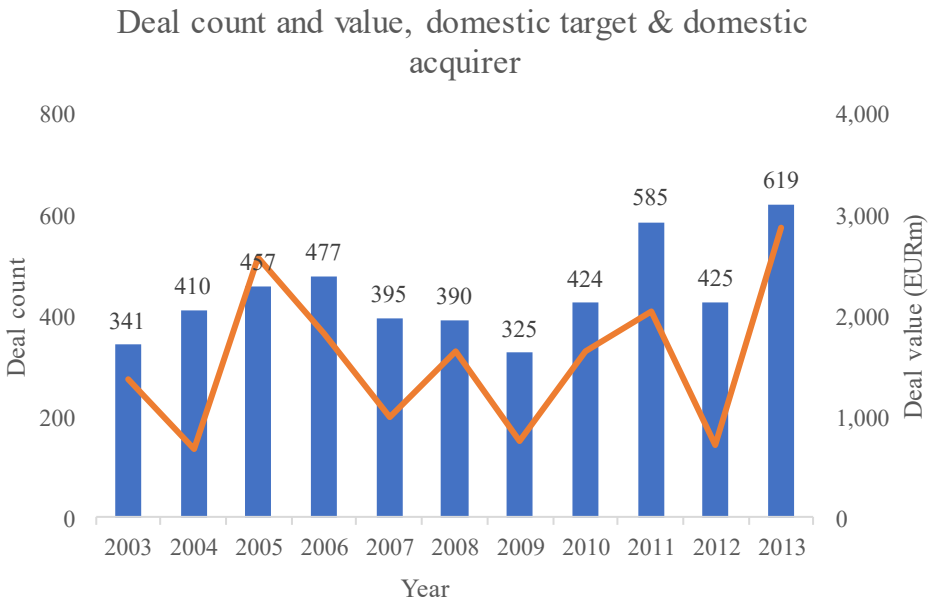

Figure 6. *Deal count and value, domestic target and international acquirer, in Finland from 2003 to 2013 (Jalonen and Suomalainen, 2014).*

Domestic deal activity is much less volatile when compared to total cross-border activity by number of deals or by deal value. International activity is a better proxy for sample used in this thesis, because public companies are much more often involved in cross-border deals compared to small companies. Figure **7** describes deal count and value in Finnish deals, where target is Finnish, and acquirer is international.

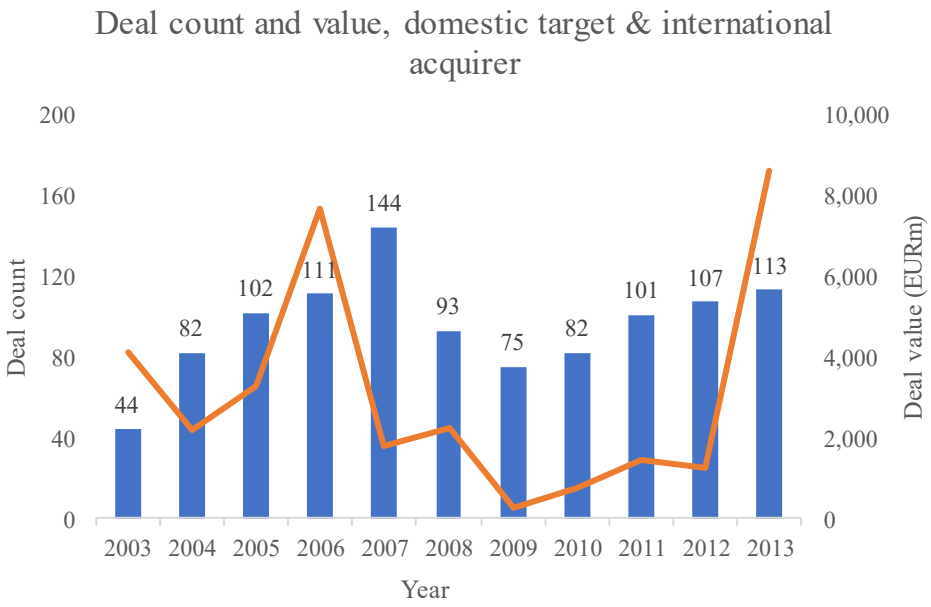

Figure 7. *Deal count and value, domestic target and international acquirer, in Finland from 2003 to 2013 (Jalonen and Suomalainen, 2014).*

Value of deals executed by international buyers in Finland crashed to EUR 256m in 2009 and reached level of EUR 8.6B in 2013, describing great volatility in international deals. To conclude the M&A activity from 2006 to 2009, deal flows were effected significantly by financial crisis. The last year of the sample period, 2009, was the low point for M&A market in Finland.

3.2 Macroeconomic drivers

Section 3.1 described the M&A activity in Finland. This section provides a brief to macroeconomic drivers which effect M&A activity. Selected drivers are valuation levels, stock market performance and volatility, GDB development and interest rate levels. Figure 8 illustrates valuation levels measured by P/E and EV/EBITDA multiples in Helsinki Stock Exchange.

Figure 8. *P/E (bar) and EV/EBITDA (line) multiples for Helsinki Stock Exchange from 2002 to 2016 (Kinnunen, 2017).*

Valuation multiples stayed more stable during financial crisis compared to M&A activity. Multiples reached the low point already in 2008 with P/E of approximately 10 and EV/EBITDA of approximately 7. Statistics are in line with the idea that low valuation levels are slowing down deal activity, as possible stagnated deal negotiations yield to low point of executed deals in 2009. As discussed in Literature review and theorical background -chapter, low valuation multiples would result to decline in activity, and favor use of cash a payment method by public acquirers. Figure 9 illustrates development of OMXPI index from 1999 to 2018.

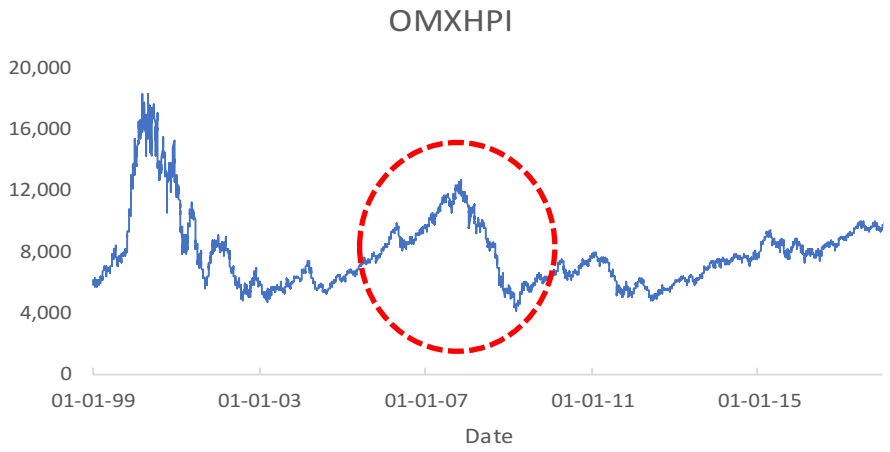

Figure 9. *OMXHPI index from 1999 to 2018 (Nasdaq, 2018).*

Market decline in 2007, 2008 and 2009 supports the development in P/E and EV/EBITDA multiples during the financial crisis. Figure 10 illustrates VIX volatility index development from 2004 to 2018.

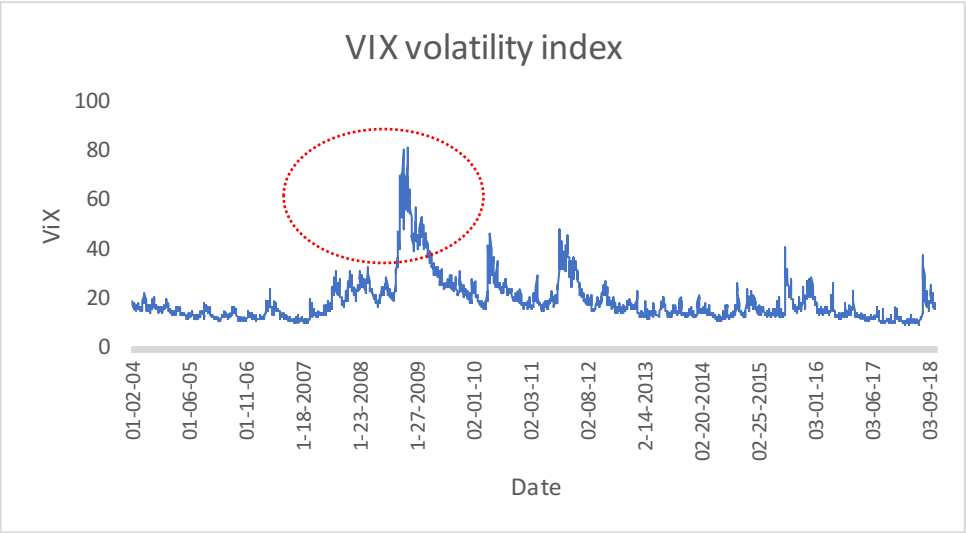

Figure 10. *VIX volatility index from 2004 to 2018 (Chicago Board Options Exchange, 2018).*

High volatility decreases M&A activity, as buyers and sellers tend to have different views about fair valuation levels. Financial crisis was a period of high volatility, VIX index peaking to 80 points in 2009. Figure 11 illustrates GDB volume growth in Finland from 1995 to 2014.

Figure 11. *GDP volume growth-% in Finland from 1995 to 2014 (Tilastokeskus, 2018).*

During the sample period, GDP volume growth in 2006 and 2007 is close to long term average, growth in 2008 is close to zero. Impact of financial crisis is most influential in 2009, when GDP volume decreased by -8.3% from previous year. GDP growth-% is in line with the deal activity during the sample period. Figure 12 illustrates 12 months Euribor rate from 1999 to 2017.

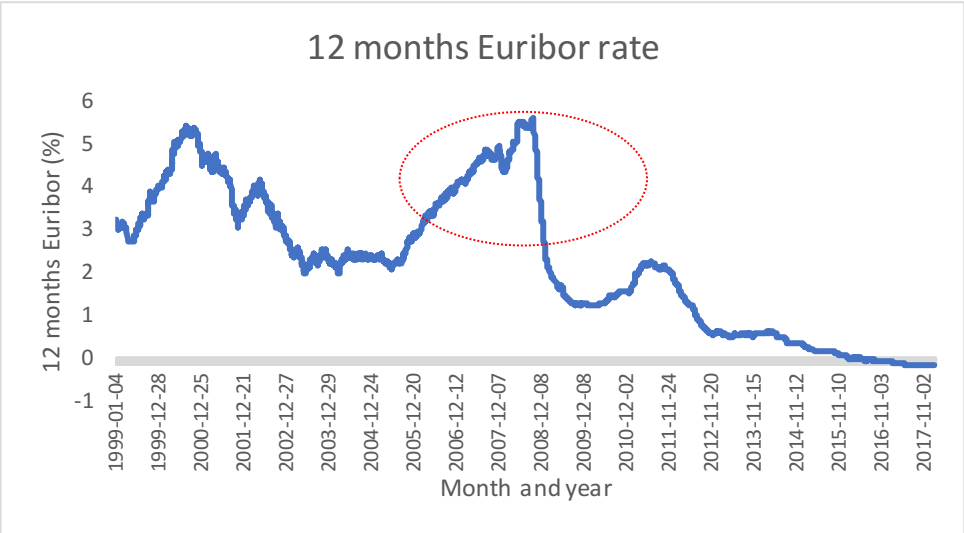

Figure 12. *12 months Euribor rate from 2004 to 2017 (Suomen Pankki, 2018).*

12 months Euribor rate is used as a proxy of overall interest rate level in Finland. Major decline in interest rate level occurred in 2008. Low interest rate level could accelerate M&A activity, as bank debt is used as one component to fund transactions.

To conclude, valuations, stock market performance, stock market volatility, GDP volume growth and interest rate levels were in line with the M&A activity during the sample period.

4. DATA

Fourth chapter provides description of data sample that is used in this study. Data set can be divided to two categories: M&A announcement data and stock price data.

4.1 M&A announcements

M&A announcement data consists of 77 stock announcements from beginning of 2006 to end of 2009 for companies listed in Helsinki Stock Exchange. Only transactions published by stock releases are included in the sample. Press releases typically contain information that is already known by the market, and thus is reflected in the stock price (Velassquez *et al.*, 2016). Therefore, as aim is to capture abnormal return of new information immediately after it is published, press releases are removed from the sample. Number of removed press releases was 82. Announcement database of Tampere University of Technology collected from Nasdaq was applied. Announcements in the database were categorized to 6 classes:

- Acquisitions and tender offers
- Company announcements
- Decisions of annual general meetings
- Investor news
- Quarterly reports

All announcements in first two categories were manually gone through to detect all true M&A announcements in the time period, as some of the M&A announcements were classified to be company announcements in the original data set.

4.1.1 Companies and industries in the sample

Total number count of companies in the sample is 49. List of sample companies:

Table 12. *List of sample companies.*

List of sample companies		
Afarak Group	Ixonos	Technopolis
Affecto	Keskisuomalainen	Tecnotree
Aspo	Metso	Teleste
Atria	Nokia	TeliaSonera
BasWare	Nurminen Logistics	Terveystalo Healthcare
Biotie Therapies	Oral Hammaslääkärit	Tulikivi
CapMan	Oriola-KD	Turvatiimi
Cencorp	Outokumpu	Vacon
Componenta	Outotec	Wärtsilä
Comptel	Panostaja	Wulff-Yhtiöt
Digia	QPR Software	YIT
Elisa	Rautaruukki	Aldata Solution
Endero	Revenio Group	Dovre Group
Etteplan	Rocla	Elcoteq
Exel Composites	Stockmann	Glaston
Fortum	Takoma	Tiimari
HKScan		

On average, there were 1.6 M&A announcements per company in the sample. Five companies with largest weight on the sample had 25 announcements in total, representing 32% of the total sample. 36 companies had 1 announcement in the sample. Distribution of sample announcements by company:

Table 13. *Distribution of sample announcements by company.*

Company	Announcements	Company	Announcements
Oral Hammaslääkärit	9	Keskisuomalainen	1
Panostaja	6	Metso	1
BasWare	4	Nokia	1
Revenio Group	3	Nurminen Logistics	1
TeliaSonera	3	Oriola-KD	1
Afarak Group	2	Outokumpu	1
Aspo	2	QPR Software	1
CapMan	2	Rautaruukki	1
Etteplan	2	Rocla	1
Ixonos	2	Stockmann	1
Outotec	2	Tecnotree	1
Takoma	2	Teleste	1
Technopolis	2	Terveystalo Healthcare	1
Affecto	1	Tulikivi	1
Atria	1	Turvatiimi	1
Biotie Therapies	1	Vacon	1
Cencorp	1	Wärtsilä	1
Componenta	1	Wulff-Yhtiöt	1
Comptel	1	YIT	1
Digia	1	Aldata Solution	1
Elisa	1	Dovre Group	1
Endero	1	Elcoteq	1
Exel Composites	1	Glaston	1
Fortum	1	Tiimari	1
HKScan	1		

Oral Hammaslääkärit is a dental and health company. Panostaja is an investment company that owns and develops small and mid-size Finnish companies. Basware is a software company, delivering financial supply chain solutions. Revenio is a health company and TeliaSonera operates in telecommunications. Outcome is, that top 5 companies measured by number of announcements in the sample are operating mainly in different industries, so sample is quite diversified from this point of view. However, there is no evidence that shareholder value differs between industries.

Sample companies are categorized to ten different industries. Classification used by Kauppalehti (Kauppalehti, 2018) is applied in this thesis. Distribution of sample companies and announcements by industry are presented in the next following two tables:

Table 14. *Distribution of sample companies by industry.*

Industry	Companies	Percentage
Industrial Goods and Services	17	34.7%
Technology	12	24.5%
Health Care	5	10.2%
Consumer Goods	5	10.2%
Finance	3	6.1%
Industrials	3	6.1%
Telecommunication	2	4.1%
Consurmer Services	1	2.0%
Utility services	1	2.0%
Oil & Gas	0	0.0%
Total	**49**	100.0%

Table 15. *Distribution of sample observations by industry.*

Industry	Observations	Percentage
Industrial Goods and Services	21	27.3%
Technology	16	20.8%
Health Care	15	19.5%
Finance	10	13.0%
Consumer Goods	5	6.5%
Industrials	4	5.2%
Telecommunication	4	5.2%
Consurmer Services	1	1.3%
Utility services	1	1.3%
Oil & Gas	0	0.0%
Total	**77**	**100.0%**

Industrial Goods and Services accounts for 33.7% and Technology for 24.5% of sample companies. Helsinki Stock Exchange is overweighed with machinery and technology companies. Thus, industry distribution in the sample is aligned with general characteristics in the market. Weight of Oil & Gas companies in 0% in this sample. Nokia is represented in the sample by one announcement: Nokia announced to acquire NAVTEQ, a leading provider of digital map information systems, mobile navigation devices and Internet-based mapping tools on 1st of October 2007 (Nokia, 2007)

4.1.2 Time distribution of sample announcements

The research period from 2006 to 2009 is characterized by financial crisis, as discussed in the second chapter. Number of announcements per year is presented in the next figure:

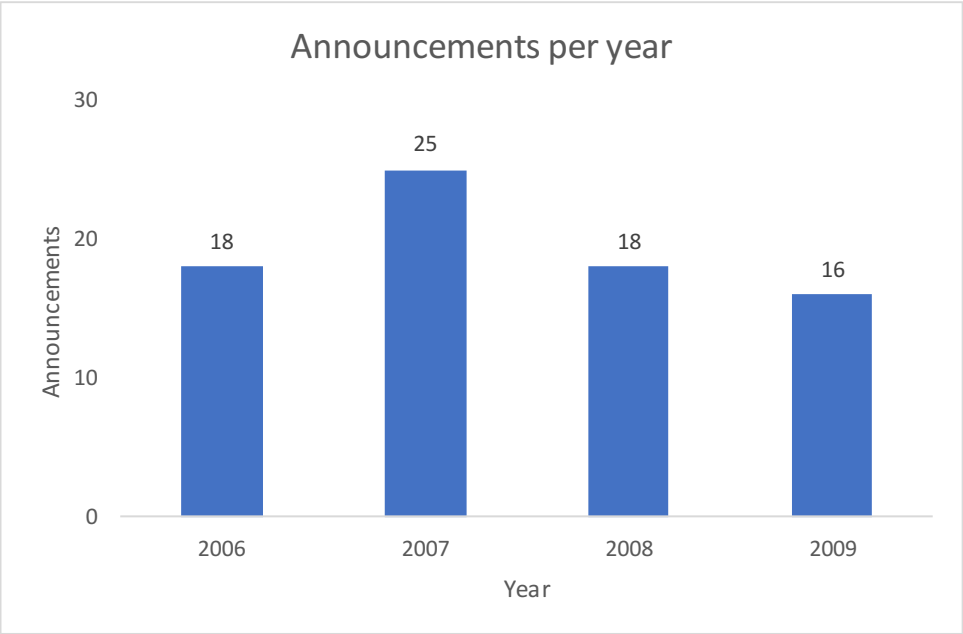

Figure 13. *Number of announcements per year in the sample.*

Announcements per year remains quite stable during the sample period 2006 to 2008. Market peaks in 2007 with 25 announcements, after which starts a moderate decline. Total deal count peaked in 2006 in Finland (see chapter 3), so there is a slight difference between the transaction count of total market and a subset of deals executed by public companies. Credit crisis hit in 2007, and these figures are in line that information, keeping in mind that the US M&A activity peaked already in 2006. One could say that there is a slight lag between effects of financial crisis between the US and Finland. Next figure presents cumulative count of sample announcements:

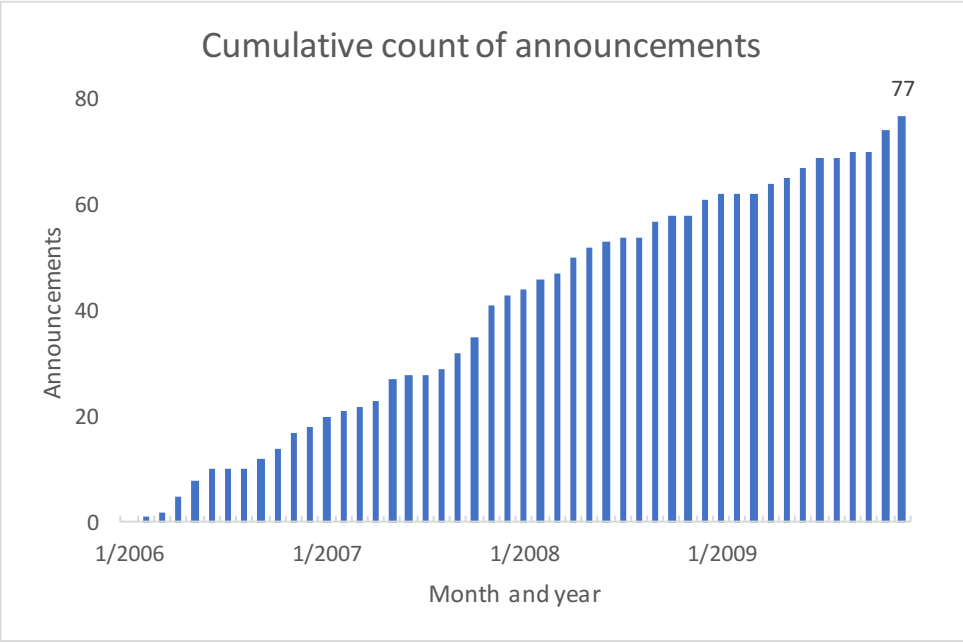

Figure 14. *Cumulative count of announcements in the sample.*

It can be seen, that announcements are cumulated with a constant pace from 2006 to 2008. Following table shows that how observations are placed in relation to the start of financial crisis. One definition for the start of financial crisis is June 2007 (Erkens et al. (2012)) and this definition is applied in this study.

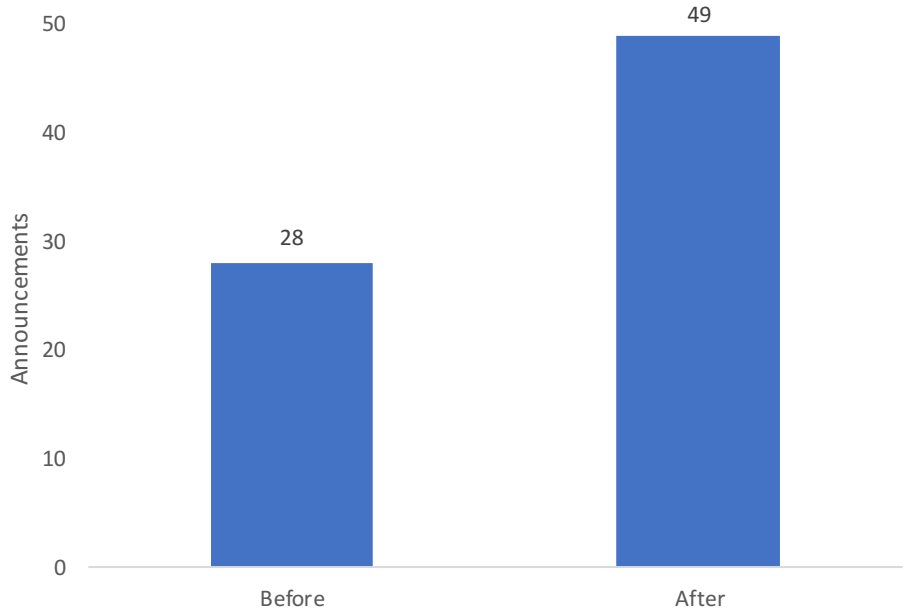

Figure 15. *Number of announcements after and before of the start of financial crisis in June 2007.*

36% of the announcements occur before start of the financial crisis, and 64% of the announcements occur after start of the financial crisis. This classification illustrates the argument that the sample period is characterized by financial crisis.

4.1.3 Deal-specific characteristics

M&A announcements in the sample are segmented by geography, legal form of target, target's positioning in value chain and by payment method. The following 4 tables illustrates sample distribution to these categories.

Table 16. *Distribution of sample observations by geography.*

	2006	2007	2008	2009	Total
Domestic	11	16	4	7	38
Cross-border	7	9	14	9	39
Total	18	25	18	16	77

Table 17. *Distribution of sample observations by legal form of target.*

	2006	2007	2008	2009	Total
Private	15	20	14	11	60
Public	3	5	4	5	17
Total	18	25	18	16	77

Table 18. *Distribution of sample observations by target's positioning in value chain.*

	2006	2007	2008	2009	Total
Horizontal	14	20	12	13	59
Vertical	1	1	3	2	7
Conglomerate	3	4	3	1	11
Total	18	25	18	16	77

Table 19. *Distribution of sample observations by payment method.*

	2006	2007	2008	2009	Total
Cash	9	12	13	7	41
Stocks	2	3	1	3	9
Mixed	7	10	4	6	27
Total	18	25	18	16	77

49% of the deals are domestic transactions, and in 51% cases the target is headquartered outside Finland. Only 22% of targets are public companies, a purchase of small private companies is usually much more common. Majority, 77% of deals are horizontal, vertical deals accounts for 9% and conglomerate deals for 14% of observations deals. Cash is most common type payment type with 53% share, only stocks is used in 12% and combination of stocks and cash in 35% of transactions.

4.2 Stock price data

Stock price data of individual companies from 01.01.2006 to 31.12.2009 provided by Tampere University of Technology is used in this thesis. The sample consists of companies listed in Helsinki Stock Exchange. 5 minutes timestep is applied in the study. Reference index used as a market return is OMX Helsinki Price Index (=OMXHPI), which is a market-weighted index of all Helsinki Stock Exchange companies. Starting point for the index was 1,000 points in 28.12.1990. Following Figure presents OMXHPI development from 01.01.2006-31.12.2009, which is also the sample period used in this study.

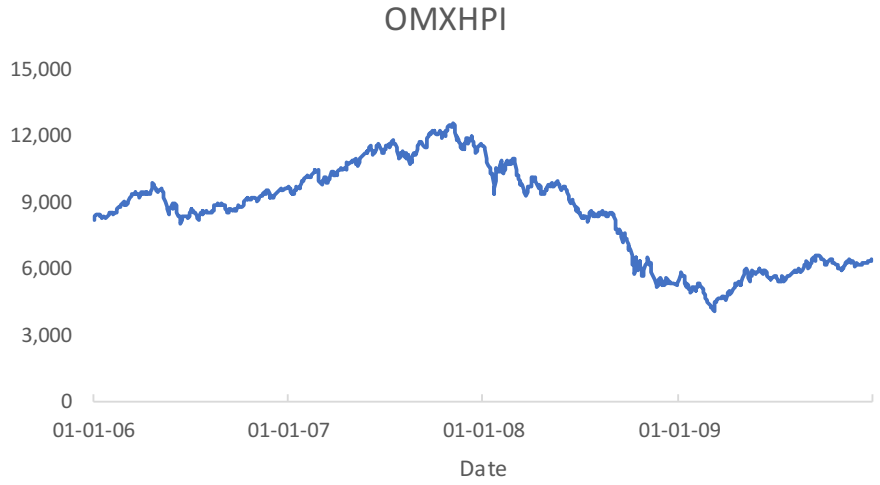

Figure 16. *OMXHPI index from 2006 to 2009 (Nasdaq, 2018).*

Index values are calculated as an average of lowest and highest value for a trading day. Next table presents OMXHPI development from 01.01.1999 to 03.04.2018.

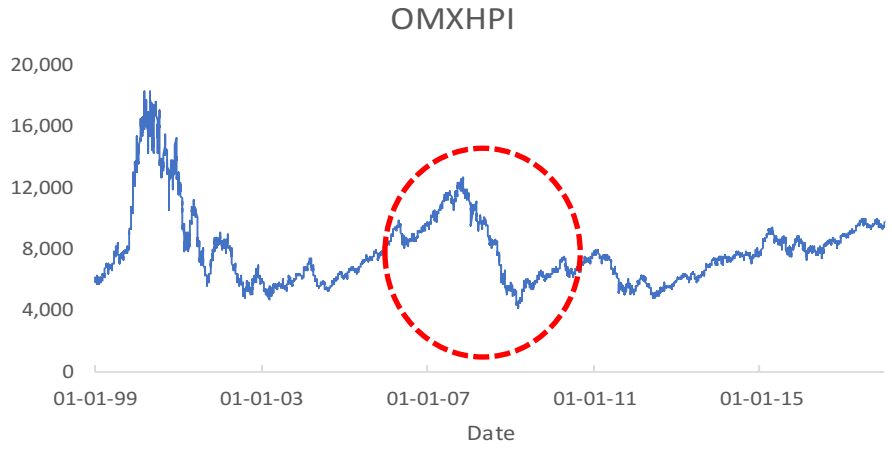

Figure 17. *OMXHPI index from 1999 to 2018 (Nasdaq, 2018).*

In figure 17 close-prices for trading days are used, because high and low values are not available for the period. It can be seen from figures 17 and 18 that a stock market crash

occurs during the sample period. From this perspective one could argue, that sample is biased – shareholder earnings may be higher or lower during a stock crash period compared to average performance.

5. HYPOTHESES AND METHODOLOGY

Fifth chapter describes the study hypotheses and used research methodology. First, hypothesis regarding to acquirer's shareholder returns and deal characteristics are defined. Secondly, event study methodology is walked through by presenting constant mean model and market model, defining estimation and event window, and finally presenting market model methodology in vector form.

5.1 Research hypotheses

As discussed in the literature review, there are inconsistent results about M&A value creation. Secondly, some theories suggest positive and some negative effect of M&A on shareholder value. General M&A studies have tried to explain the impact of announcement effect on acquirer's or target's shareholders returns, or combined returns. For example, Alexandridis et al. (2012) researched domestic deals in US markets from 2003 to late-2007 and reported negative returns for acquirer's shareholders. Ma et al. (2009) examined returns in Asia and found positive returns. Moreover, M&A returns are reported in several studies where focus has been to explain how different factors effect on return. Again, with inconsistent results. Thus, there is no reason to expect positive or negative returns for acquirer. From these perspectives, main hypothesis for this event study is defined as follows:

H_1: M&A announcements do not lead to abnormal returns for acquirer's shareholders on an aggregate level

Deal-specific characteristics

This study tries to explain also explain variation of the returns by deal-specific characteristics. Hypotheses H_2-H_5 examine geographical location of acquirer and target, legal form of target, deal structure and payment method. These study questions are typical in M&A event studies, as discussed in the second chapter. Hypotheses are formed in a way that they represent the most probable result based on earlier studies.

One angle is to research cross-border transactions. On one hand, there are some difficulties in cross-border transactions, such as cultural integration, which may affect the returns. On the other hand, another common idea state that higher level of corporate governance leads to higher returns, and thus M&A returns effected by proportional level of a corporate governance in acquirer's and target's home country (Martynova and Renneboog, 2008). As this study focuses on Finnish markets alone, cultural characteristics or level over corporate governance may differentiate the returns. Results of cross-border studies are inconsistent, for example, Martynova & Renneboog (2008) reported higher returns

for domestic deals and Bris & Capolis (2004) reported lower returns for domestic transactions. However, greater share of studies has presented higher returns for domestic deals.

H_2: Domestic transactions yield to higher returns compared to cross-border transactions

Legal form of a target is a commonly researched factor of M&A performance and theories on the impact on returns are related to valuation and asymmetric information-based frameworks. Illiquidity discount suggests that acquirer has to pay higher price for public targets, and thus it is more beneficial to acquire private targets. (Fuller et al., 2002) Capron and Shen (2005) reported positive returns for acquirer when target was a private company and negative return when target was a public company. Fuller et al. (2002) shown similar results.

H_3: Public target company yields to lower returns compared to private targets

Positioning in the value chain is interesting question. It examines impacts of different strategic choices, and is discussed in section 2.6, different merger waves were characterized by different transaction types. In horizontal mergers two companies are competitors and synergies are achieved. (Wübben, 2007) From this perspective it could be argued that horizontal transactions yield to higher returns compared to two other type of transactions. Bris and Cabolis (2004) reported negative returns for non-horizontal mergers, and Fan & Goyal (2006) found positive returns for horizontal and vertical transactions compared to total sample. Thus, there are slight variations in earlier studies. Theoretical background favors horizontal mergers, thus hypothesis H_4 is defined as follows:

H_4: Vertical and conglomerate deals yield to lower returns compared to horizontal transactions

Payment method is one of the most researched areas of M&A transactions. Payment method has an impact on for example taxation and liquidity and more importantly, it has signaling effect. Stock is typically used as a payment method if it is overvalued (Jensen, 2004). Thus, use of stocks signals overvaluation of acquirer, and cash signals undervaluation. Typical studies compare impact of use of cash, use of stocks or a combination of stocks and cash as a payment method. For example, Eckbo and Thorburn (2000) reported that transactions paid with stocks performed worst, and Loughran & Anand (1997) showed similar results. There are consistent results on cash versus stock studies, but role of hybrid payment is not as clear. Finally, hypothesis H_5 is set as follows:

H_5: Use of stocks or a combination of stocks and cash as a payment method yields to lower returns compared to use of cash as a payment method

5.2 Constant-mean model and market model

To capture an impact of an event, one must first determine abnormal return. The abnormal return is defined as the actual return of the security minus normal return of the security in the event window. (Pagan, 1996) The normal return is the expected return when no event takes place. For firm *i* and date *T* expected return is defined as

$$\varepsilon_{it}^{*} = R_{it} - E(R_{it}|X_t), \quad (1)$$

where ε_{it}^{*} is abnormal return, R_{it} is actual return and $E(R_{it}|X_t)$ is normal return for time period *t*. X_t is conditioning information for the normal return model. (Pagan, 1996)

Event study methodology is presented in vector-form according to Pagan 1996. Both constant mean model and market model are shown. Only market model is used in this thesis. R_t is a (N x 1) vector of asset returns for time period *t*. Assumptions are that R_t is independently multivariate normally distributed with mean μ and covariance matrix **Ω** for all *t*.

Constant-mean model

For constant mean model we have

$$R_{it} = \mu_i + \xi_{it}, \quad (2)$$

$$E[\xi_{it}] = 0, \quad (3)$$

$$Var[\xi_{it}] = \sigma_{\xi i}^{2}, \quad (4)$$

where R_{it} is *i*th element of R_t is period-t return for security *i*, ξ_{it} is disturbance term and $\sigma_{\xi i}^{2}$ is the (i, i) element of covariance matrix **Ω**. Constant-mean model assumes that the mean of a stock is constant trough time. Constant mean model might be the simplest model for modeling normal performance for stocks. (Pagan, 1996) Brown and Warner (1980) results show that the simplest method, constant mean model, has nearly same explanatory power compared to more sophisticated models, market model and risk adjusted returns model. However, explanatory power decreases more with constant mean model, compared for example to market model, if clustering, simultaneous impact of event on several securities, occurs. Clustering increases variance of the residuals because they are positively correlated across multiple securities. (Brown and Warner, 1980)

Market model

Even though constant mean model gives similar results compared to more advanced models, one major disadvantage of constant mean model is high variance. Common approach is to reduce variance by using market model (MacKinlay, 1997). In market model return

of a stock *i* is measured by relation to return of market return. Advantage of market model is to capture part of the variance of a stock *i* which is result of a variance of market portfolio. (Pagan, 1996) In market model, for security *i*

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_i, \quad (5)$$

$$E[\varepsilon_{it}] = 0, \quad (6)$$

$$Var[\varepsilon_{it}] = \sigma_{\varepsilon i}^2, \quad (7)$$

where R_{it} is the return of security *i* for time period *t* and R_{mt} is market return for time period *i*. ε_{it} is the zero-mean disturbance term, and α_i, β_i and $\sigma_{\varepsilon i}^2$ are market model parameters. For market return, broad stock indexes, such as S&P500 are used. Also value-weighted and equal-weighted indexes, such as CRSP value-weighted and CRSP equal-weighted indexes are common choices. (Pagan, 1996) In this study, market return is estimated by OMXHPI as discussed in Data-chapter.

5.3 Data frequency, estimation window and event window

Let $\underline{T} = 0$ be the event date, $\underline{T} = T_1+1$ to be start of event window and $\underline{T} = T_2$ end of event window. Estimation window is presented by $\underline{T} = T_0$ as a starting point and $\underline{T} = T_1$ as an end. Note, that with this definition there is no overlap between estimation and event window. Post-event window starts from $\underline{T} = T_2+1$ and ends to $\underline{T} = T_3$. Timeline for the event study is presented in figure 18.

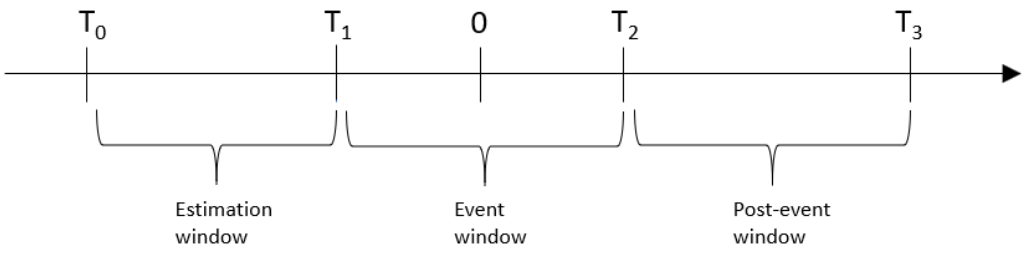

Figure 18 Illustration of event study time line (Pagan, 1996)

Length of the estimation window, event window and post-event window are $L_1 = T_1 - T_0$, $L_2 = T_2 - T_1$, and $L_2 = T_3 - T_2$.

Data frequency

As discussed in literature review, most of the studies use daily data, usually close-prices, to estimate performance. One disadvantage of daily data is, that announcement effect may occur after minutes of the publication, and it will not be captured by using daily data. Use

of intraday data allows the study to examine how investors process the new information (Velassquez *et al.*, 2016) Secondly, information is lost the coarseness of daily data. (Lee, Mucklow and Ready, 1993) Thirdly, use of more frequent interval increases the explanatory power (MacKinlay, 1997) Implication of these arguments is that use of intraday data is preferable. However, use of as frequent as possible data points is not optimal, unless correction term for microstructure noise is used (Aït-Sahalia, Mykland and Zhang, 2005). In this thesis 5 minutes timestep is used, on one hand to capture short term reactions, and on the other hand to prevent effects of market microstructure noise.

Estimation window

Selecting an estimation window length, trade-off is made between long estimation window and short estimation window. Long estimation window is in favor for larger data sample size. However, market characteristics may have more likely changed during the estimation period if estimation window is long. Additionally, estimation window may be more likely disturbed by non-related events effecting on stock performance. (Krivin *et al.*, 2003)

Estimation window of 950 steps, which converts to about 10 trading days, is used in this study. With use of daily close-prices for stocks, 950 steps would convert to estimation window length of 4 years. As discussed, shorter estimation window decreases the likelihood of confounding events and changes in market characteristics. Additionally, short estimation window decreases heteroscedasticity (Velassquez *et al.*, 2016).

Event window

One difficulty is event study setup is to prevent confounding events in an event window. If the are other major financially effecting events in the event window, capturing of the impact of the one particular event is distracted. (McWilliams and Siegel, 1997) Similar trade-off between advantages of sample size and disadvantages of window length is to be consider with event window length as was with estimation window length.

One issue to be treated is uncertainty of the event date. Even though announcements in the data sample contain exact time-stamp, part of the announcements may be published after the stock markets are closed. In this case the impact is of the event will occur in day 1 and will not be captured with event window of one day. To prevent the risk of missing an event, event window can be expanded from one day to two or three days. (MacKinlay, 1997) Alternative approach would be to use one day event window and to examine whether announcements are published before or after the stock market closing, and adjusting event day one day forward in the case of publication after the markets are closed.

Event window of 3 days is used in this study. On one hand, event window is kept as short as possible to decrease probability of confounding events. On the other hand, use of three

days window prevents the missing of an event. With timestep of 5 minutes, there are 285 observations in the event window.

5.4 Market model in vector form

Let $R_i = [R_{i\,To+1} \ \dots \ R_{i\,T1}]'$ be an (L_1 x 1) vector of estimation window returns, $X_i = [\iota R_m]$ an (L_1 x 2) vector with a vector of ones in first column and market returns $R_m = [R_{m\,To+1} \ \dots \ R_{m\,T1}]'$ in the second column, and $\Theta_i = [\alpha_i \ \beta_i]'$ a (2x1) parameter vector. Derived from equation (5), estimation window returns R for stock i are expressed as a regression model:

$$R_i = X_i \Theta_i + \varepsilon_i \ . \tag{8}$$

Assuming that general conditions of OLS hold, market model parameters for estimation window are as follows:

$$\widehat{\Theta_\iota} = (X_i' X_i)^{-1} X_i' R_i, \tag{9}$$

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1 - 2} \hat{\varepsilon}_i' \hat{\varepsilon}_i, \tag{10}$$

$$\widehat{\varepsilon}_i = R_i \ - \ X_i \widehat{\Theta_\iota}, \tag{11}$$

$$VAR[\widehat{\Theta_\iota}] = (X_i' X_i)^{-1} \sigma_{\varepsilon i}^2. \tag{12}$$

Using equation (11) for event window returns, we have

$$\hat{\varepsilon}_i^* = R_i^* - \hat{\alpha}_i \iota - \widehat{\beta}_i R_m^* = R_i^* - X_i^* \widehat{\Theta_\iota}, \tag{13}$$

where $R = [R_{i\,T1+1} \ \dots \ R_{i\,T2}]'$ is (L_2 x 1) vector of event returns, $[\iota X_i^*]$ is (L_2 x 2) matrix of ones in first column and market returns $R_m = [R_{m\,T1+1} \ \dots \ R_{m\,T2}]'$ in second column, and $\widehat{\Theta_\iota}$ is parameter vector $[\hat{\alpha}_i \ \widehat{\beta}_i]'$. For abnormal returns zero mean of error terms can be shown:

$$E[\varepsilon_{it} | X_i^*] = E\left[R_i^* - X_i^* \widehat{\Theta_\iota} | X_i^*\right] = \dots = 0. \tag{14}$$

And for abnormal returns covariance matrix:

$$V_i = E[\hat{\varepsilon}_i^* \hat{\varepsilon}_i^* | X_i^*] = \dots = I\sigma_{\varepsilon i}^2 + X_i^* (X_i' X_i)^{-1} X_i^{*\prime} \sigma_{\varepsilon i}^2 \ , \tag{15}$$

where I is (L_2 x L_2) identity matrix. For cumulative abnormal returns we have

$$\widehat{CAR}_i(\tau_1, \tau_2) = \gamma' \hat{\varepsilon}_i^* \ , \tag{16}$$

where $T_1 < \tau_1 \leq \tau_2 \leq T_2$, γ is (L_2 x 1) vector with ones in positions from $\tau_1 - T_1$ to $\tau_2 - T_1$, and $\hat{\varepsilon}_i^*$ is abnormal returns for stock i. Variance of cumulative abnormal return is:

$$Var\left[\widehat{CAR}_i(\tau_1, \tau_2)\right] = \hat{\sigma}_i(\tau_1, \tau_2) = \gamma' V \hat{\varepsilon}_i^*. \quad (17)$$

Standardized cumulative abnormal return (SCAR) is defined as

$$\widehat{SCAR}_i(\tau_1, \tau_2) = \frac{\widehat{CAR}_i(\tau_1, \tau_2)}{\hat{\sigma}_i(\tau_1, \tau_2)}. \quad (18)$$

Assuming general conditions of OLS to hold, $\widehat{SCAR}_i(\tau_1, \tau_2)$ distribution is Student t, with degrees of freedom $L_1 - 2$. Given the equal weight for each stock, average SCAR for a sample of N securities is

$$\overline{SCAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^{N} \widehat{SCAR}_i(\tau_1, \tau_2). \quad (19)$$

For testing the null hypothesis, J_1, where non-standardized returns are applied, or J_2 with standardized returns, can be used. (Pagan, 1996) In this thesis, J_2 is presented. J_2 is defined as

$$J_2 = \left(\frac{N(L_1 - 4)}{L_1 - 2}\right)^{\frac{1}{2}} \overline{SCAR}(\tau_1, \tau_2) \sim N(0, 1), \quad (20)$$

where N is number of securities, L_1 length of estimation window, and $\overline{SCAR}$ is average of standardized cumulative abnormal returns. (Pagan, 1996) When using $\overline{SCAR}$, more weight is given for stocks with lower variance, which is preferable choice when abnormal return is constant in sample. When abnormal returns is higher for stocks with larger variance, better choice for testing null hypothesis would have been use of $\overline{CAR}$ (Pagan, 1996) Patell (1976) applied standardization of price changes by estimates of stock's estimate of price variability, finding statistically more stable results compared to un-standardized methodology. Standardization accounts for possible heteroskedasticity in sample and possibly increase power of the test (Brown and Warner, 1985)

6. RESULTS

The results chapter reports the findings of this thesis. The study sample consisted of 77 M&A announcement observations on time period from 2006 to 2009 and event study methodology was used to examine shareholder returns. Results are observed in relation to study hypothesis presented in the fifth chapter and they are compared to earlier results presented in literature review. Section 6.1 reports the shareholder returns for acquiring company and section 6.2 presents results of multivariate regression examining the impact of event specific characteristics. Section 6.3 summarizes results.

6.1 Returns

Shareholder returns of the acquiring company were studied by event study using event window of 3 days with 5 minutes timesteps. Figure 19 presents the SCAR for acquiring company.

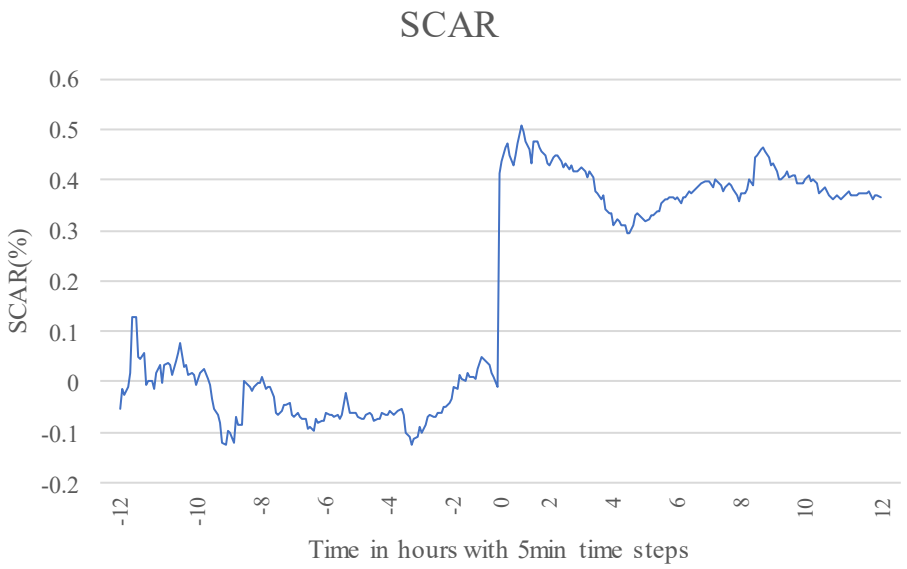

Figure 19. *SCAR of acquiring company in 3 days event window with 5 minutes timesteps.*

It can be observed that SCAR fluctuates around 0.0% on negative and positive side from timestep -134 to timestep 0. At the event time T=0 SCAR rises immediately from 0.0% to 0.41% and reaches the maximum of 0.51% on timestep 8, 40 minutes after the announcement. After the maximum point there is a slight downward drift, and at the end of the event window SCAR is at 0.37%. This result shows that acquirer's shareholders receive slightly positive returns from M&A activity. Before discussing this result further, it is essential to examine statistical power of the result. Statistical significance is studied by J_2 test for SCAR. Next two charts present J_2 test statistic from SCAR in 3 days event

window. Chart 20 shows J_2 from beginning of event window to the last timestep just before the announcement. Second chart presents J_2 from the first timestep just after the announcement to the end of event window. SCAR is reset in chart 21.

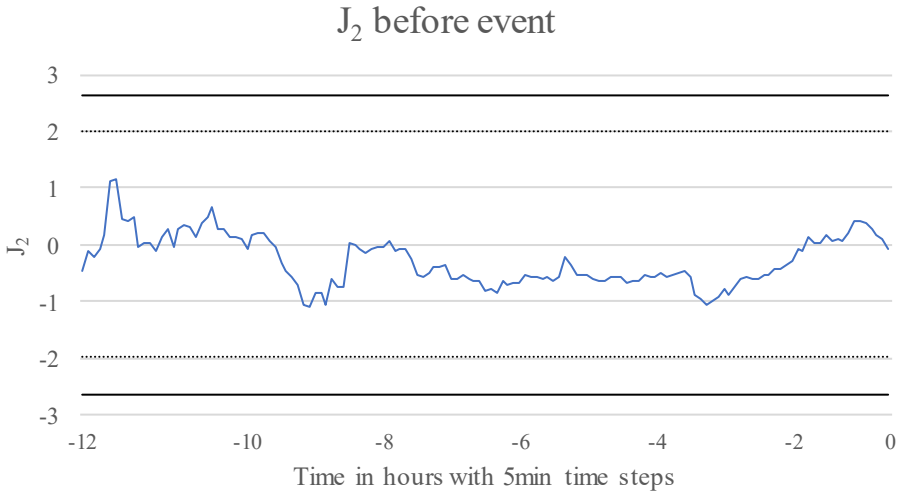

Figure 20. *J_2 test statistic for SCAR before the announcement time T=0. Dashed line represents 95% confidence interval and solid line represents 99% confidence interval.*

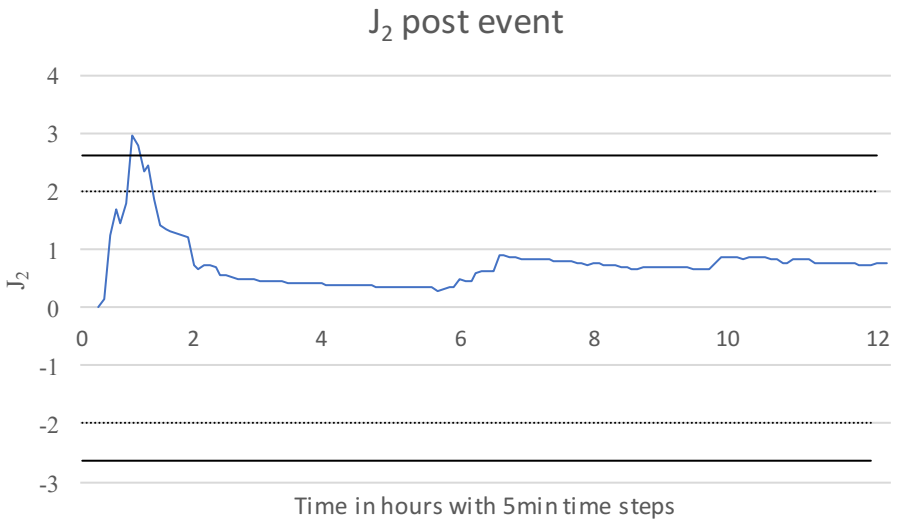

Figure 21. *J_2 test statistic for SCAR after the announcement time T=0. Dashed line represents 95% confidence interval and solid line represents 99% confidence interval.*

Figure 20 shows that J_2 fluctuates on both sides of zero before the announcement, approximately between 1 and -1. Outcome confirms the result from SCAR figure that there are no abnormal returns before the announcement. In figure 21 J_2 begins to rise just after the event and reaches the maximum value on timestep 7, 35 minutes after the announcement. After the peak J_2 declines to close-to-zero level. J_2 values immediately after the event are

statistically significant at 99% confidence level. These findings confirm that Hypothesis 1 is rejected.

J_2 is sound test statistic to be used if observations are normally distributed. Figure 22 illustrates distribution of SCARs in the sample.

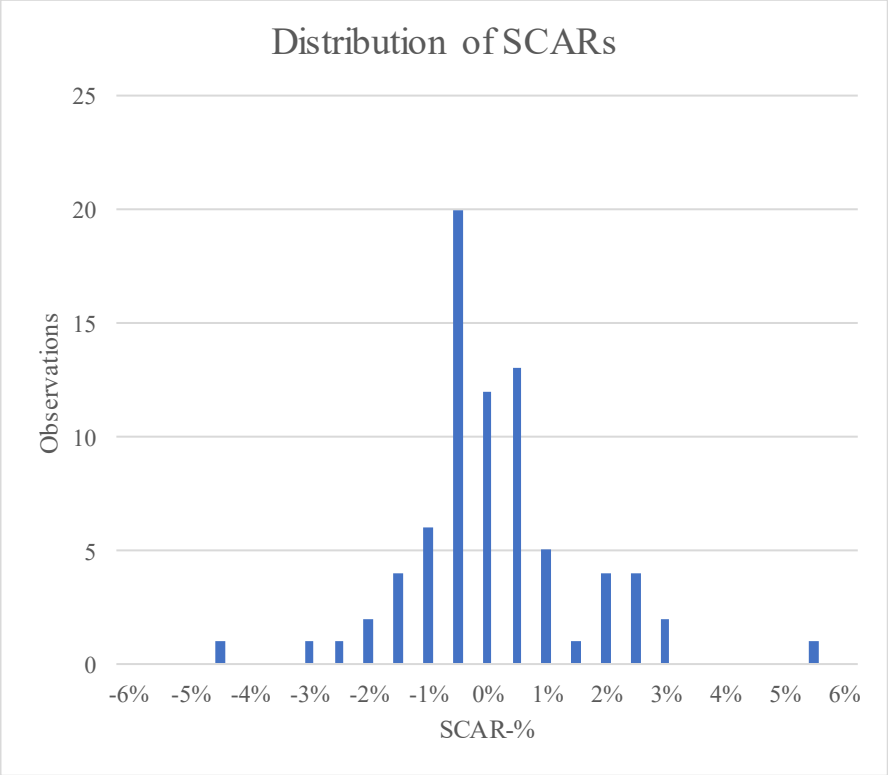

Figure 22. *Distribution of SCARs in the sample (N=77).*

SCAR distribution resembles normal distribution, with slightly more weight on close-to-zero positive values. Thus, J_2 can be argued to be right test statistic. Moreover, the choice between J_1 and J_2 is significant, because variance of the returns is on similar levels across different securities.

The result for SCAR is in line with earlier studies. For example, Ma et al. (2009), Georgen & Renneboog (2002), and Mulherin & Boone (2000) reported slightly positive returns from 0.7% to 1.7%, and there is not empirical evidence for high positive returns. On contrary, some studies, for example Alexandridis et al. (2012) and Martynova & Renneboog (2008b), reported slightly negative acquirer's shareholder returns. It is to be noted that several studies indicating negative returns used a sample of U.S. companies, and several studies outside U.S. indicated positive returns.

As the sample period from 2006 to 2009 is flavored with financial crisis, one question was to if financial crisis effects the returns. The sample was divided to two time periods: the first period ended to last day of June 2007 (period before start of financial crisis), the

second period started on first day of July 2007 (period on and after financial crisis). Figure 23 shows SCAR for the two time periods in 3-day event window.

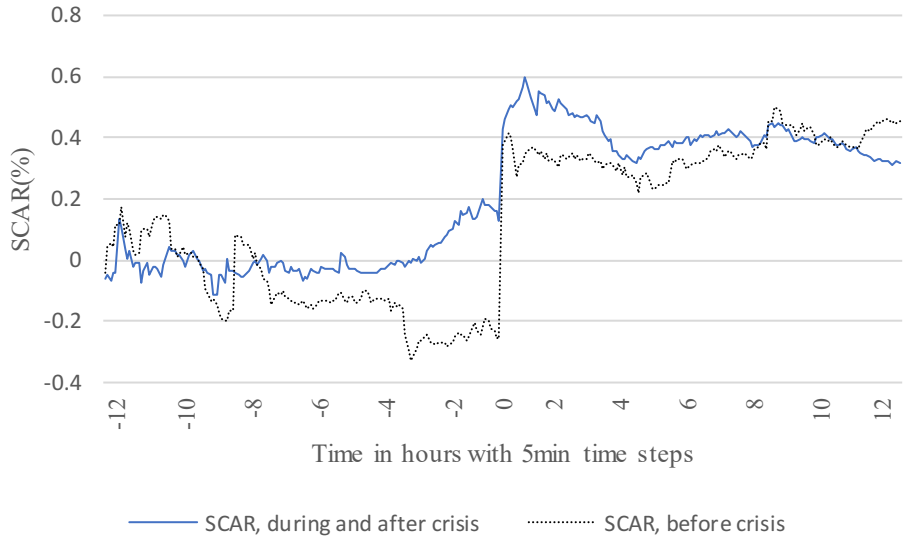

Figure 23. *SCARs in 3 days event window with 5 minutes timesteps for time period before financial crisis (dashed line) and for time period during and after financial crisis (solid line).*

SCARs for the two time periods resemble the SCAR for total sample. There is a slight upward drift in the SCAR plot for before financial crisis for few timesteps before the announcements. However, this is only an illustration of information leakage before the official announcement. It can be argued that returns for acquirer shareholders remained the same before and after of the start of financial crisis. However, these results are not statistically meaningful, due to low number of observations in the sample.

6.2 Regression analysis

Multivariate regression is used to study impact of transaction-specific explanatory factors on acquirer's shareholder return. Table 20 lists independent variables that are used in the multivariate regression. Dependent variable is 3-day SCAR.

Table 20. *List of independent variables in the regression analysis.*

Independent variables used in the regression analysis	
Domestic	Target is headquartered in Finland
Public	Target is a public company
Vertical	Target operates before or after acquirer in value chain
Conglomerate	Target opeates in unrelated industry
Stock	Payment type is stock
Mixed	Payment type is combination of cash and stock
Year 2007	Announcement occurs in 2007
Year 2008	Announcement occurs in 2008
Year 2009	Announcement occurs in 2009
Note: "Horizontal", "Cash" and "Year 2006" are excluded from the regression, and they serve as a reference category for transaction type, payment type and year	

Aim is to study whether hypothesis presented in the fifth chapter hold true. Transaction year is added to the regression to find out if there are any changes in returns relative to time, keeping in mind that financial crisis started during the sample period. Next table presents the results of the multivariate regression analysis.

Table 21. *Regression output. Statistically significant result is marked with *.*

R-squared	0.116
Observations	77

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.772	0.461	1.676	0.098
Domestic	0.098	0.379	0.258	0.797
Public	-0.218	0.420	-0.519	0.606
Vertical	-0.873	0.599	-1.457	0.150
Conglomerate	-0.161	0.494	-0.326	0.746
Stock	-1.287	0.565	-2.278	0.026*
Mixed	0.000	0.372	0.001	0.999
Year 2007	-0.419	0.451	-0.930	0.356
Year 2008	-0.164	0.512	-0.321	0.749
Year 2009	0.107	0.512	0.209	0.835

“Stock”-coefficient is negative. Thus, the regression analysis suggests that transactions that are announced to be paid by stock yield lower returns for acquirer’s shareholders compared to transactions paid by cash. P-value for “Stock” coefficient is 0.026, so the result is statistically significant. “Mixed”-coefficient is 0.000, suggesting that transactions paid by combination of stock and cash yield does not have any effect compared to transactions paid by cash. P-value for “Mixed”-coefficient is 0.999, resulting that the finding

to be statistically non-meaningful. Hypothesis 5 holds partly, cash as a payment type yields to higher returns compared to stock payments. However, there is no evidence to support any difference between returns when cash or combination of cash and stock are used as a payment method. Earlier studies provide similar findings, Martynova & Renneboog (2009) and Eckbo & Thorburn reported worst returns for transactions paid by cash. Furthermore, this finding supports the valuation-based theories (for example Steiner (1976) and Jensen (1984)), suggesting that overvalued companies tend to use stock as a mean of payment, and thus giving a negative signal to the markets.

"Vertical"-coefficient is negative, suggesting that vertical transactions yield lower returns compared to horizontal transactions. P-value of 0.15 does not fulfill the criteria for statistical significance, but it is relatively close to a threshold to be meaningful. "Conglomerate"-coefficient is also negative, but without statistical power. Therefore, Hypothesis 4 is rejected. Literature provided inconsistent evidence regarding vertical, horizontal and conglomerate, so rejection of Hypothesis 4 is in line with earlier studies. For example, Eckbo (1983) reported horizontal mergers to be the most profitable, but Wübben's (2007) study suggested conglomerate mergers to yield highest profits.

Domestic transactions are suggested to yield higher returns for acquirer stockholders, as Hypothesis 2 states. The result is not statistically significant, but the positive sign of the coefficient is in line with earlier studies, such as Martynova and Renneboog (2008b), keeping in mind that studies regarding domestic and cross-border transactions provide inconsistent results. "Public target" had also negative sign as predicted, but result is not statistically significant, and Hypothesis 3 is rejected. P-values for "Domestic", "Public", and year coefficients are so high, that no statistically significant conclusions can be drawn from this study.

Robustness check

3-day event window was applied in this study, and the decision to choose a certain length for event window is exposed to subjective choice, even though event window length was chosen based on earlier studies. Regression analysis was conducted for the end of event window SCARs (12 hours). To check the robustness of regression results, regression analysis was conducted also for SCARs at 8 hours, 4 hours, 2 hours, 1 hours, 35 minutes and 30 minutes after the announcement. 35 and 30 minutes were chosen, because peak of the return occurred 35 minutes after the announcement. The idea is to check signs of the coefficients and P-values with different specifications. Statistically significant results from the original regression model maintain same signs with different SCARs more likely, and coefficients with high P-value are more likely to change signs. Table 22 presents the signs of regression coefficients with different SCARs.

Table 22. *Regression coefficients signs with different SCARs. Statistically significant result is marked with *.*

Coefficient	12 hours[1)]	8 hours	4 hours	2 hours	1 hour	35 mins	30 mins
Domestic	+	+	-	-	-	-	-
Public	-	-	-	-	-	-	-
Vertical	-	-	-	-	-	-	-
Conglomerate	-	-	+	+	-	-	-
Stock	-*	-*	-*	-*	-*	-	-
Mixed	+	-	-	-	+	+	-

1) Note: 12 hours after the announcement equals to original 3-days SCAR

Table 22 shows that results are similar with 12 hours to 1-hour SCARs: the only statistically significant finding is that cash as a payment method yielded lower returns compared to transactions paid by stocks. "Stock"-coefficient maintained the minus sign with different model specifications. P-value for "Stock"-coefficient remained approximately at the same level with the original 12 hours SCAR model (P=0.026) from tests with 12 hours to 1-hour SCARs, and the results were not meaningful with 35 minutes and 30 minutes SCARs. "Vertical"-coefficient had the second lowest P-value (P=0.150), and signs of the coefficient remained consistent with different model specifications. Furthermore, "Public"-coefficient kept the negative sign in the robustness check, P-value in original model was 0.606. However, "Vertical" and "Public" did not reach statistical power with any of the model specifications.

"Domestic", Conglomerate" and "Mixed" had changing signs with different model specifications. These coefficients did not have statistical significance in the original regression (12 hours). In addition, robustness check revealed that signs of coefficients were subject to model specification, and no conclusions of the signs can be made. P-values for the coefficients were high: for "Domestic" P = 0.797, for "Conglomerate P=0.746, and for "Mixed" P = 0.999), which is in line with the finding that signs changed with different models.

6.3 Summary

This study had five hypothesis, and main hypothesis had several sub-questions regarding abnormal returns. Study method to analyze Hypothesis H_1 was to generate SCAR and J_2 plots based on the sample. Hypothesis H_2-H_5 were tested by conducting a multivariate regression to explain 3-day event window SCAR by deal-specific characteristics. Summary of results is presented in table 23.

Table 23. *Summary of results.*

Hypotesis	Description	Result
H_1	M&A announcements do not lead to abnormal returns for acquirer's shareholders on an aggregate level.	M&A announcements lead to 0.37% SCAR for acquirer's shareholders in 3-day event window. Result is statistically significant at 99% confidence level.
H_2	Domestic transactions yield to higher returns compared to cross-border transactions.	The study did not provide statistically meaningful results. Additionally, signs of the coefficients changed with different model specifications.
H_3	Public target company yields to lower returns compared to private targets.	The results imply that public targets yield to lower returns, but the result is not statictically significant.
H_4	Vertical and conglomerate deals yield to lower returns compared to horizontal transactions.	The study suggests that vertical transactions lead to lower retuns compared to horizontal transactions, result is close to being statitically meaningful. Statistically sound results regarding conglomerate transactions was not found, and signs of the coefficients changed with different model specifications.
H_5	Use of stocks or a combination of stocks and cash as a payment method yields to lower returns compared to use of cash as a payment method.	Use of stocks yields to lower returns, and the results is statistically significant at 95% confidence level. Statistically sound results regarding mixed payments was not found, and signs of the coefficients changed with different model specifications.

Hypothesis H_1 was rejected and part of H_5 was proven to hold with statistically significant empirical evidence. In original regression, coefficients had expected signs for each of the variables regarding the study hypothesis H_2-H_5, except in the case of mixed payments (combination of stocks and cash) coefficient had value of 0.000, instead of minus-sign, which was expected. In addition, robustness check showed that regression coefficients of stock payments, vertical transactions and public targets remained same-signed with different model specifications, whereas coefficients regarding domestic deals, conglomerate deals and mixed payments were inconsistent as they had different signs.

7. CONCLUSIONS

This study focused examining effects of M&A announcements for acquirer's shareholders. The data set included M&A announcements published as stock exchange releases with exact timestamps and stock price data with 5-minute time intervals from 2006 to 2009 from companies listed in Helsinki Stock Exchange. This thesis focused on short-term returns, and event study with 10-day estimation window and 3-day event window was conducted to observe intraday returns. Standardized cumulative abnormal returns (SCAR) was chosen as a metric for shareholder returns and statistical significance was examined by J_2 test statistics. Additionally, effects of transaction-specific attributes on returns was researched by conducting a multivariate regression on 3-day SCAR.

Effects of M&A announcements has been widely researched field in the past and great proportion of earlier studies has been also event studies. Earlier studies include topics such as return of acquirer's shareholders in general, comparison of different markets, cross-border transactions, merger waves, comparison on effects of private and public targets, positioning of target in value chain relative to acquirer, and effects of payment methods. In addition to empirical studies are there several theoretical frameworks, such as agency theories and signaling effect. This thesis focuses on companies listed in Helsinki Stock Exchange. Majority of M&A studies are conducted in the US, and samples in European studies include usually transactions from larger markets, such as Germany. Therefore, this thesis contributes in relation to earlier research by focusing on a market that is not widely researched.

Short term returns are searched in earlier studies, but most common approach is to use daily returns. Use of daily returns lack the opportunity to investigate intra-day returns, keeping in mind that stock markets react to new information in a matter of minutes or hours, and there might be some intra-day patterns. This study used 5-minute timesteps and thus shed light to intra-day returns, which has been rarely studied phenomena in M&A event study context.

Most of the earlier studies use longer sample periods, such as 10 or 20 years. The sample used in this thesis was from beginning of 2006 to end of 2009 includes financial crisis that started in 2007. This opened an opportunity to investigate effects of financial crisis on the returns, which is rarely investigated angle in earlier studies.

Main objective of the thesis was to study short term returns of M&A announcement for acquirer's shareholders. Acquirer's shareholder received positive SCAR of 0.37% in 3-day event window, and the results was significant at 99% confidence level. This result is in line with earlier studies, however, negative SCARs have also been reported in previous literature. The market reaction after an announcement is immediate, and SCAR reaches

the maximum in 35 minutes after an announcement and after the maximum point there is a slight negative drift. This result could imply that first effect to the announcement is overreaction, and markets need time to analyze the information further. Effect of financial crisis on returns was also studied. Pre-crisis and post-crisis returns was shown to be similar, however, without statistical significance. Even though financial crisis effected M&A activity and shock in stock markets decreased valuation levels, the effects of announcements remained the same.

A multivariate regression on SCAR revealed that use of stocks as a payment method compared to cash yielded to lower returns. This result was statistically significant at 95% confidence level. Domestic transactions yielded higher returns compared to cross-border deals, target being a public company was a negative factor, vertical and conglomerate deals yielded to negative returns compared to horizontal transactions, and there was no difference between use of cash or a combination of stocks and cash as a payment method. These results were mainly expected based on earlier studies, but only the finding of cash versus stock payments was statistically meaningful. The outcome is typical for M&A event studies: there are inconsistent results about the returns itself and also about the deal-specific explanatory factors on the returns. This leads often to situations were impacts of explanatory factors are not statistically significant.

There are several limitations in this study. Firstly, the sample size is relatively low, and there may be inaccuracies in the original data. Secondly, there may be errors in processing the original data to purposes of this study. Thirdly, selection of study hypothesis was exposed to subjective choices. Fourthly, there may be some market-specific reasons effecting the findings in this study, i.e. results from Finnish market cannot be generalized to other markets. For example, ratio of median acquirer size to target size is 220 in Finland and two in Japan (Bris & Cabolis, 2004), which illustrates that there may be some market-specific factors. However, the results seemed to resemble findings from studies conducted in other markets. And finally, there may be some time period -specific factors effecting the results, i.e. findings for time period from 2006 to 2009 cannot be generalized to other time periods.

For future research, this study could be expanded to other markets and time periods to tackle the limitations regarding markets and time period. Different markets could be compared in relative to returns and other factors, or different merger waves could be examined. On contrary, other event studies could be replicated with intra-day stock price sample to capture intra-day returns. Some of transaction-specific factors could be examined together, e.g. using cash as a payment method when acquiring a private target or using stocks as a payment method when acquiring public target.

This thesis examined short term returns, so future studies could examine returns in longer term, e.g. one year or five years. One approach is to examine strategic rationales behind transactions and their effects on returns. Effects of financial performance of acquirer and

target can be studied, e.g. revenue or EBIT and their relations. Finally, effects of M&A activity on development of financial performance and implications on return could be studied.

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