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Toeholds in Mergers and Acquisitions

Do bidders learn to acquire toeholds more efficiently over time?

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PREFACE AND ACKNOWLEDGEMENTS

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ABSTRACT

This thesis empirically investigates the profitability of Mergers & Acquisitions (M&A) in North America under the presence of a toehold. M&A deals of listed acquirers during the periods of 1981-1988 and 2001-2006 were analysed with an event study approach for the long and short-term and a regression analysis on accounting data to evaluate the operating performance. The short-term event study and the regression analysis on accounting data showed no proof for an increase in toehold efficiency over time within M&A transactions. For the long-term event study the results indicate that acquisitions with toeholds in the later period perform on average better than in earlier periods. The results of this study are heavily influenced by the sample selection and adjustments on M&A deal characteristics.

Keywords:
Toeholds; mergers & acquisitions; post-merger performance; event study; accounting ratios

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CHAPTER 1 Introduction

Mergers and Acquisitions (M&A) go back to the start of the 20th century and can be seen as a general investment opportunity. Typically M&A occur in waves over different time periods. So far there have been six waves, which can be clearly identified since the end of the 19th century. Every wave was caused by different events and has its own characteristics. The first wave occurred in the US between 1895 and 1905 and was driven by the transcontinental railway line, hence the name railroad wave. The second wave was the automobile wave, which happened between 1918 and 1930. The main driver of this wave was the widespread availability and use of automobiles. The third wave is known as the conglomeration wave and took place between 1965 and 1969. This wave was mainly driven by legislation and the strong dynamic of the US economy. After the conglomeration wave the mega-merger wave occurred during 1981 – 1989. One of the main drivers for this wave was the maturity of some major industries combined with over-capacity and the need to reduce costs. Soon after the fifth wave, the globalization wave or cross-border wave, took place between 1992 and 2000, which was largely driven by the IT industry. The most recent wave occurred between 2003 and 2008 and was driven by shareholder activism, private equity and leverage buyouts (Martynova & Renneboog, 2005).

There are various reasons for companies to acquire another company, ranging from operating synergies such as market share and cost reduction to financial synergies like economy of scale and debt-to-equity ratio (Mukherjee, Kiymaz & Kent, 2004). Hence a lot of research was devoted to takeovers and their profitability for acquirers and targets. Due to the fact that M&A can be seen as investment opportunities researchers are interested in profitability and how it is influenced. On account of this a minor part of research focused on bidder's pre-announcement ownership of target shares, also know as "toehold", within acquisitions (Strickland et al., 2010). The majority of research on toeholds has its focus on strategic and behavioural aspects concerning the bidding process. Researchers reported a heavy decline in the application of toeholds in M&A over the last decades (Betton & Eckbo, 2009). Therefore one could reason that toeholds nowadays are more efficient than in earlier periods, as toeholds today are rare in practice and hence are only used by experienced bidders. The goal of this thesis is to determine if there is an increase in the efficiency speaking a higher post-merger profitability of acquisitions with toeholds over time. On these grounds the following hypotheses is tested with different empirical methods:

H$_0$: Toeholds within an acquisition do not have a positive effect on the post-merger profitability of acquirers.

In order to test the hypotheses two periods were chosen, one from 1981-1989 and one from 2001-2006, over which stock and accounting data was collected. The first period is the fourth merger wave and stands for the peak of toehold acquisitions. The later period is the latest merger wave excluding years, which were influence by the housing crisis. An event study approach and operating performance comparison

with accounting data is used to test if there is an efficiency increase in acquisitions with toeholds over time. The sample selection is crucial for analysing the effect of toeholds on the profitability of takeovers and hence different samples can lead to different empirical findings. Next to this it is important to define whether the effect of toeholds is analysed over a short-term or long-term horizon. Both the sample selection and the horizon play an important role within the empirical research and have a major influence on the results. Until now almost no research was devoted to the post-merger performance of M&A involving toeholds as a takeover strategy. Therefore this thesis can be seen as guidance for further research in this area.

This thesis is organized as follows: Chapter 2 gives an overview of related research results of post-merger performance with regard to the presence of toeholds; Chapter 3 describes the data sample and the methodologies of the empirical tests used; Chapter 4 presents the results of the different tests applied within this thesis; Chapter 5 sets the results into context with existing literature and refers to the limitations associated with the applied tests; Chapter 6 concludes this thesis and gives implications for further research.

CHAPTER 2 Literature Review

Mergers and Acquisitions have been of substantial interest over the past 35 years and have attracted streams of enquiries in behavioural and strategic literature focusing on strategic and organizational fit and the acquisition process itself. The popularity of Merges and Acquisitions can be seen by the fact that in 2004, 30,000 acquisitions were completed. This is equivalent to one transaction every 18 minutes (Cartwirght & Schoenberg, 2006). By 2007, 35,982 deals were announced worldwide and accounted for an aggregated deal value of USD 1,345 billion in the US and USD 3,053 billion in Europe (Huyghebaert & Luypaert, 2009). Nevertheless to their popularity one of the most interesting findings in M&A research are the post-merger performances of acquiring firms, which are in most cases negative and significant (Agrawal et al. 1992). The success of a takeover can be determined from different perspectives, such as from the target or bidder shareholders and one can also calculate the combined shareholder wealth. But in financial theory shareholder wealth is mostly considered due to the fact that the shareholder represents the residual owner of the company (Martynova & Renneboog, 2005). Therefore the focus on shareholder value creation gives an efficient evaluation criterion. The profitability of mergers can be measured over a short-term or long-term horizon. The majorities of studies have its focus on the effect of the publicly made offer right prior to the announcement and right after (Tuch & O'Sullivan, 2007). Nevertheless there are also a number of studies applying a long-term horizon to determine the profitability of M&A activities. Event studies and accounting measures are the most commonly used tools to evaluate the

performance of a takeover. The event study approach determines whether shareholders earned an abnormal return. An abnormal return equals the difference between a realized return and an expected return, in case the offer did not occur (MacKinlay, 1997). The operating performance of merging firms is measured by a comparison of accounting measures prior to the takeover and after. Common accounting measures applied in M&A research are: Return on Assets, Net Income, Sales, Earnings per Share and profit margins (Martynova & Renneboog, 2008).

This thesis focuses its attention on empirical findings from North America for the periods between 1981 – 1989 and 2001 – 2006 for the literature review. The intention behind this approach is to provide a better comparison between the empirical results from existing literature and the results of this thesis for the reader. The purpose of this thesis is to provide an evaluation of the short and long-term performance of takeovers by North American companies involving a toehold.

2.1 Post-merger analysis short-term horizon

Event study approach

Since the 1970s event studies analysing short–term profitability of takeovers are the dominant approach. An important assumption for this approach is that a takeover announcement releases new information to the market that will influence investors' expectations about the firm's prospects and hence the share price.

On average bidder shareholders realize abnormal returns, which are negative or statistically indistinguishable from zero. Morck et al. (1988) reported for 57 takeovers during 1980 – 1987 a cumulative average abnormal return (CAAR) of 2.88%, but with the same time window of two days prior and one day after the announcement he found a negative CAAR of -4.09% for bidder shareholders when increasing the sample from 57 to 115 transactions. The negative CAAR reported by Morck is confirmed by Franks et al. (1991), who analysed 399 takeovers between 1975 and 1984 with a time window of 5 days prior and after the announcement. They discovered for the whole sample a negative CAAR of -0.7%, when accounting for different methods of payments only the all cash payment method gives a slightly positive CAAR of 0.83% for 156 takeovers. To a similar result come Mitchell and Lehn (1990) who analysed 228 hostile targets, 240 friendly targets and 230 bidders for an event window of -1/+1 days during 1980 – 1988 reporting a CAAR of -1.66% for acquirers. Servaes (1991) stated in his analysis of 307 friendly and 77 hostile takeovers for both a negative CAAR of -0.16% (friendly) and -4.71% (hostile) for the sample period from 1972 – 1987 with an event window of announcement day until closing time the same day. Byrd & Hickman (1992) arrived at similar results for 128 takeovers during 1980 - 1987 giving a CAAR of -1.23%. Smith & Kim (1994) found positive CAARs for three different event windows for the period between 1980 and 1986. With an event window of five days prior and five days after the announcement bidder shareholders made a CAAR of 0.5%, for an event window of 60 days to 6 days

prior the announcement a CAAR of 0.67% was reported. The highest CAAR was determined for the event window of 6 days to 60 days after the announcement date of 2.76%. Schwert (1996) and Maquiera et al. (1998) both analysed longer periods from 1975 – 1991 and 1977 – 1996. Both studies report positive CAARs for bidder shareholders of 1.4% up to 6.14%. Chang (1998) used an event window of one day prior to the announcement day and end of the announcement day. Bidder shareholders made in both cases a negative CAAR when acquiring a public company with cash and stocks as a payment method. Walker (2000) and Graham et al. (2002) both studied takeovers for periods from 1980 – 1996 and 1980 – 1995. Walker applied an event window two days prior and after the announcement and Graham one day prior and after the announcement finding both slightly negative CAARs. Only Walker reported for 48 tender offers a positive CAAR of 0.51% for bidder shareholders.

The conclusion, which can be drawn from the literature review on short-term return analyses for the event study approach is that most of the empirical findings reveal negative cumulative average abnormal returns. Only in a few cases a positive CAAR was found but the general picture contradicts the financial theory that concludes that takeovers create value for both bidder and target shareholders. Whereas empirical findings show that the returns for bidder shareholders are almost always negative or close to zero.

2.2 Post-merger analysis long-term horizon

Event study approach

A long-term horizon refers to the event window applied for an event study, which can be over several years after the announcement of an acquisition. With an extended event window the importance of the estimation method, which is used to predict the benchmark return, increases. There are different estimation methods, which can be employed such as the market model (MM), capital asset pricing model (CAPM) and the market-adjusted model (MAM). Studies applying the Market Model tend to revel significantly negative cumulative average abnormal returns (CAAR) over three years following the acquisition announcement. However when the CAPM or the MAM are used to predict the benchmark returns, results about the post-merger CAARs following the M&A announcement are inconsistent (Tuch & O'Sullivan, 2007).

Franks et al. (1991) analysed for a sample of 388 takeovers during 1975 - 1985 the abnormal returns for an event window from the announcement date to three years after. For the overall sample an abnormal return of 0.05% was generated, for 156 acquisitions with an all cash payment method an abnormal return of 0.26% was reported. Hostile takeovers resulted in a higher abnormal return of 1.24% than friendly takeovers 0.78%. Argawal et al. (1992) reported in his study from 1955 – 1987 of 937 mergers and 227 tender offers for an event window of five years following the announcement date abnormal returns of -10.26% for acquirers. Mergers exhibit significant negative abnormal returns of -10%, whereas for tender

offers the abnormal returns are insignificant. Loderer & Martin (1992) adjusted the benchmark for size and beta in their research on 155 tender offers and 304 mergers between 1965 and 1986. The results they reported were both insignificant for tender offers 1.0% CAAR and mergers -0.75% CAAR for an event window of one month to 60 months after the acquisition announcement. In a study of Anderson & Mandelker (1993) the benchmark was adjusted for size and book-to-market value for 670 mergers between 1966 and 1987. With the same event window as in the study by Loderer & Martin, Anderson & Mandelker reported significantly negative CAARs of -9.31% (size and benchmark adjusted) and -9.56% (size adjusted). Both results are significant at the 1% significance level. Loughran & Vijh (1997) analysed 100 tender offers and 434 mergers between 1970 and 1989. The benchmark was adjusted for size and book-to-market value and the buy and hold abnormal return (BHAR) were estimated for an event window from the announcement date to 60 months after. The BHAR for all mergers was insignificant 7.1 %, on the other hand the BHAR for all tender offers was significant at the 5% significance level and remarkably high 56.2%. Rau & Vermaelen (1998) computed CAARs for a sample of 2823 mergers and 316 tender offers from 1980 – 1991. In their study they reported a negative significant CAAR for the all mergers of – 4.04% and a not significant CAAR of 8.85% for all tender offers. The event window used for this study was from announcement until 36 months after the announcement date and the benchmark was adjusted for size and book-to-market value. One of the later studies is by Bouwman et al. (2003) who measured the buy-and-hold abnormal returns (BHAR) of 510 mergers paid in stocks over 1978-1998. They reported a BHAR of -7.03% for acquirers over the following two years after the merger. In conclusion, the results of most long-term event studies reveal negative abnormal returns after the acquisition, which illustrates the difference between financial theory and empirical results.

Operating performance

Most of the existing research on takeover profitability is based on share price data. A reason for this is that accounting information may be biased through management manipulation or new accounting rules (Stanton 1987). Nevertheless there are a number of studies using accounting information to measure the effect of takeovers on the operating performance. The reasoning behind this approach is that any benefit from takeovers will eventually show in the firm's accounting records.

Mueller (1980) was one of the pioneers performing a post bid accounting analysis on takeovers. In his study he analysed 247 mergers during 1962 – 1972 for following three years after the merger. Mueller reported a decline in return on assets (ROA), return on equity (ROE) and return on sales (ROS) for the post-merger period. A later study by Mueller (1985) for the period of 1950 – 1972 analysed a total of 123 horizontal mergers and the development of the firm's market share after the merger. As in his earlier study Mueller reported a decline in the market share of the acquiring company after the merger. Ravenscraft & Scherer (1987) reported for 62 tender offers a decline in the operating income for the three years following the merger during 1975 – 1977. Hermann & Lowenstein (1988) analysed the ROE for 53

hostile tender offers during 1975 – 1983. The ROEs for bids made between 1975 and 1978 computed over an event window of three years prior and three years after the merger are between 11.4% and 16.9%. For the years between 1981 and 1983 the ROE is between 4.3% and 15.6%. Seth (1990) found an increase in expected cash flow for 102 tender offers between 1962 and 1979 for the 100 days following the merger. Healy et al. (1992) finds in his study of the largest 50 mergers between US public industrial firms completed in the period 1979 to 1983 an increase in asset productivity, operating cash flow returns and asset turnover in the five years following the merger. One of the most extensive studies is by Dickerson et al. (1997) of 2914 mergers between 1948 and 1977. In the five years after the mergers a decline in the rate of return on assets is reported. Ghosh (2001) examined the profitability of 315 tender offers and mergers during 1981 – 1995. The cash flow returns in the three years following the merger increased, whereas the sales growth and the cash flow margin did not experience any change.

2.3 Toeholds in Mergers & Acquisitions

In the process of acquiring a target company, a toehold can present a strategic opportunity to buy a limited number of shares in the company and carry out a takeover in a later stage. A toehold is an ownership interest in a target firm, which is purchased by a potential acquirer before any merger or acquisition discussions, is initiated (Strickland et al., 2010). Toeholds therefore can be an important part of a successful bidding strategy due to the fact that they can lower the risk and costs involved in a takeover. Nevertheless, they are not without risks and can lead to unpleasant outcomes under certain circumstances.

Strategic rational of toeholds

At the beginning of each acquisition process and before any bids are made a target company has to be identified. There are several reasons that can make a company a target for a takeover, such as market share, costs reductions, low debt-to-equity ratio, mismanagement and other synergy effects. In case of Disney acquiring Marvel, Disney saw the combined assets of both firms to be more successful than as single entities. Marvel should benefit from Disney's high marketing and distribution power (Strickland et al., 2010). Once the target has been identified the acquirer has to estimate the willingness of the target shareholders to tender their shares and at what price. The optimal bid price is crucial for the target management to accept the offer and to prevent rival bids. Therefore a large toehold could allow the acquirer to pay a higher premium, due to the fact that the own purchased shares would increase in value as well. The downside of a large toehold is that the target management could turn hostile and fight the takeover attempt. Should the takeover attempt fail the toehold will suffer a significant loss in value. Hence a good understanding of the toehold strategy is crucial to identify when it is appropriate and when another strategy might be more applicable.

Advantages from applying a toehold strategy

There are four main advantages, which can be identified when applying a toehold strategy:

1. Diminishes the free-rider problem
2. Bidder can afford to pay a higher premium
3. Reduces the risk of rival bids
4. Reduces the probability of suffering a "Winner's curse"

Management is usually put in place to increase the shareholder wealth. But under certain circumstances managers' actions can decrease the shareholder wealth instead of increasing it. For instance empire building does not increase shareholder wealth but rather enriches the management. If the management is not acting in the interests of shareholders, shareholders should try to replace the management. Nevertheless replacing the management can be associated with costs such as under a proxy contest. Therefore it could be that none of shareholders is willing to spend these resources. This makes the poor managed company a target for a takeover by an acquirer with a good management team. The acquirer now faces the problem that small shareholders may believe that their decision to tender their shares has no effect on the success of the takeover and will wait for a higher premium. In case that a large part of shareholders (>50%) acts in this manner the takeover is likely to fail, since the higher premium would wipe out most of the takeover profits. This issue is called the free-rider problem and can be diminished with the purchase of a toehold. If the profit from the toehold exceeds the additional costs from offering a higher premium to shareholders the free-rider problem is solved (Shleifer & Vishny, 1986).

Next to this toeholds also enhance the aggressiveness of bidders since the premium paid is also shared with the bidder and not solely with target shareholders. Additionally a toehold reduces the risk of rival bidders and hence bidding wars. A new bidder entering the bidding contest must purchase 50% plus one share to gain control, which is more difficult under the presence of a first bidder toehold of a rival (Betton & Eckbo, 2000).

The winner's curse is usually associated with the winning bidder, who overpaid for the target company. The probability to suffer from the winner's curse is reduced with the purchase of a toehold. A toehold is no guarantee against overpayment but it offers a partial insurance against overpayment. Especially when a target company is difficult to value a large toehold can mitigate the winner's curse.

The toehold strategy has also some limitations, such as the 13-D filling and target firms defence mechanisms. The 13-D form has to be filed within 10 days when the toehold purchased exceeds 5%. This makes the toehold purchase and hence the interest in the target firm public, but the toehold can be increased within the 10 days time frame before the form has to be handed in. The second limitation is that some firms have a takeover defence, which is activated when a certain stake is acquired.

Disadvantages from applying a toehold strategy

There are three main disadvantages, which can be identified when applying a toehold strategy:

1. Failed takeover attempt leads to decline in value of the toehold shares
2. Target management may turn hostile
3. Chance of receiving a termination fee might be reduced by toehold

In the case that the takeover attempt fails the bidder is still in possession of the toehold shares purchased before. This becomes only a problem if the value of the target firm declines below the pre-bid level, which can happen if the takeover fails even with the presence of a substantial toehold and the market judges the target as not viable target candidate. Hence the bidder has to take both the benefits and the risks of the toehold into account when selecting its size (Goldman & Qian, 2005).

Bidders normally approach targets to negotiate a friendly merger only if the target management rejects the friendly offer a hostile tender offer is initiated. If the bidder approaches the target firm with a toehold the target firm might infer that the bidder is not negotiating in good faith. This could induce the target management to turn hostile and reject the friendly merger negotiations (Betton, Eckbo & Thorburn, 2009).

A termination fee can be seen as a compensation for the bidder in case a rival bidder acquires the target. This fee is paid by the target and amounts to 3-4% of the deal value nowadays. Since a toehold increases the probability of the target management to turn hostile, a termination fee is unlikely to be granted (Officer, M., 2003).

Today the toehold strategy provides an opportunity to purchase toeholds at a reduced price, as the equity values of many firms are at a low due to the credit crisis. One can exercise the acquisition as soon as the economy is on a rise again and the credit availability increases.

Empirical Findings on Toeholds

Almost no attention has been focused on post-merger performance involving toeholds. In the following the empirical results are some of the major findings in the research about toeholds, which are mainly about the strategic rational of toeholds within the bidding process.

The term toehold is here used as an ownership fraction (stake) below 50% in the target company prior any takeover announcements are made. According to finance theory bidders should acquire a toehold prior announcing the takeover, due to the fact that toeholds are beneficial for the bidder (Georganas & Nagel 2011). The acquisition of a toehold leads to a better understanding of the target and thus too more efficient takeover decisions (Betton & Veeren, 2011). In reality only a small percentage of takeovers have been performed with a pre-bid ownership. The lack between theory and empirical research was the inducement for further research. Concerning the field of toeholds and their efficiency most research so far is based on strategic components and the correlation between run-ups, mark-ups and toeholds. Some of

the major researchers within this area are Sandra Betton and B. Espen Eckbo, who both contributed a detailed research about the strategic components of toeholds within bidding wars. Betton & Eckbo (1999) state in their paper the significance of the toehold on the bidding strategy. The possession of a toehold, especially if it is significantly large, signals the valuation of the target company by the bidder. Although this reveals valuable information to potential rival bidders Betton, Eckbo & Thornburn (2009) find that a toehold of significant size reduces the likelihood of potential rival bidders and increases the probability of a single-bid success. Furthermore toeholds reduce the amount of shares that have to be acquired with a premium and can in the case of a loss of the bidding contest be beneficial, in the way that a rival bidder acquires the toehold with a premium on top (Betton & Eckbo 1999). Choi (1995) finds that the possession of a stake of at least 5% allows the bidder to influence the target management; hence these stakes are related to management turnover and replacement decisions of the board of directors. Ravid & Spiegel (1999) find that if no competing bidders are expected toeholds should not be purchased for the reason that the valuation of the target is revealed what leads to a stock price increase. Moreover they find that toeholds are mainly purchased with the intention to win the contest rather than to resell the stake to a rival bidder. Jennings & Mazzeo (1993) conclude that acquiring a toehold can reduce the resistance of the target management. According to Betton & Eckbo (2009) the optimal toehold should leave the market in the dark whether a takeover bid is going to occur or not. An additional feature of toeholds is that they can help to overcome the free-rider problem. Larger toeholds seem to be more efficient than smaller ones for the reason that they have only a minor effect on the bidding strategy, which actually contradicts existing theory (Georganas & Nagel 2011).

Various studies about the post-merger performance of acquirers exist. The existing literature is divided into short-term and long-term analysis using an event study approach to measure the effect of a merger announcement on the acquirers' stock price and an operating performance comparison of accounting data before and after the announcement. Bris (2002) and Betton & Eckbo (1999) report that offer premiums and toeholds are negatively correlated. Toehold acquisitions do not release any new information to the market hence the bid price and the toehold size are no correlated the toehold only reduces the bid price (Bris, 2002). This is due to the fact that the bid price is set fixed before the takeover announcement. Eckbo (2009) finds that the abnormal stock returns of bidders are usually very small or even negative around the takeover announcement. Empirical findings from Betton, Eckbo & Thornburn (2009) and Betton & Eckbo (2009) have shown that there exists a threshold for toeholds. Betton & Eckbo find that this threshold is around 9% of the total shares outstanding. Furthermore they find that in almost 50% of all hostile takeovers toeholds are involved, which can be explained by the fact that it is beneficial to have a toehold when target management resistance is expected. The introduction of the Williams Act and the Hart-Scott-Radino Act had no influence on appearance of toeholds. Nevertheless a steady and steep decline in the presence of toeholds by almost around 13% during 1973 – 2002 can be observed (Betton & Eckbo 2009).

Given this evidence this thesis is designed to test if toehold acquisitions nowadays are more efficient than in earlier periods when they were more common. Does the post-merger performance of acquirers with and without toeholds differ? Therefore different methods are used to test the post-merger performance of takeovers with pre-bid ownerships. In the following chapter the structure of the applied models is explained in detail.

CHAPTER 3 Data and Methodology

This chapter contains the data description, the sample selection and filtering process. Furthermore, the empirical methodology employed to test toeholds effectiveness and significance in mergers and acquisitions is described. As mentioned already in the literature review there are two common methods to test the post-merger performance of M&A transaction, which are the event study approach and the operating performance measurement. Both methods will be explained in detail in this chapter.

3.1   Data sources

Within this thesis different financial databases were used to extract the relevant data for the empirical research done here. The SDC Platinum database provides extensive worldwide information on new issues, mergers & acquisitions, syndicated loans, private equity, project finance and more for the global financial market place. This thesis used the SDC Platinum M&A database to obtain information on takeovers. The following databases are accessible through the Wharton Data Research Service, which is one of the leading internet-based data research services. The Center for Research in Security Prices (CRSP) offers the most comprehensive collection of security price, return and volume data for NYSE, AMEX and NASDAQ stock markets. The data obtained from CRSP was used for the long and short-term horizon event studies (Loughran & Vijh, 1997). The Compustat North America is a database of U.S. and Canadian fundamental and market information, which contains 300 annual and 100 quarterly Balance Sheet, Income Statement, Statement of Cash Flows, and supplemental data items. For analysing the operating performance of the acquirer Compustat provided the crucial accounting information.

3.2   Data samples and Time Periods

The initial data sample is obtained from the SDC Platinum M&A database for the periods from 1981-1988 and 2001-2006. The first period is the forth merger wave, which includes the peak of the toehold usage within takeovers. The later period is the sixth merger wave excluding the years, which are influenced by the housing crisis. In order to provide a comparison between the toehold presence and the efficiency differences these two periods were chosen. For each period information on M&A transactions

was collected and filtered on certain criteria[1]. During the period between 1981 and 1988 in total 543,037 M&A transactions took place of which 805 met the required criteria. Within this period all M&A transactions were filtered from companies of financial and related industries, acquirers outside North America, non public companies, takeover dates outside the sample period and uncompleted deal status. The 805 M&A transactions were divided into two data sets, one with acquisitions involving a toehold and one with acquisitions without toeholds. Afterwards both data sets were cleaned from companies involved in follow-up acquisition two years prior and three years following the takeover announcement to prevent from potential biases in accounting or stock data.

The same has been done for the period between 2001 and 2006 where a total of 543,041 takeover transactions occurred. After the filtering process 1098 M&A deals remained, which were divided into two data sets as it has been done for the first period. Again serial acquisitions were excluded from the two data sets for the two years prior and three years following the takeover announcement.

A threshold for the deal size was not used due to the large amount of small deal size acquisitions, which would decrease the number of total M&A deals within the samples. In figure 1 & 2 it can be seen that a deal size threshold of $500 mln, which is a common deal size threshold, would decrease the number of M&A deals considerably (Betton, Eckbo & Thorburn, 2008).
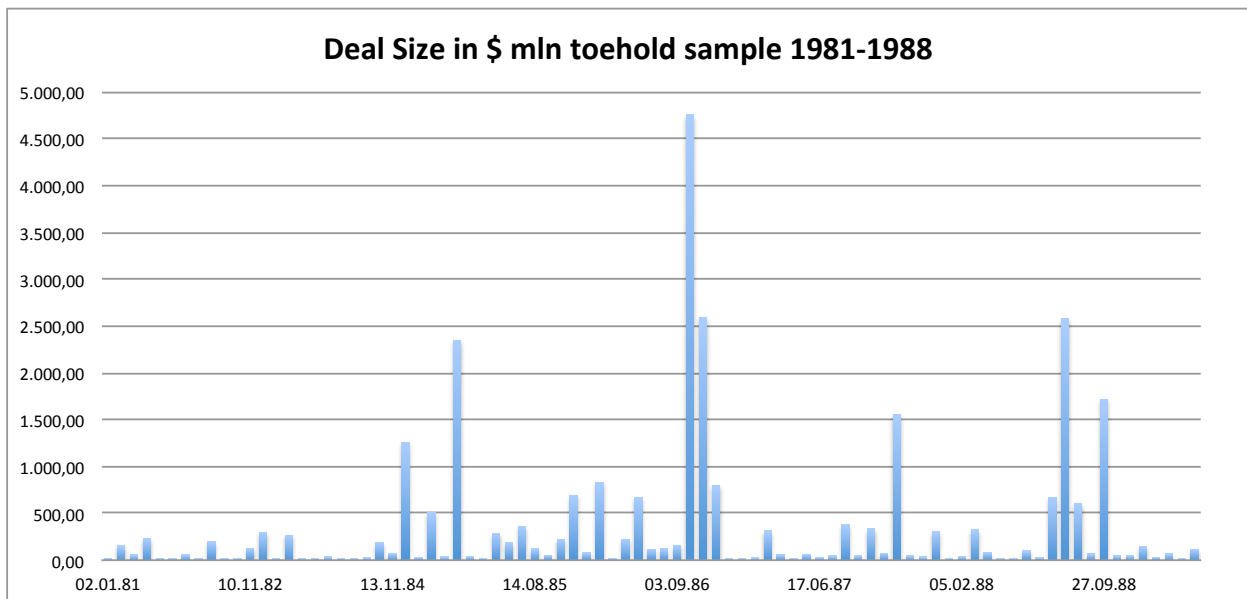
Figure 1: based on own calculations for toehold sample 1981-1988.

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[1] The chosen criteria are in line with major studies on the post-merger performance on takeovers in earlier periods.
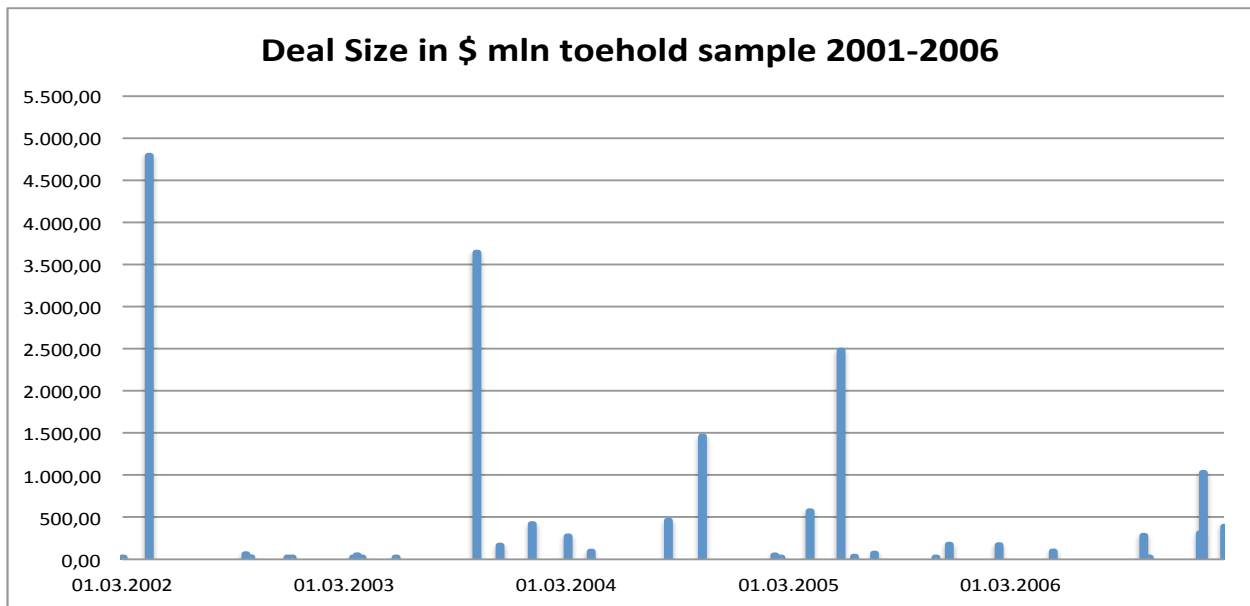
Figure 2: based on own calculations for toehold sample 2001-2006.

In order to identify an M&A deal which used a toehold during the acquisition process the following criteria for a toehold was applied: % of shares acquired during the takeover have to be less than 100% and more or equal to 50%. This results in toeholds of the size between 1% and 50% of total shares outstanding. Minor pre-bid ownerships are not taken into account due to their insignificant influence on the acquisition process. After identifying the toehold acquisitions two data samples exist for each period, one consisting solely of toehold acquisitions and one of acquisitions without a toehold during the specific period. For the period of 1981-88 information on 85 takeovers with toeholds and 409 takeovers without a toehold were collected. In the later period from 2001-2006 information on 32 takeovers with toeholds and 526 takeovers without a toehold were collected. The obvious decrease in the occurrence of toeholds within the two periods has been documented by various studies on toeholds. Due to this fact the research of this thesis on toehold efficiency was initiated.

Once the four data sets computed from the SDC Platinum M&A database with the deal specific information are set up, we used the CUSIP codes (identifier for North American securities) to obtain stock information from CRSP. The CUSIP codes from the SDC data sets have only 6 digits whereas the CRSP database needs CUSIP codes of 9 digits to identify the company. On WRDS one can use the CUSIP issuer to transform the 6 digits code into CRSP accepted 9 digits code. One of the filtering criteria is that the acquirer has to be a North American listed company and therefore CRSP could be used, which provides sufficient stock information for both periods. With the 9 digits CUSIP and the announcement dates of the takeover the event study can be performed with Eventus.

The accounting data, which is needed for the operating performance measure is obtained from Compustat for both periods. To download the needed data one has to choose the Compustat database for North

America and specify which data frequency should be chosen annually or quarterly. The regression analysis performed here in this thesis uses annually fundamentals (Ramaswamy and Waegelein, 2003). By uploading the company identifiers (acquirers) CUSIP codes various accounting information can be obtained[2] for the selected firms. Financial ratios[3] were computed by the use of specific accounting information such as:

- ➤ Return on equity = Net income / (stock price end of fiscal year * common shares outstanding)
- ➤ Return on assets = Net income / total assets
- ➤ Return on sale = Net income / net sales
- ➤ Sales growth = (Sale (t=1) – sale (t=0)) / sale (t=0)
- ➤ Market value = (Stock price end of fiscal year * common shares outstanding)[4]
- ➤ Leverage = (Long-term debt + debt in current liabilities) / total assets
- ➤ Operating cash flow[5]
- ➤ CAPEX (capital expenditures)

3.3 Methodology

The following section gives a detailed explanation of the statistical methods and techniques applied in this thesis. The empirical work can be structured in two parts the event study analysis and operating performance measurement. In the following both methods will be explained in detail and with regard to the applied data samples.

3.3.1 Event study approach

A major part of research on acquisitions performance applies to stock price changes to measure the effect of a takeover. The intuition behind this approach is that stock price changes after the takeover are related to predicted synergy effects resulting from the acquisition. In order to measure the stock price changes in relation to the takeover an event study approach is commonly used as it can be seen in the literature review. One of the advantages of an event study is that the input data (stock data) is publicly available, which makes it possible to analyse large data samples. The event study approach is based on the efficiency market hypothesis, which assumes that share prices react to new information contemporary (Cable & Holland, 1996). Therefore the resulting benefits in the stock price from a takeover announcement can be interpreted as the future value of the combined firm. Another attractive feature of

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[2] Balance sheet, income statements, cash flow statement etc.

[3] http://finabase.blogspot.nl/2011/03/ratios-values-and-other-instruments.html

[4] Market value was scaled down by $10e^{10}$ to account for the difference between absolute numbers and ratios

[5] Operating cash flow and CAPEX were scaled down by 1/10000 to account for the difference between absolute numbers and ratios

the event study approach is that abnormal returns are not sensitive to industries and hence a broad cross-section of firms can be examined (Brealy & Myers, 2003).

The event study performed in this thesis is based on the paper of MacKinlay (1997). Next to the paper of MacKinlay the Eventus tool for the Wharton Data Research Service (WRDS) was of great help to compute the abnormal returns (AR) for post-merger periods. The Eventus tool on WRDS requested certain input variables such as announcement dates and CUSIP codes of the acquirer. The CUSIP codes identify any North American security for the purposes of facilitating clearing and settlement of trades.

Event of interest definition

The initial task of performing an event study is to determine the event of interest. For this event study we defined the event of interest as the announcement date of the takeover. We want the test the implications of the announcement of the merger on the acquirer's stock price. In order to do this one has to define the event window and estimation period, which will be apply in the event study (MacKinlay, 1997).

Event window and estimation period

In order to measure abnormal returns one has to estimate normal returns, which are computed by choosing a benchmark. The normal returns drawn from the chosen benchmark are seen as the returns that would have occurred without the event of interest taking place. In this case what would have been the stock returns in case of no takeover announcement. The difference between the actual stock price over the event window and the normal returns are the abnormal returns due to the occurrence of the takeover announcement (Duso, Gugler & Yurtoglu, 2006). In addition to the benchmark choice one has to define the estimation period over which returns are used in order to estimate the benchmark's parameters such as alpha and beta. The event window is the period over which the security prices of the acquiring firm are examined. It is common to set the event window larger than the period of interest in order to cover the entire effect of the event; thereby one can examine periods surrounding the event. Additionally one should mind that the estimation window and event window do not overlap. This design makes sure that the normal returns are not being influenced by the event. If one does not account for this both abnormal and normal returns would be influenced by the event and the event impact is not solely captured by the abnormal returns as the methodology states. By taking care of this the robustness of the normal market return measure increases (MacKinlay, 1997).

Announcement date (t = 0)
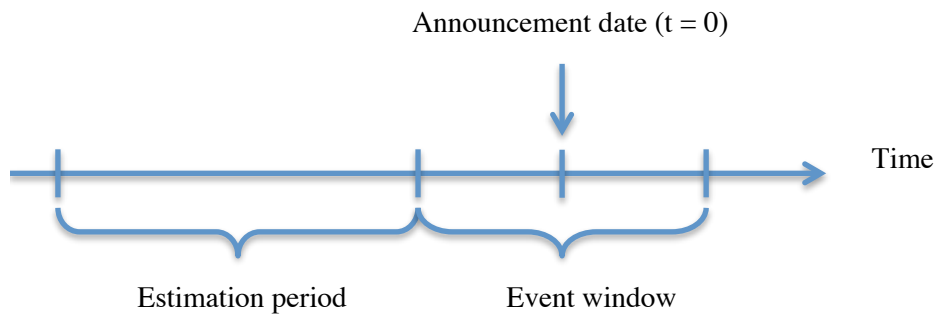
Figure 3: Event study time line.

As mentioned above in the literature review the common way to test for abnormal returns in post-merger periods are to perform an event study. There are two possibilities to perform the event study, namely with a short-term horizon or a long-term horizon. In this thesis the event study is performed for both horizons. Therefore a daily event study was applied to analyse the short-term abnormal returns of takeover announcements with and without the presence of toeholds. For the long-term horizon a monthly event study was used. The event windows of the short-term event study are defined as following: "- " = days before event; "+" = days after event; 0 = event day; (-20, 0), (-10, 0), (-1, +1), (-10, +10), (0, +10), (0, +20). The choices for the event windows are in line with the common research[6] performed on the shareholder wealth effect of takeover announcements. The estimation period ends 21 days before the event and is 255 days in length.

The monthly event study to measure the long-term wealth effect of takeovers was performed with the following different event windows. The same notation as above applies but instead of days the number refer to months in this case: (0 +2), (0, +6), (0, +12), (0, +24), (0, +36) and (+1, +36). The event windows are following the common empirical research[7] on shareholder wealth in the long run with event studies. For the long-term performance event study the estimation period ends 1 month before the event day and is 24 months in length.

Precise estimation periods are difficult to determine. Long estimation periods are subject to a trade-off between improved estimation accuracy and potential parameter shifts. The longer the estimation period the harder to control for other cofounding effects. Nevertheless, it is crucial to choose large enough estimation periods to compute the benchmark returns.

Eventus, the program used to perform the event study requires to set a maximum and minimum length for the estimation window. The minimum length is only used when for the specified maximum length estimation window the particular stock returns are not available. In cases of insufficient data availability or a company is delisted from the stock market Eventus drops these event days.

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[6] Table 15 provides detailed information.
[7] Table 16 provides detailed information.

Benchmark models

The choice of a benchmark model is essential to compute the normal returns (Cable & Holland, 1996). There are several options to choose a benchmark model for the event studies performed in this thesis. One can choose between statistical or economic models. Statistical models imply assumptions on asset returns and do not need any economic arguments. Economic models need next to statistical also assumptions concerning investor's behaviour.

For this thesis a statistical benchmark model is used to estimate the normal returns. The constant mean return and the market model are statistical models, which underlie the assumption of jointly multivariate normal and independently and identically distributed asset returns through time (Jain, 1986). Despite of the strong character of this assumption it is empirically reasonable and statistical models are robust enough to cope with deviations from this assumption. The event studies performed here are using the market model, which relates any given security return to the return of the market portfolio. The market portfolio should be constructed from a broad stock index, such as the S&P 500, CRSP Value Weighted or the CRSP Equal Weighted Index (MacKinlay, 1997). Here the CRSP value weighted index was chosen, which gives weight according to the market capitalization of a firm. Whereas the equal weighted index allocates the same weights to all firms unrelated to their market capitalization. An advantage of the market model to the constant mean return model is that it reduces the variance of abnormal returns. This is achieved by eliminating the part of the return that is related to the variation in the market's return. The overall effect of the variance reduction is that it can increase the ability to detect the event effect (MacKinlay, 1997).

Next to the market model, factor models are popular because they can reduce the variance of the abnormal return even further by explaining more of the variation in normal returns. The market model is a single factor model. But for event studies the gains of multifactor models are limited due to the empirical fact of marginal explanatory power of additional factors next to the market factor (Campell et al., 1996; MacKinlay, 1997).

Under the market model any security return is set in relation to the market portfolio, giving the following form:

(1) $\quad R_{it} = a_i + \beta_i R_{mt} + \varepsilon_{it}$;

$\quad\quad E(\varepsilon_{it} = 0) \quad\quad \text{var}(\varepsilon_{it}) = \sigma^2_{E_i}$

Where R_{it} is the return of company i at time t; R_{mt} the return of the market portfolio at time t; ε_{it} is the zero mean disturbance term and $\alpha_i, \beta_i, \sigma^2_{E_i}$ are parameters. In order to cover the event impact on stock

returns right around the event, the short-term event study used daily market and stock data. However to test on the long-term post-merger performance monthly market and stock data was used for the long-term event study here.

The abnormal return (AR) or prediction error is given by the following formula under the market model:

(2) $\qquad AR_{it} = R_{it} - \hat{a}_i - \hat{\beta}_i R_{mt}$

The abnormal return is the deviation from the normal returns of the market model calculated on an out of sample basis. Where the market model parameters $\hat{a}_i$ and $\hat{\beta}_i$ are estimated by ordinary least square (OLS). The following formula gives the average abnormal return (AAR):

(3) $\qquad AAR_t = \dfrac{\sum\limits_{i=1}^{N} AR_{it}}{N}$

The average abnormal returns can be measured over different time horizons. In order to check if investors predicted synergy effects advantages come true, one has to measure AARs over a longer horizon. Therefore it is crucial to calculate the cumulative average abnormal returns (CAAR):

(4) $\qquad CAAR_{T_1,T_2} = \dfrac{1}{N} \sum\limits_{i=1}^{N} \sum\limits_{t=T_1}^{T_2} AR_{it}$

T_1 and T_2 are the start and end of the interval. To compute the CAAR one has to average the sum of the abnormal returns over the event window.

The market-adjusted return model is a restricted version of the market model, where a_i is constrained to be zero and $\hat{\beta}_i$ to be one. Due to the fact that the parameters are constant no estimation period is needed for estimating parameter values, hence excluding the possibility of an estimation bias. The market-adjusted return model was used for a robustness check, as it is an approximation of the market model (Cable & Holland, 1996). The abnormal returns under market-adjusted return model are calculated from the difference between the stock return of firm "i" and the market return at time t.

(5) $\qquad AR_{it} = R_{it} - R_{mt}$

Abnormal returns do not need to be necessarily due to the event in this case the merger announcement. They could also result from market effects such as the ones explained by Fama & French (1992) the size and value factor. Next to the size and value factor the momentum anomaly, which is the most persistent anomaly over time could explain some parts of the abnormal returns. To account for the influence on the

abnormal returns event studies over both horizons long and short-term are performed including the size, value effect and the momentum anomaly.

The robustness of the results from an event study is closely related to the normality assumption, meaning that the distribution of the stock returns is normal. If the assumption of normality would not hold all results would be asymptotic. Though, this issue is generally not a concern for event studies as for the test statistics, convergence to asymptotic distributions is rather quick.

In order to compare the mean cumulative abnormal returns of the two samples (toehold and non-toehold) of each period a Welch's t-test is performed. The Welch's test is applicable to compare the means of two samples of different size and unequal variances (Ruxton, 2006).

$$\textbf{(6)} \qquad t = \frac{\overline{x}_1 - \overline{x}_2}{s_{\overline{x}_1 - \overline{x}_2}}$$

$$\textbf{(7)} \qquad s_{\overline{x}_1 - \overline{x}_2} = \sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}} \; ; \qquad v = \frac{(\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2})^2}{\frac{s_1^4}{N_1^2(N_1 - 1)} + \frac{s_2^4}{N_2^2(N_2 - 1)}}$$

Where $\overline{x}_i, s_i^2$ and N_i are the ith sample mean, sample variance and sample size. Using the Welch-Satterthwaite equation approximates the degrees of freedom "v".

3.3.2 Operating Performance

Next to the event study approach accounting measures of firm financial performance are widely applied to test the post-merger performance. The average return on assets (ROA) and the average return on equity (ROE) are popular accounting measures, which allow analysing the difference between post and pre-merger data. The difference between ROE and ROA is that ROE is not as robust as ROA due to the included leverage effect. Nevertheless King et al. (2004) state that accounting measures best reflect the influence of corporate strategy on the firm's performance. The fact that accounting studies of acquisitions normally investigate the accounting rates of return over several years before and after the acquisition help to comprehend and evaluate the outcome of the acquisition (De Langhe & Ooghe, 2001). Therefore a multiple factor OLS regression is applied to test the post-merger performance of acquirers by analysing financial information.

The simple OLS regression model allows studying the relationship between two variables "*x*" and "*y*" where *y* is the dependent and *x* the independent variable. Various econometric analysis begin with the

following premise where two variables are given, which represent some kind of information for example accounting data as it is the case for this thesis. The relationship of the two variables is now subject of interest and one is interested in explaining y in terms of x or analyse how y varies with changes in x. One of the major drawbacks of the simple regression model for empirical research is that it is problematic to draw ceteris paribus conclusions about how x affects y. The assumption of the simple OLS regression model is that all other factors influencing y are uncorrelated with x, which is unlikely. In order to overcome this issue a multiple factor regression analysis is used. The advantage of a multiple regression analysis is that it allows for a controlled application of many other factors, which simultaneously affect the dependent variable y. Allowing for multiple factors that might be correlated one can hope to infer causality in cases where simple regression analysis would be misleading. The more factors are added to the multiple regression, which explain y, the more of the variation in y can be explained. Therefore a multiple factor regression model can be a better estimator to predict the dependent variable y. The following equation is the standard equation for a multiple factor regression model (Wooldridge, 2006):

(8) $\qquad y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + ... + \beta_k x_k + u$

In the equation of the multiple regression model β_0 represents the intercept, β_1 is the parameter associated with the factor x_1, β_2 is the parameter associated with factor x_2, and so on. The variable u stands for the error term or disturbance and covers factors others than $x_1, x_2, ... x_k$ that influence y. Despite of how many factors are added to the equation there will always be factors that cannot be included, which are captured by the error term u. In order to account for outliers within the data sets a robust regression was chosen, which is an alternative to the least square regression. A robust regression can be used in any situation in which a least square regression would be used instead. Within in the data sets some outliers exist, which are no data entry errors and therefore should not be excluded. Therefore a robust regression is a good compromise between excluding outliers from the data set or treating all data points equally as it is done in the OLS regression. In the robust regression observations are weighted differently based on the fact how well behaved these observations are. This means that a robust regression is a form of a weighted reweighted least squares regression (Verardi & Croux, 2008).

The accounting data was obtained from the database Compustat for each period (1981-88 and 2001-2006) and each sample within the periods. The accounting data for the toehold samples and non-toeholds samples was then used to calculate the profitability ratios and other factors such as market value and leverage (Boileau & Moyen, 2010). Next to the financial ratios two dummies were used within the regressions, one to account for horizontal mergers where 1 was allocated to horizontal mergers and 0 otherwise. The second dummy was used to divide the period into pre and post-merger periods. This allows for analysing the difference between pre and post merger accounting data, as this thesis is

primarily interested in the acquirer's overall performance. The dependent variables from table 1 represent *y* within the regression equation and the independent variables represent the different *x* factors. Various historical research papers back the choice of the dependent and independent variables used within this thesis (Buhner (1991), Cable et al. (1980), Mueller (1980), Peer (1980), Ryden and Edberg (1980)).

Table 1 gives an overview of the different dependent and independent variables that were applied within the regression analysis.

Variable	Description
dependent variables	
Return on Equity	Profitability measure by revealing how much profit a company generates with the money shareholders invested
Retrun on Assets	Return on Assets is an indicator for the corporations's profitabilty compared to its total assets
Return on Sales	A measure to evalute a corporation's operational efficiency. Also known as "operating profit margin"
Sales growth	Increase in sales over a year
independent variables	
Market Value	Market capitalisation defined by the share price at the end of the fiscal year times the shares outstanding
Leverage	Leverage is measured by the sum of long-term debt and debt in current liabilities divided by total assets
Horizontal	Indicates if the acquisition took place in the same industry sector
Capital expenditures	Funds used by a corporation to maintain or increase the scope of their operations
Operating Cash Flow	Cash corporation generates by runing its business
Takeover	Indicates the post-merger period where 0 pre-merger and 1 is post-merger
Toehold	Indicates the effect of the toehold on the profitabilty ratios.
Period	Indicates the two periods 1981-1988 and 2001-2006 where 0 ist the first period and 1 the second

Table 1: Variables used for the regression analysis

CHAPTER 4 Empirical Research and Results

4.1 Event study results

In this chapter the results of the long and short-term event studies are presented for the two periods 1981-1988 and 2001-2006. The tables below give information about the different event windows over which the mean cumulative abnormal returns and the precision weighted cumulative average abnormal returns were calculated. The number of observations "N" of the original data samples decreased as Eventus dropped some companies for which no sufficient data was available or due to inconsistence within the different identifier codes (PERMNO and CUSIP). Eventus reports a precision-weighted CAAR when the Patell z-test is selected. The precision-weighted CAAR is a weighted average of the original CARs, which preserves portfolio interpretation that CAAR offers but average standardized CAR does not. Additionally to the return information the results of two statistical tests are reported in the tables below, namely the Patell z-test and the time-series standard deviation test. The time-series standard deviation test uses a single variance estimator for the entire portfolio so that unequal return variances across securities are not taken into account. This avoids the potential problem of cross-sectional correlation of security returns. In order that the two mean CARs can be compared another table with the t-score is provided.

4.1.1 Short-term event study results

Over the different event windows based on days, which were chosen for the short-term event study results are mainly negative for the period between 1981 and 1988 for both data samples toehold and non-toehold M&A deals. The on average highest negative return in both samples occurs over the event window from the event day to 20 days after the event. For the toehold sample a mean CAR of -1.03% and for the non-toehold sample a mean CAR of -0.39% is found. The best performance results are found for the event window one day prior to one day after the event. A 0.53% mean CAR for the toehold sample and a 0.16% mean CAR for the non-toehold sample.

Market Model, Value Weighted Index										
		toehold sample 1981-1988						non-toehold sample 1981-1988		
Days	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t
(-20,0)	73	-0.24%	-0.63%	-0.620	-0.168	345	-0.22%	-0.32%	-0.648	-0.322
(-10,0)	73	-0.29%	-0.40%	-0.544	-0.289	345	-0.20%	-0.34%	-0.970	-0.401
(-1,+1)	73	0.53%	0.20%	0.526	1.003	344	0.16%	0.09%	0.517	0.609
(-10,+10)	73	-0.10%	-0.09%	-0.086	-0.072	345	-0.18%	-0.10%	-0.209	-0.264
(0,+10)	73	0.02%	-0.05%	-0.075	0.023	345	-0.24%	-0.10%	-0.266	-0.498
(0,+20)	73	-1.03%	-1.42%	**-1.407$**	-0.734	345	-0.39%	0.16%	0.341	-0.570

Table 2: Short-term event study results for the period between 1981 and 1988.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

In the days prior to the merger acquirer's shareholders earn slightly negative abnormal returns no matter if the takeover included a toehold or not. During the days around the event date slightly positive mean CARs are earned for acquirer's shareholders for both toehold and non-toehold M&A transactions. The days after the event date result in mean CARs around zero or somewhat negative returns. As a matter of fact most results for the short-term event study for the period 1981-1988 are not statistically significant. Only for the event window (0,+20) the mean CAR within the toehold data sample is significant negative and also significantly different from the mean CAR of the non-toehold group. Taking this result the toehold M&A deals result in a lower performance than the non-toehold M&A deals for acquirer's shareholder for the days after the takeover (0,+20). For the other results, which are not significant no conclusion about the efficiency of the use of toeholds within acquisitions can be made. The Welch's t-test shows that the returns of the toehold and non-toehold sample are not significantly different from each other.

Welch's t-test					
	toehold sample 1981-1988		non-toehold sample 1981-1988		
Days	N	Mean CAR	N	Mean CAR	t score
(-20,0)	73	-0.24%	345	-0.22%	-0,039
(-10,0)	73	-0.29%	345	-0.20%	-0,157
(-1,+1)	73	0.53%	344	0.16%	0,351
(-10,+10)	73	-0.10%	345	-0.18%	0,055
(0,+10)	73	0.02%	345	-0.24%	0,276
(0,+20)	73	-1.03%	345	-0.39%	-0,471

Table 3: Welch's t-test results for short-term event study 1981-1988.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels.

The second short-term event study for the period between 2001 and 2006 gives the following results, which are provided in table 3. For the computed mean CARs over different event windows most results are significant. The acquisitions with a toehold during 2001 and 2006 result in most cases in a lower mean CAR over the specific event windows than non-toehold acquisitions. In other words shareholders of acquirers who used a toehold takeover strategy made a slightly larger negative return than shareholders of acquirers without a toehold strategy. For example in the 20 days before the event date takeovers with toeholds resulted in a mean CAR of -3.77% whereas takeovers without a toehold resulted in a mean CAR of -2.46%. The event window (-20,0) over which mean CARs were measured shows negative returns between 20 days before and event day for both samples. Around the event day (-1,+1) the returns for the toehold -1.23% sample are slightly higher than for the non-toehold sample -1.33%.

Market Model, Value Weighted Index										
		toehold sample 2001-2006						non-toehold sample 2001-2006		
Days	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t
(-20,0)	19	-3.77%	-2.81%	**-1.712***	**-1.727***	314	-2.46%	-1.56%	**-2.581****	**-2.428****
(-10,0)	19	-2.89%	-2.47%	**-2.077***	**-1.828***	314	-1.50%	-1.12%	**-2.560****	**-2.049***
(-1,+1)	19	-1.23%	-0.68%	-1.100	**-1.487$**	314	-1.73%	-1.33%	**-5.838*****	**-4.533*****
(-10,+10)	19	-3.42%	-2.29%	**-1.394$**	**-1.570$**	314	-1.99%	-1.24%	**-2.050***	**-1.966***
(0,+10)	19	-0.86%	-0.63%	-0.531	-0.545	314	-1.62%	-1.09%	**-2.491****	**-2.217***
(0,+20)	19	-3.73%	-2.25%	**-1.369$**	**-1.712***	314	-2.07%	-1.34%	**-2.231***	**-2.044***

Table 4: Short-term event study results for the period between 2001 and 2006.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

Taking all the different event windows into account over which mean CARs were calculated, only the event window (-1,+1) gives a better return for the toehold sample than for the non-toehold sample. Within the period from 2001 to 2006 the toehold sample shows on average lower mean CARs for the different event windows than the non-toehold sample. As the results for the first period do not give any significant findings no conclusion can be made about the toehold sample in contrast to the non-toehold sample. Comparing the results between the two periods one cannot draw any inference, as the first period does not give any statistical significant findings, one can only observe that the toehold sample within the period between 2001 and 2006 performs on average worse than the non-toehold sample.

As the returns for both samples are quite similar the Welch's test shows that the mean CARs of both samples during 2001 and 2006 do not differ significantly from each other.

Welch's t-test					
	toehold sample 2001-2006		non-toehold sample 2001-2006		
Days	N	Mean CAR	N	Mean CAR	t score
(-20,0)	19	-3.77%	314	-2.46%	-0,546
(-10,0)	19	-2.89%	314	-1.50%	-0,921
(-1,+1)	19	-1.23%	314	-1.73%	0,432
(-10,+10)	19	-3.42%	314	-1.99%	-0,542
(0,+10)	19	-0.86%	314	-1.62%	0,435
(0,+20)	19	-3.73%	314	-2.07%	-0,577

Table 5: Welch's t-test results for short-term event study 2001-2006.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels.

4.1.2 Long-term event study results

The mean CARs from the long-term event study are calculated over different event windows on a monthly basis. During the period 1981-1988 the returns for shareholders of acquirer having a toehold compared to shareholders of acquirer without a toehold suffer significantly higher negative returns. Three years after the takeover acquisitions with a toehold experienced a negative return of -45.66% whereas acquisitions without a toehold experienced a negative return of -16.25%. Even in the first few months after the takeover the toehold acquisitions result in negative mean CARs while the acquisitions without a toehold gain slightly positive or around zero returns. With increasing time after the event date the

difference between the toehold and non-toehold acquisitions widens. Under consideration of the results presented in table 5 toehold acquisitions performed on average significantly worse than non-toehold acquisitions during 1981-1988.

Market Model, Value Weighted Index											
toehold sample 1981-1988						non-toehold sample 1981-1988					
Months	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t
(0,+2)	75	-0.97%	-0.41%	-0.239	-0.526	339	0.95%	1.71%	**1.699***	0.925
(0,+6)	75	-1.55%	-0.72%	-0.287	-0.548	339	0.00%	1.79%	1.177	-0.002
(0,+12)	75	-9.18%	-5.72%	**-1.608$**	**-2.389****	339	-3.67%	0.40%	0.231	**-1.724***
(0,+24)	75	-29.92%	-22.63%	**-4.594*****	**-5.615*****	339	-8.95%	-5.66%	**-1.812***	**-3.028****
(0,+36)	75	-45.66%	-36.06%	**-6.039*****	**-7.042*****	339	-16.25%	-10.82%	**-2.890****	**-4.522*****
(+1,+36)	75	-45.76%	-36.47%	**-6.208*****	**-7.156*****	339	-16.45%	-11.01%	**-2.995****	**-4.640*****

Table 6: Long-term event study results for the period 1981-1988.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

The Welch's t-test shows that the mean CARs for the event window of (0,+36) and (+1,+36) are significantly different from each other for the two samples. The returns of toehold acquisitions are significantly different from non-toehold acquisitions for the three years after the takeover.

Welch's t-test					
	toehold sample 1981-1988		non-toehold sample 1981-1988		
Months	N	Mean CAR	N	Mean CAR	t score
(0,+2)	75	-0.97%	339	0.95%	-0,469
(0,+6)	75	-1.55%	339	0.00%	-0,287
(0,+12)	75	-9.18%	339	-3.67%	-0,326
(0,+24)	75	-29.92%	339	-8.95%	-2,565
(0,+36)	75	-45.66%	339	-16.25%	**-3,121$**
(+1,+36)	75	-45.76%	339	-16.45%	**-3,188$**

Table 7: Welch's t-test results for the long-term event study 1981-1988.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels.

The results of the long-term event study for the later period from 2001 to 2006 show the opposite of the results of the event study considering the earlier period. In table 7 one can see that the acquisitions with toeholds have a less negative performance than acquisitions without a toehold for the 1, 2 and 3 years following the takeover. For the event window (0,+36) the difference between the two mean CARs of the two samples is around 20%. Even though the returns are highly negative one can say that the toehold acquisitions in the long run show a better performance than the non-toehold acquisitions.

Market Model, Value Weighted Index										
		toehold sample 2001-2006					non-toehold sample 2001-2006			
Months	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t	N	Mean CAR	precision weighted CAAR	Patell Z test	Portfolio Time-Series t
(0,+2)	22	-7.45%	-5.94%	**-2.010***	**-1.659***	319	-5.24%	-3.58%	**-3.353*****	**-3.570*****
(0,+6)	22	-12.51%	-9.17%	**-2.034***	**-1.825***	319	-11.56%	-7.31%	**-4.498*****	**-5.156*****
(0,+12)	22	-15.46%	-11.00%	**-1.792***	**-1.654***	319	-25.97%	-16.74%	**-7.565*****	**-8.498*****
(0,+24)	22	-29.50%	-21.81%	**-2.568****	**-2.277***	319	-52.07%	-34.69%	**-11.283*****	**-12.285*****
(0,+36)	22	-49.20%	-37.39%	**-3.610*****	**-3.122*****	319	-70.36%	-52.25%	**-13.875*****	**-13.646*****
(+1,+36)	22	-44.98%	-34.35%	**-3.356*****	**-2.893****	319	-68.31%	-50.36%	**-13.550*****	**-13.432*****

Table 8: Long-term event study results for the period 2001-2006.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

All the returns reported in table 7 are significant and result in a converse conclusion as for the earlier period 1981-1988. Taking the overall results from the long-term event study and comparing the two periods with each other one can come to the conclusion that toehold acquisitions improved on average over time in efficiency. The mean CARs for the event window (0,+36) are significantly different from each other for the toehold and non-toehold sample. For the three years following the takeover shareholders of acquirers are better off with toehold acquisitions than with non-toehold acquisitions.

Welch's t-test					
	toehold sample 2001-2006		non-toehold sample 2001-2006		
Months	N	Mean CAR	N	Mean CAR	t score
(0,+2)	22	-7.45%	319	-5.24%	-0,549
(0,+6)	22	-12.51%	319	-11.56%	-0,143
(0,+12)	22	-15.46%	319	-25.97%	1,132
(0,+24)	22	-29.50%	319	-52.07%	1,837
(0,+36)	22	-49.20%	319	-70.36%	**8,205***
(+1,+36)	22	-44.98%	319	-68.31%	1,629

Table 9: Welch's t-test results for the long-term event study 2001-2006.
The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels.

4.2 Operating performance results

In the following the results of the multiple regression analysis based on accounting data are presented. The list of the different dependent and independent variables can be found in table 1. For each of the four samples multiple robust regressions were performed to test the hypothesis. Due to the different data availability some observation were dropped during the accounting data collection procedure. The tables below present the regression results of acquirers, where the coefficients which are statistical significant are printed in bold. The regression results for the overall sample can be found in table 13 in at the end of this chapter.

	toehold sample 1981-1988			
VARIABLES	ROE	ROA	ROS	Sales growth
Takeover	-0.0153	-0.0172	-0.00702	-0.0701
	(0.0875)	(0.0139)	(0.0180)	(0.0427)
Market Value	**0.0345*****	0.00166	0.00190	0.00458
	(0.00656)	(0.00104)	(0.00135)	(0.00320)
Leverage	**-6.053*****	0.0107	0.0717	**-0.416*****
	(0.0590)	(0.0364)	(0.0473)	(0.112)
Horizontal	-0.0491	0.00817	0.000533	-0.0126
	(0.0576)	(0.00913)	(0.0119)	(0.0281)
Operating Cash Flow	-0.537	**0.647*****	**0.635****	-0.257
	(1.271)	(0.201)	(0.261)	(0.619)
CAPEX	-1.353	**-0.871*****	**-0.866*****	-0.0955
	(1.396)	(0.221)	(0.288)	(0.680)
Constant	**0.254*****	**0.0523*****	**0.0485****	0.141***
	(0.0951)	(0.0152)	(0.0197)	(0.0466)
Observations	100	99	99	99
R-squared	0.991	0.180	0.129	0.168

Table 10: Regression results toehold sample 1981-1988.
Standard errors in parentheses; levels of significance *** p<0.01, ** p<0.05, * p<0.1.

Table 9 presents the results of regressions for the toehold sample 1981-1988 for acquirers with a toehold. Here the return on equity (ROE) is influence by the market value (size) and the leverage. The market value has a positive effect on the ROE for the acquirers with a toehold whereas the leverage has a negative effect on the ROE. This means that a higher market value results on average in a higher ROE and a higher leverage will on average decrease the ROE. The return on assets (ROA) is positive affected by the operating cash flow and negative by the capital expenditures (CAPEX). The same can be observed for returns on sales (ROS). On the sales growth of acquirers with a toehold the leverage has a negative affect. The takeover dummy, which indicates the effect of the post-merger period on the dependent variables showed no significant results for the toehold sample from 1981 to 1988.

The results for the non-toehold sample for 1981-1988 are presented in table 10. Here the ROE is negatively influenced by the market value, which indicates that larger acquirers have on average a worse ROE than smaller acquirers. That is exactly the opposite as for the toehold sample.

non-toehold sample 1981-88				
VARIABLES	ROE	ROA	ROS	Sales growth
Takeover	-1.40e-06	-0.00808	-0.00162	**-0.185***
	(1.04e-06)	(0.00936)	(0.00944)	(0.0244)
Market Value	**-2.04e-07***	**0.00450***	**0.00240***	**0.00423***
	(6.70e-08)	(0.000605)	(0.000601)	(0.00155)
Leverage	9.57e-07	**-0.104***	**-0.0647**	**-0.136**
	(2.91e-06)	(0.0263)	(0.0261)	(0.0675)
Horizontal	**1.17e-06**	0.00664	-0.00161	0.00520
	(4.99e-07)	(0.00450)	(0.00447)	(0.0116)
Operating Cash Flow	**3.40e-05***	0.0831	**0.338***	-0.232
	(9.85e-06)	(0.0890)	(0.0883)	(0.228)
CAPEX	-1.14e-05	**-0.318***	**-0.265***	-0.00446
	(9.13e-06)	(0.0825)	(0.0819)	(0.212)
Constant	**4.27e-06**	**0.0359**	**0.0425***	**0.241***
	(1.69e-06)	(0.0153)	(0.0152)	(0.0395)
Observations	524	525	524	523
R-squared	0.037	0.192	0.175	0.117

Table 11: Regression results non-toehold sample 1981-1988.
Standard errors in parentheses; levels of significance *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

The ROE in the non-toehold samples is not influenced by the leverage, as it was the case for the toehold acquisitions but horizontal mergers have a positive influence on the ROE of non-toehold acquirers. Next to this the operating cash flow has a positive effect on the ROE of acquirers without a toehold. The market value has a positive effect on ROA while leverage and CAPEX have a negative effect on it. The magnitude of the negative influence of CAPEX on ROA is higher for toehold acquisitions. Leverage and market value have no significant influence on the ROA of acquirers with a toehold. The extent of the influence on ROS by the operating cash flow (+) and CAPEX (-) is higher for acquirers within the toehold sample as for acquirers without a toehold. The ROS of acquirers without a toehold is positively affected by the market value and negatively affected by leverage, both are not significant for acquirers with a toehold. Leverage and the takeover dummy negatively influence the sales growth within the non-toehold sample. This indicates that the post-merger sales growth is on average worse than the pre-merger sales growth. The negative leverage effect is higher for the toehold sample than for the non-toehold sample. Next to this the market value has a positive effect on the sales growth for the non-toehold sample but is insignificant in the toehold sample.

Comparing the two samples is difficult as the takeover dummy is only for the sales growth in the non-toehold sample significant. Therefore no conclusion can be made about the efficiency of toeholds on accounting measures for the pre and post merger period between the two samples.

toehold sample 2001-2006				
VARIABLES	ROE	ROA	ROS	Sales growth
Takeover	**1.22e-06****	-0.00930	0.000574	**-0.0665****
	(5.07e-07)	(0.00708)	(0.0107)	(0.0261)
Market Value	**-5.83e-08****	**0.00186*****	**0.00384*****	0.00195
	(2.61e-08)	(0.000365)	(0.000550)	(0.00140)
Leverage	**1.82e-05*****	-0.0175	-0.00276	-0.344
	(5.00e-06)	(0.0698)	(0.105)	(0.277)
Horizontal	-3.86e-08	0.00467	-0.0190	**-0.0660****
	(6.01e-07)	(0.00838)	(0.0126)	(0.0305)
Operating Cash Flow	**1.11e-05*****	-0.0642	**-0.159***	-0.307
	(4.01e-06)	(0.0560)	(0.0845)	(0.214)
CAPEX	**-9.16e-06****	**-0.149****	**-0.294*****	**0.406***
	(4.28e-06)	(0.0597)	(0.0901)	(0.212)
Constant	**3.62e-06*****	**0.0434*****	**0.0614*****	**0.193*****
	(6.34e-07)	(0.00885)	(0.0134)	(0.0329)
Observations	209	209	209	191
R-squared	0.138	0.260	0.345	0.095

Table 12: Regression results toehold sample 2001-2006.
Standard errors in parentheses; levels of significance *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

For the later period 2001-2006 the results of the regressions are presented in table 11 & 12. The relation between the ROE of toehold sample for the later period and the leverage, operating cash flow and the takeover dummy is positive. The takeover has a positive effect on the ROE of acquirers with a toehold. The coefficients of the market value and leverage are both negative and significant which implies a negative relation of acquirer size and leverage with the ROE. ROA for larger acquirers with a toehold is on average higher than for smaller acquirers with a toehold, while a higher CAPEX will decrease the ROA of acquirers with a toehold. The market value has the same effect on ROS as on ROE for acquirers with a toehold. The operating cash flow and CAPEX have a negative influence on ROS. The sales growth of acquirers with a toehold during the period 2001-2006 is negative influenced when the takeover took place in the same industry and for the post-merger period where the sales growth is on average worse than in the pre-merger period. A higher CAPEX has a positive effect on the sales growth.

The non-toehold sample over the same period shows that the ROA, ROS and sales growth are all negative influenced by the takeover dummy, which means that the post-merger period for ROA, ROS and sales growth is on average worse than for the pre-merger period. Acquisitions within the same industry but without a toehold have a negative influence on ROE and are insignificant for acquirers with a toehold. The relation between the market value and ROE is also negative for both samples. Whereas the relation between ROE and leverage and operating cash flow is positive for both samples. The relation between ROA and market value and operating cash flow is for both samples the same. Next to this horizontal

mergers have a negative impact on the ROA of non-toehold acquirers as well as higher leverage, which are not significant for acquirers with a toehold. After the takeover the ROS is on average worse than for the pre-merger period. The relation between the sales growth and the takeover dummy shows that after the takeover the sales growth declines on average less than for acquirers without a toehold than for acquirers with a toehold.

non-toehold sample 2001-2006				
VARIABLES	ROE	ROA	ROS	Sales growth
Takeover	-1.01e-07	-0.0138***	-0.0111***	-0.0357***
	(2.25e-07)	(0.00268)	(0.00399)	(0.0102)
Market Value	-7.21e-08***	0.000431**	0.000421	-0.000444
	(1.49e-08)	(0.000177)	(0.000262)	(0.000690)
Leverage	1.14e-06***	-0.171***	-2.26e-05***	-1.59e-06
	(0)	(2.80e-07)	(4.14e-07)	(1.01e-06)
Horizontal	-6.42e-07**	-0.0181***	0.00189	0.0162
	(2.68e-07)	(0.00319)	(0.00476)	(0.0122)
Operating Cash Flow	1.18e-05***	0.0557**	0.0171	0.0338
	(1.88e-06)	(0.0224)	(0.0331)	(0.0856)
CAPEX	-1.14e-06	-0.0485*	-0.00552	0.0369
	(2.21e-06)	(0.0262)	(0.0388)	(0.0972)
Constant	3.73e-06***	0.0605***	0.0529***	0.111***
	(2.62e-07)	(0.00312)	(0.00464)	(0.0121)
Observations	2,501	2,502	2,458	2,218
R-squared	1.000	1.000	0.554	0.008

Table 13: Regression results non-toehold sample 2001-2006.
Standard errors in parentheses; levels of significance *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Comparing the two toehold samples over the different periods with each other shows that the effect of the market value and the leverage on ROE is the opposite within the two samples. Whereas in the toehold sample for 1981-1988 the size of the acquirer has a positive and the leverage a negative influence on ROE, it is the other way around for the later toehold sample. This indicates a shift in acquirer size and the direction of the effect on ROE for toehold acquisitions over time. In addition to this, CAPEX has a negative influence on ROE for the later toehold sample and the operating cash flow a positive influence on ROE. The toehold sample for 2001-2006 also shows a positive impact of takeovers on ROE for the post-merger period. For the ROA both toehold samples have a negative relation with CAPEX, which implies that a higher CAPEX will lead on average to a lower ROA. There are two differences between the two samples concerning the effect on ROA those are that in the toehold sample from 1981-1988 the operating cash flow has positive effect on ROA and in the later sample the market value. In the sample from 1981-1988 the operating cash flow has a positive effect on ROS whereas in the later sample it is the other way around. CAPEX has in both samples a negative effect on ROS, not so the market value that has no effect on ROS in the first period but in the later a positive one. The effects on sales growth are totally different between the two toehold samples. For example the leverage has a negative influence on sales

growth in the toehold sample of 1981-1988 whereas in the later sample leverage is not significant. In the later sample horizontal mergers and CAPEX have a negative impact on ROS while in the earlier sample both factors are not significant. The sales growth for the toehold sample 2001-2006 is after the merger on average worse than before the merger, which cannot be observed in the earlier sample, as the takeover dummy is not significant.

If the four different samples are merged into one sample and the regressions are performed on the joint sample the following results can be observed.

overall sample				
VARIABLES	ROE	ROA	ROS	Sales growth
Takeover	8.99e-08	-0.0139***	-0.00995***	-0.0420***
	(2.12e-07)	(0.00233)	(0.00322)	(0.00825)
Toehold	8.66e-07**	0.00260	0.00392	-0.0128
	(3.40e-07)	(0.00372)	(0.00511)	(0.0130)
Market value	3.87e-08***	0.000883***	0.000836***	0.000336
	(6.74e-09)	(7.40e-05)	(0.000102)	(0.000257)
Leverage	1.60e-06***	-0.164***	-2.26e-05***	-1.54e-06*
	(0)	(2.60e-07)	(3.57e-07)	(8.79e-07)
Horizontal	-4.28e-08		-0.000791	0.00862
	(2.26e-07)		(0.00343)	(0.00873)
Operating Cash Flow	5.76e-08***	0.000586***	0.000709***	0.000277
	(7.31e-09)	(8.03e-05)	(0.000110)	(0.000280)
CAPEX	-1.72e-08*	-7.53e-05	0.000246	0.000656*
	(1.01e-08)	(0.000111)	(0.000153)	(0.000385)
Period	-2.87e-06***	-0.0182***	0.00335	0.00749
	(2.75e-07)	(0.00301)	(0.00415)	(0.0102)
Constant	5.60e-06***	0.0890***	0.0433***	0.0843***
	(6.75e-07)	(0.00740)	(0.0102)	(0.0260)
Observations	3,333	3,336	3,292	3,033
R-squared	1.000	1.000	0.561	0.016

Table 14: Regression results for overall sample.
Standard errors in parentheses; levels of significance *** p<0.01, ** p<0.05, * p<0.1.

Some of the more interesting findings are that ROA, ROS and sales growth all have a negative relation with the takeover dummy, which indicates that in the post-merger period those three profitability ratios decline on average. Next to this the toehold dummy shows a positive relation with ROE, which means that an acquisition with a toehold has on average a higher ROE that non-toehold acquisitions. The period dummy displays a negative relation with ROA and ROE, therefore one can conclude that the second period 2001-2006 has on average a lower ROA and ROE than the first period. This can be due to several reasons such as the housing crisis, which affects the years from 2006 onwards. Another conclusion that that can be drawn from the regression results is that horizontal mergers have no effect on the profitability ratios in total.

CHAPTER 5 Discussion

Within this chapter the results of this thesis are set into context with existing literature and a brief overview of the limitations of the applied methodology is given. However, as the research of post-merger profitability involving a pre-bid ownership is relatively unexplored it is difficult to set the findings of this thesis into context with existing literature. A comparison between researches on takeovers without a toehold will be made instead. Furthermore, the results will be explained and used to draw a conclusion about the hypotheses.

5.1 Interpretation and Discussion of the empirical results

The results of the short-term event study for the earlier period 1981-1988 were not significant but nevertheless the observed returns for both toehold and non-toehold samples are similar to the results of Morck et al. (1988), Franks et al. (1991), Mitchell & Lehn (1990), Servaes (1991), Byrd & Hickman (1992), Chang (1998), Walker (2000) and Graham et al. (2002). All of these short-term studies on takeovers reported for event windows around the takeover day slightly negative returns. This finding can be confirmed within this thesis for both periods. The mean CARs for the toehold sample 2001-2006 are around -3.73% for the event windows from event date to 20 days after the takeover and for the non-toehold sample for the same event window -2.07%. Smith & Kim (1994) reported a remote positive return, which could result from the fact that the investigated period ends before the year 1987. Therefore the "Black Monday" 19th October 1987 is not within the analysed period, whereas the first period 1981-1988 of this thesis includes the "Back Monday". Schwert (1996) and Maquiera (1998) both also report positive returns for the days following the takeover, however they both analysed longer research periods than the above mentioned studies. Taking the findings of the short-term event study no evidence is given to reject the null hypothesis, due to insignificant results for the first period. On average returns for the toehold sample are worse than for the non-toehold sample for the later period.

The long-term event study analyses the returns of different event windows up to three years after the takeover. The results are significant and negative for both samples for the period 1981-1988. This is in line with Argawal et al. (1992), Mandelker (1993) and Rau & Vermalen (1998), who also reported negative returns for the following years after the merger. The difference in the dimension between the results of existing literature and the results of this thesis could be due to differences in the sample selection or adjustments in the benchmark. Franks et al. (1991) and Loughran & Vigh (1997) both report positive abnormal returns. These positive returns can result from various factors such as the sample selection or differences in the event window. Within the first period the results of the Welch's t-test indicate that for the event windows zero till 36 months after the takeover and one month till 36 months after the takeover the mean CARs of both sample are significantly different. The toehold sample performs

on average worse than the non-toehold sample for the period of 1981-1988. The opposite is found for the later period, where the toehold sample performs on average better than the non-toehold sample. Nevertheless both samples show highly negative returns for the following 3 years after the takeover. The two periods by comparison show that the efficiency of toeholds over time increased. In the second period takeovers including a toehold performed on average better than takeovers without a toehold. Taking this evidence one can reject the null hypotheses and argue that nevertheless the returns were negative they were still on average better than the returns for acquisitions without a toehold.

The regression results on accounting data to test the post-merger operating performance show only one significant result for the period 1981-1988, which is that the sales growth declines on average after the merger for non-toehold acquisitions. This finding is supported by the results of Mueller (1980) who also states a decline in sales growth after the merger. For the toehold sample no conclusion about the post-merger profitability of acquirers can be made, as the results are insignificant. The results of the period 2001-2006 show that ROE improves after the merger for acquirers with a toehold, while the sales growth declines. Acquirers without a toehold experience a decline in ROA, ROS and sales growth after the takeover for the same period. These results are in line with the findings of Mueller (1980), Hermann & Lowenstein (1988) and Dickerson et al. (1997). Given the results of both toehold samples over the two periods one could argue that shareholders of acquirers with a toehold experience a wealth increase as the ROE increases after the merger, while in the first period there are no significant changes. Nevertheless these findings are not sufficient enough to draw any conclusion about the efficiency increase of toeholds over time.

The overall results of the three methods to test the post-merger profitability of acquirers with a toehold are inconsistent, as only the long-term event study rejects the null hypotheses. Therefore it is not possible to draw an overall conclusion about the efficiency of toeholds within mergers and acquisitions. Nevertheless, as the research on toeholds is still developing it would be interesting to account for different factors within the research methodology. It could be of interest to make changes within the sample selection such as different countries, single industry sectors or time periods. Next to this a change in M&A deal characteristics could also provide some new insights by testing the influence of tender offers against hostile takeovers or accounting for different payment methods.

5.2   *Limitations of applied methodology*

Next to the two performance measurements the event study and the regressions on operating performance applied within this thesis there are other approaches to measure the post-merger performance of acquisitions. Due to this fact Schoenberg (2006) contended that the variety of performance measurements presents an issue to decide on the appropriate measurement choice. As there is no agreement on the best

approach to measure takeover success Kiessling & Harvey (2006) name this as an important issue, which surfaces within the research of post-merger profitability. In the following a brief overview of the main criticism on the two performance measurements of this thesis will be given.

Stock returns

Haely et al. (1992) and King et al. (2004) argued that it is almost impossible for studies on share prices to differentiate between the economic gain and the market inefficiency. Therefore post-merger share price increases could be due to market inefficiencies and must not solely result from economic gains. The limited purpose of event studies for strategic management research is claimed by Fowler & Schmidt (1989). As event studies rather focus on the short-term performance, which gives researchers not the chance to capture long-term results of the strategy employed. Lubatkin (1983) argued that the firm under study couldn't be involved in any further merger activities pre or post of the merger being investigated to ensure unbiased results. Lubatkin (1983) suggests in his research that a period of three years on each side of the merger investigated has to be without serial acquisition activity.

Accounting profits

Montgomery & Wilson (1986) contend that accounting measures rather reflect the past than present profitability and do not give any information on changes in a firm's risk profile. Due to the variety of accounting measures to analyse post-merger performance there is no common method researchers favour. The fact that research is still developing in this area and methodologies still vary widely makes a comparison between different empirical results quite problematic (Tuch & O'Sullivan, 2007). Additionally to the problem to choose the appropriate methodology there is a lack of appropriate accounting data to actually complete the research.

CHAPTER 6 Conclusion

The intention of the thesis is to test the post-merger profitability of North American acquirers with pre-announcement ownership in takeovers over time. Therefore two periods the fourth merger wave 1981-1988 and the latest merger wave 2001-2006 were analysed by constructing two samples within each period of toehold acquisitions and non-toehold acquisitions. The non-toehold samples serve as a control variable to account for market reactions.

Three different methods were applied to test if there is any efficiency increase in the use of toeholds within acquisitions over the two periods. First, a short-term event study was applied to examine the effect of toeholds on the following days after the takeover announcement. Secondly, a long-term event study was applied to test the effect of toeholds on the following years after the announcement. Last, regression

analyses on accounting data were performed to test on changes within profitability ratios. The short-term event study provided no sufficient results to reject the null hypotheses and actually was not able to confirm an increase in the efficiency of toeholds used in acquisitions. The same can be said about the regression analyses, only under the long-term event study the null hypotheses could be rejected. Therefore it is not possible to draw an overall conclusion about the efficiency of toeholds within mergers and acquisitions. Nevertheless this thesis can be seen as a guideline for further research, as it is a pioneer work on the post-merger profitability of acquisitions with toeholds. The existing literature on toeholds covers only the strategic rational of toeholds within the bidding process but does not provide any information on the post-merger profitability of the takeover with toeholds. Therefore this thesis can be an inducement for further research concerning the profitability aspect of toeholds in M&A.

The analysis of the takeover effects in isolation from other influences over a long-term period is a crucial issue within this thesis. Next to this both periods are influenced by financial crisis to some extend, as the following three years of each period are also taken into account to measure the long-term profitability of toeholds on acquisitions. For further research it could be of interest to adjust the sample selection and to account for some other M&A deal characteristics that would provide some new insights.

Mergers and acquisitions provide a unique investment opportunity to shareholders and hence it is crucial to explore all possible methods to improve the overall performance of this investment. Therefore toeholds can be seen as a valuable strategic tool within the bidding process, but it cannot be concluded that toeholds also have a positive influence on the post-merger profitability of the acquiring company.

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APPENDIX   Additional tables and graphs

Literature short-term event study					
Study and sample country	Period	Benmark model	Event window (days)	Sample size	CAARs Bidder
Morck et al. (1988), US	1975-1987	EV/PA	(-2,+1)	326	-0.7%
Franks et al. (1991),US	1975-1984	Market Model	(-5,+5)	399	-1.02%*
Mitchell & Lehn (1990),US	1980-1988	Market Model	(-1,+1)	232	-1.66% / 0.7%*
Servaes (1991),US	1972-1987	Market Model	(0,close)	577	-0.16%
Healy et al. (1992)	1979-1984	Market adjusted Model	(-5,close)	50	-2.2%
Byrd & Hickmann (1992),US	1980-1987	Market Model	(-1,0)	128	-1,23%
Smith & Kim (1994),US	1980-1986	Market Model	(-5,5)	177	+0.5%
Schwert (1996),US	1975-1991	Market Model	(0,close)	959	+4.9%**
Maquiera et al. (1998),US	1977-1996	VPE	(-40,+40)	102	-4.79% / +6.14%**
Chang (1998),US	1981-1992	Market Model	(-1,0)	255	-0.02% / -2.46%***
Walker (2000),US	1980-1996	Market adjusted Model	(-2,+2)	230	-1.3%**
Graham et al. (2002),US	1980-1995	Market Model	(-1,+1)	356	-0.78%***

Table 15: Literature review on short-term event studies.
*,**,*** significance level of 10%, 5% and 1%.

Literature long-term event study					
Study and sample country	Period	Benmark model	Event window (months)	Sample size	CAARs Bidder
Franks et al. (1991),US	1975-1984	8-factor model	(0,+36)	399	+0.05%
Argawal et al. (1992), US	1955-1987	size and beta-adjusted	(0,+60)	937	-10.26%***
Loderer & Martin (1992), US	1965-1986	size and beta-adjusted	(+1,+60)	304	-0.75%
Anderson & Mandelker (1993), US	1966-1987	size and B/M	(+1,+60)	670	-9.56%***
Loughran & Vijh (1997), US	1970-1989	size and B/M	(0,+60)	434	+7.1%
Rau & Vermalen (1998), US	1980-1991	size and B/M	(0,+36)	2823	-4.04%***
Bouwman et al. (2003), US	1979-1998	size and B/M	(0,+24)	510	-7.03%*

Table 16: Literature review on long-term event-studies.
*,**,*** significance level of 10%, 5% and 1%.