ERASMUS UNIVERSITY ROTTERDAM
ERASMUS SCHOOL OF ECONOMICS
MSc Economics & Business
Master Specialisation Accounting and Finance

Post-Merger Performance of North American, European and UK acquirers

A study of synergy advantages: M&As during 1981-1999 in the Utilities, Manufacturing and Services industries

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EUR study number: 307381
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Finish date: September 2011

ABSTRACT

This thesis empirically investigates the antecedents of abnormal return and operating performance improvement through mergers and acquisitions in Europe, the United Kingdom and North America. The study is an empirical study of M&As of listed acquirers and targets announced between 1985 and 1999. The transactions are analysed using event studies for abnormal return on the short and long terms (216 transactions) and operating performance (135 transactions). The event study for the shareholders' wealth of acquiring firms report significant negative abnormal returns on the long run. This does not support M&A motives of acquiring firms. The M&As with a Europe-based target firm instead report significant positive abnormal returns for a three- and five-year event window. Nevertheless, the European targets within the sample are too small to make reliable conclusions. The post-merger operating performances of merged firms based on accounting variables are compared with industry developments. The results do not support the operating synergy argument for M&A activity or overall ROA improvement. However, a positive influence for financial synergy is found in lower capital expenses after two years. Furthermore, a cross sectional regression analysis is done for abnormal returns and operating performance improvement to detect influences of deal and firm characteristics. A positive relation for cross border mergers and a negative relation for targets in the Utilities industry are found in the results.

Keywords
Synergy, Mergers & Acquisitions, Merger waves, Operating performance, Utilities, Manufacturing, Service industry.

PREFACE AND ACKNOWLEDGEMENTS

The production of the thesis presented here took a long time to finish as I was writing it while also running a company during daytime. I would like to thank Wouter de Maeseneire for being so kind and patient in supervising me in writing this thesis. Also, I would like to thank Anko Benjamins, my dear colleague, who helped me with some technical advice on computing data. Ilco van Spijker, who overlooked the concept versions and provided me with very useful comments. And, of course, my friend Jeroen Krebbers who persuaded me to head for my masters in the first place. Of course, I cannot forget my friends and family for being there and keeping me on track.

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CHAPTER 1 Introduction

Mergers and Acquisitions (M&A) are an important means for corporations to execute strategies or reallocate assets and resources. Synergy is a common motive for M&A activities in corporate strategies. Among other motives, economies of scale, industry concentration and competitiveness, productivity growth and financial synergy are well known examples of synergy drivers for corporate firms. M&A activity is in some way connected to the economic cyclical development. This means that firms acquire more during periods of good market economies and firm performance. Some acquirers use excess cash holdings to invest in acquisitions to gain a return on those cash holdings. Instead, during an economic meltdown there is less M&A activity, but afterwards there are opportunities to make acquisitions at bargain prices. Nevertheless, do the acquisitions in the economic cyclically high periods perform well over the long run?

In the recent decades, a great number of studies about M&A profitability have been published. Shareholder wealth and abnormal returns are common indicators of M&A profitability. The most previous studies indicate that in the short run shareholders of bidding firms achieve small abnormal returns and shareholders of target firms achieve positive abnormal returns, for example Franks et al (1991). The combined abnormal return of bidding and target shareholders in the short run is on average found to be positive. There are some studies that deal with a longer time frame. For the long run, Asquith (1983) and Mitchell and Stafford (2000), among others, report negative returns for the shareholders of bidding firms. On the contrary, Loughran and Vijh (1997) and Franks et al. (1991) found positive returns on the long run. The main subject in available financial and empirical research is the wealth effect of M&A for the shareholders regarding the value of target and acquiring firms. Besides the shareholders' wealth, a measure to indicate the profitability of a merger is accounting performance. Mueller (1980) used commonly known ratios for analysing the accounting performance. He found a declining post acquisition performance using ratios for return on equity and return on assets.

The main purpose of this thesis is to analyze the short and long run shareholders' wealth of publicly traded acquiring firms and the post-merger accounting performance. The results will be compared for different regions, related and unrelated mergers and different periods of the merger announcements.

An empirical event study of M&A profitability abnormal returns and accounting performance indicators is done. A regression model is included to analyse the abnormal returns and operating performance improvement for a number of explanatory variables. In the case of accounting performance, an industry portfolio is constructed for the different accounting variables to adopt

industry developments. To examine the research question, a sample of 219 transactions by acquirers in North America, the UK and Europe is constructed. In order to compare the profitability of M&As during different merger waves indicated by Martynova and Renneboog (2008), the mergers in the research sample are announced during the fourth and fifth merger waves between 1985 and 1999.

Government regulation and the market for firm ownership affect the market for corporate control. In this paper acquirers and targets are selected from within three different continental regions because of government regulation and ownership protection. The relative number of listed firms in the European continent is much lower than the Anglo Saxon American continent and the UK. The governmental regulations in the European continent have set higher restrictions on acquirers than governments in the Anglo Saxon area. In this perspective, the target regions are divided as Europe, the UK and North America. The results are compared for the different target regions, related and unrelated M&As, industries and merger waves.

The event study results for shareholders' wealth show negative abnormal returns for acquiring firms on the long run. In the short run, the overall results are as expected. Acquirers have a modest loss and target shareholders gain a large abnormal return. However, the combined abnormal return in the short run is positive. The event study results based on accounting variables do not support the synergy argument for M&A. All variables used indicate a lower performance than predicted for the individual firms, only the capital expenses are reduced within two years after the event is announced. The post-merger results are analysed for both shareholder returns and operating performance. A contribution to existing literature is made for differentiating the results over regions, time frames and industries. Although remarkable, one must notice that the sample included only eight target firms located in Europe. The regression analysis for some explanatory variables included only a strong indication for a positive relation for M&A profitability and cross border target firms as well as a negative relation on M&As in the Utilities Industry.

The remainder of this paper is structured as follows: Chapter 2 provides a literature overview of M&As, synergies and empirical research; Chapter 3 describes the methodology for research; Chapter 4 describes the research sample; and Chapter 5 presents the test results. Finally, concluding remarks and implications for further research are given in Chapter 6.

CHAPTER 2 Literature review

Firms have many different motives to participate in M&As. A boost in sales growth, increasing market power, cost reduction through synergies, financial synergies and other strategic motives are often stated as the rationale for M&As. William Alberts (1974) distinguished two models which could explain why a firm is involved in M&A. Firstly, M&A is considered to be just like any other investment transaction in the existing business. Secondly, the takeover of a firm is a way to enter new markets, industries or adding a new product or services efficiently. However, growth and firm size do not by any means have a positive influence on profitability. Dean and Smith (1974) explained some fallacies for failing in turning growth into profitable transactions through M&A. In this chapter some literature about theories for synergy and empirical literature of shareholder profitability and operating performance is described. A regression analysis is done in this thesis in order to study the influence of some explanatory variables. The explanatory variables used are briefly summarized under the relevant paragraphs.

2.1 Synergy

Synergy advantages in the case of M&As can be operational, financial or risk reducing (diversification). Synergy advantages could allow acquiring a firm's management to pay a premium to the target firm's shareholders over the value of the target firm even after subtracting the transaction expenses. This synergy effect can be captured in the following Net Transaction Value formula,

$$\textit{Net Transaction Value (NTV)} = V_{AB} - (V_A + V_B) - P - E \qquad (1.1)$$

where V_{AB} stands for the combined after merger value of the firm, V_A for the Market Value of firm A, V_B for firm B, P for the premium paid to shareholders of firm B and E for the transaction expenses. Reordering formula 1.2 gives a clear insight in the importance of synergy advantages.

$$\textit{Net Transaction Value}\ (\text{NTV}) = \text{synergy effect} - (\text{P} + \text{E}) \qquad (1.2)$$

The formula states very clearly that without synergy advantages an acquirer cannot afford to pay a premium or be able to cover for the expenses if there is no allowance for a negative net transaction value. The actual realisation of synergy is a heavily discussed subject in business research. In order to measure synergy in a merger transaction Haughan (1975) covered 59 industrial mergers in the period 1951 – 1968. As other factors may influence the results and the risk profile, Haughan inserted a control group of firms comparable to the merging firms. He did not find a difference in the underlying distribution which generates asset returns and variance (i.e. risk) between the merging firms and the control group, thereby indicating a lack of evidence for synergism.

Operating synergy

Improvement in accounting variables like revenues and earnings before interest and tax indicate operating synergy. This category can be separated in revenue creating and cost reducing synergy advantages. Clement and Greenspan (1998) define it as revenue-enhancing opportunities; "*a newly created or strengthened product or service that is formulated by the fusion of two distinct attributes of the merger partners and which generates immediate and/or long term revenue growth*". Revenue-creating synergy can be much more difficult to achieve than cost reducing synergy. It is by far easier to achieve cost reduction by excluding double overhead facilities and by aggregating production processes. The most certain revenue creating benefits are difficult to quantify and project in valuing merger synergy advantages. Hence, merging firms tend to see cost-reducing synergies as the main source of operating synergy.

Market power

Integrating mergers create the opportunity to benefit from scale factors. Successful acquirers do benefit by earning higher profits in a competitive industry. Firms can benefit from industry concentration through pricing power. Kim and Singal (1993) found evidence that M&A increased market power and price leading advantages for acquiring airplane firms although their sample is small (14 airline mergers). Economies of scale and lower total overhead costs can reduce the cost price. The combined firm will earn higher margins if customer prices are stable or gain market share. Trahan (1993) found a positive relation between firm size and acquisition performance by using a logit regression model. In this perspective, lawmakers influence horizontal growth through mergers by law. Mergers and acquisitions must be approved by the authorities responsible, which can oppose restraints. Due to restrictions on the market power, firms may not be allowed to increase their market share in a certain industry. The conditions can have a negative influence on the transactions potential synergy.

Cost reduction

Cost reduction can be realized by several measures. Manufacturing firms can face high costs per unit when operating at low production levels. If the level of production increases, fixed costs are spread over more units so that the cost per unit decreases (fixed cost reduction). The unit cost price can also decrease through better purchasing agreements by suppliers (variable cost reduction). The quantity of supplies needed increases when the firms combine their activities, especially in horizontal mergers. New attractive arrangements could be reached when the merged firm continues working with central suppliers. Other cost reduction measures are increased specialization of personnel, decrease in management efforts of the two merged firms, more efficient use of capital equipment, marketing expenditure and real estate.

Research and development

Synergy realization depends on the way a combined firm can exploit resources more effectively than the separate firms individually. In certain industries the role of R&D activities in a firm plays a crucial role in ensuring the firm can stay ahead of its competitors. R&D and patents may provide the ability to develop new products, thereby enhancing profit opportunities and market share. The importance of certain assets can explain the bidding contests of competitors for the controlling share of firms with possession of these assets. To combine the patent of a unique product or service could be better exploited with the market power or service package of another firm. Merged firms can benefit from each other's knowledge or by cutting R&D costs. The likelihood that a target firm is acquired increases by the firms R&D activity, as Lehto and Lehtoranta (2004) concluded. They based their conclusion, which holds good for all included industries, on a study in Finland. On the other hand, Cassiman et. al. (2005) studied 31 M&A deals and found that M&A between complementary firms or technologies result in a better R&D performance after the M&A. However, when merged firms are technologically substitutive, the R&D performance decreased after the M&A. Therefore, active R&D increases the possibility for a firm to be acquired and M&As of firms that strongly participate in R&D have a high likelihood to be more profitable. In this study, the effects of the relative R&D expenditure of acquiring as well as target firms are related to the returns and operational performance improvement.

Explanatory variables: operating performance

Market power and sales growth (explanatory variable: sales growth) are expected to have a positive influence on the profitability of M&A. The industry growth rate is a proxy for the attractiveness of the target segment and therefore included as an explanatory variable as well. Cost reduction is an often used synergy argument for M&A. Cost reduction, if implemented well can result in an improvement of the merged firm and increase the EBIT as well. The pre-merger profitability (explanatory variable: target and acquirer profitability) could be a positive indicator for performance improvement post-merger as well. The target's Operating Cash Flow is included because cash flow is a better proxy for value creation, Koller et al (2005). As explained in the previous paragraph, positive influence of R&D expenditure is included as well (R&D/Sales).

Financial synergy

Financial synergy refers to a possible change in cost of capital of the combined firm after a merger. The synergy generating the effect of the combination should, in corporate finance theory, result in a decrease of the merged company's cost of capital. A positive impact on the cost of capital can be reached if the cash flow of the two firms are not perfectly positively correlated in which case the volatility of the combined firm lower after the merger. The suppliers of capital relate low volatility of cash flow to less risk bearing investments. A lower probability of a downward cash flow stream

decreases the chance that a firm cannot meet its obligation to (current) debtors. Financial synergy is expected to reduce the cost of capital in mergers where cash flows of the target and acquirer are not highly correlated. Huyghebaert and Luypaert (2010) did not find evidence for financial synergy in their study of Belgian M&As and the growth of firms after the transaction. In this study, a variable for capital costs related to assets is included to measure the relative capital costs prior and after the M&As.

Leverage

The ability to acquire relatively more debt is an often debated subject. Lau et al (2008) found that the combined firm often held a higher leverage position post-merger. Highly leveraged firms are said to earn a relatively higher return on equity and are therefore beneficial to shareholders. A high debt position also provides a tax advantage over interest costs. According to Travlos (1987), acquirers who use equity financing earn lower abnormal returns. Maloney, McCormick and Mitchell (1993) found similar results. On the contrary, the financial risk for highly leveraged firms is higher and the interest costs are higher. The operating performance and operating cash flow is therefore a better indicator for synergy, Koller et al (2005).

Free cash flow

Target firms with large free cash flows and borrowing capacity are vulnerable for takeovers, Jensen (1988). When good investment opportunities are not available to these firms, managers might use that cash to acquire other firms instead of paying out to the stockholders. According to Jensen, these acquisitions will result in poor investments or even '*value destroying mergers*'. Especially, conglomerate mergers undertaken by these firms will have bad results. Hanson (1992) found evidence that acquirers with high cash flows undertake low performing acquisitions. Hay and Lui (1998), on the contrary, found a positive significant relation between free cash flow and M&A performance using a sample of 110 UK firms. Dominant firms especially benefit from free cash flow in acquisitions.

Explanatory variables: financial synergies

Leverage is included for the acquirer and target to study the firm debt characteristics and M&A profitability. The acquirers' free cash available is included to test the hypotheses that firms that have too much cash available perform bad acquisitions. Devos et al (2009) found no influence by the liquidity of the acquiring firm on synergy realisation. The market to book value of the target has also no significant influence on synergy creation through M&A.

Explanatory variables: M&A characteristics

Devos et al (2009) and Asquith, Bruner and Mullins (1983) found that the relative size of the target compared to the acquirer has a positive impact on the financial and operating synergies realized. Diversifying mergers show significantly higher financial synergies and focussing mergers show higher operational synergies. Sorensen (2000) measured the influence of the corporate governance and ownership attributes of target firms. His research contained takeovers in Australia during 1991 and 2000. He found that government influences on corporate governance had a minimal effect on the likelihood for success in M&As. This accounts for more regulated countries and industries like the Utilities industry. In this thesis the profitability by acquirers and operating performance improvements after M&As are segmented by region to measure potential differences in results.

2.2 Empirical studies

There are many studies published about the valuation effects of a merger or acquisition. Most studies include only relatively short periods before and after the publicly made offer. Several studies also include long-term effects of a transaction. Shareholders of target firms generally earn positive returns from an acquisition transaction. Control premiums are the most likely factors to influence those positive returns, according to research by Asquith (1983), Asquith and Kim (1982) and Dennis and McConnell (1986). When tracking cumulative excess returns, the market seems to incorporate the information within a short number of days before the announcement. Malatesta (1983) concluded that acquiring firms generally earn no or negative returns out of acquisition transactions. The reaction of the acquiring firms' shareholders is neutral or negative, which reflects the scepticism that the firm can offset the premium paid by synergy benefits. If the acquirer pays a high premium, it is unlikely those costs are recovered by future benefits/cash flow. Early research by Halpern (1973), Mandelker (1974) and Franks, Broyles and Hecht (1977) found an above average return for target firms. Elgers and Clark (1980) used 337 transactions during 1957 – 1975 based on returns of 24 months pre- and post-transaction date to indicate that buyers perform a moderate gain over substantial gain of selling stockholders. They remarkably defend the case of conglomerate mergers because of possible synergy advantages due to product and market extension or financial debt capacity rationale for conglomerate merges.

Historical Transaction Profitability

As suggested by Martynova and Renneboog (2008) and Netter, and Stegemoller and Wintoki (2010), M&As are historically clustered and research showed that the transactions appear in merger waves, which are further explained in chapter 4. Golbe and White (1993) found that a series of sign curves provide insights and strong explanations for the structure of takeover waves. Empirical research is done over the short and the long term. For a complete review, the author covers both long- and short-term results for the recent M&A waves of 1981-1989 and 1993-2001 in this paragraph. Both

waves are included in the research panel of this study so the earlier results are relevant. Short-term studies normally base their insight on Cumulative Abnormal Return over a period varying from a couple of days before and after the M&A announcement through 40 days before and after the announcement. Long-term studies use periods varying over 12 to 36 months and do not measure the period prior the announcement. Table 2.1 gives an overview of the previous literature conclusions.

Short term return analysis

On the short term, Morck et al. (1988) analysed 57 transactions during 1980-87 and found a positive return of 2.88% for bidding firms during one day prior and two days after the announcement for non-conglomerate transactions. For the same time window of three days using 115 transactions, a loss of -4,09% is reported. These results do not provide a positive image for conglomerate mergers in the short run for acquiring firms' shareholders. Franks et al (1991) studied 399 transactions during 1975-84 for the five day prior to the announcement and after the announcement and reports a strong return (+28.04%) for target firms and a modest loss (-1.02%) for bidding firms. They used different forms of M&A transactions. Cash paid transactions did result in a positive 10-day return for bidding firms (+0.83%). For stock paid transactions the returns reported are lower (-3.15%). For hostile takeovers the target firm's returns reported are much higher related to friendly takeovers (+39.49% vs. +24.57%) as expected. These results are supported by Servaes (1991) using a one-day (announcement until the closing time that day) result for 307 friendly takeovers over 77 hostile takeovers during 1972-87 reporting a positive one day return of +21.89% and +31.77% respectively. The bidding firms incurred a one-day loss of -0.16% (friendly) and -4.71% (hostile). Studies of Kaplan and Weisbach (1992) and Healy et al (1992) found similar results on the short run for this period indicating substantial positive results for target firms and modest negative results for bidding firms. Interesting results are provided by Smith and Kim (1994) for 177 transactions during 1980-86. They used abnormal returns for 5 days prior and post announcement and 60 days until 6 days prior and post the announcement (-60, -6 and 6, 60). For their sample target firms shareholders gained a positive return (7.98%) during the period 60 and 6 days prior to the event and 30.19% during the 10 days around announcement and lost 0.95% in the 6 until 60 days after the announcement period. Shareholders of bidding firms gained a positive return of 2.76% in the 54 day period after the announcement. Higson and Elliott (1998) studied 830 UK transactions during 1975-90 on the first day (0, close) and 20 day after announcement. They report a strong gain on the first day (+37.5%) and the 20 day period (+31.5%) for target firms and a small gain for bidding firm. Studies used a longer sample period overcoming M&A waves are Schwert (1996) and Maquiera et al. (1998) for a US sample during the periods 1975-91 and 1977-96 respectively. Both studies report a positive result for targets and a small positive return for acquirers.

Using 182 domestic M&A deals, Campa and Hernando (2004) found only a small positive return during the one day prior and post the announcement for target firm shareholders (+3.86) and bidding firms shareholders (+0.61). Holmen and Knopf (2004) found similar results for Sweden. In the US transactions Mulherin and Boone (2000) found a positive result for target firms and a small loss for bidding firms. The historical results provide strong evidence that target firms gain from M&A announcements in the short run. The results are less powerful for bidding firms and depend on the target firms activities (horizontal or vertical) varying over a small loss or gain. On average the results of bidding firms do not vary significantly from zero. The terms of payment seems to be relevant for bidding firms. Cash payments result more often in a positive result whereas equity financed deals results in a negative return. Huang and Walking (1987) and Sullivan et al. (1994) reported similar results for shareholders of target firms where a cash transaction results in a higher abnormal return. For target firms these results could be anticipated as there is no market risk in a cash transaction. For bidding firms an equity financed transaction adds more risk than if excess cash is used.

Bradley et al (1988) assumed a portfolio of shares equally divided over the target and bidding firm one week before the M&A announcement. Within this portfolio the shares (target and bidder) are sold one week after the announcement. Using transactions over the period 1963-84, the portfolio gained an abnormal return of 7-8%. The combined abnormal return on the short run is positive in all studies included, the last column of table 2.1 panel A. The market expects M&As to have a positive effect on the overall market value. Target firms' shareholders earn a positive abnormal return and bidding firms on average earn a modest positive return. The combined positive return benefits the target firms much more than the acquiring firm shareholders.

Long term return analysis

Long term effects of a certain event are hard to study, because it is hard to measure the isolated effects of one event over a longer time frame. Performance and valuation effects due to acquisition strategies are hard to observe directly, because benefits may also be granted over a very long time period. Moreover, performance and valuation effects might just as well be caused by macro-economic trends or events. The results of studies on long-term effects strongly depend on the reference or benchmark return used. A couple examples of the benchmark estimation model are the Market Model, CAPM and the Market Adjusted Model. an event study is performed based on the literature available.

For a sample of 399 transactions Franks et al. (1999) found a positive average monthly return of +0.05%. They used an eight-factor benchmark model and divided their results in different merger types. Hostile takeovers (+1.24%) outperform friendly takeovers (+0.78%) and a higher non-significant abnormal return is found for cash payment instead of stock. Loughran and Vijh (1997) differed takeovers and mergers and studied a sample of 100 takeovers and 434 mergers. They formed

a benchmark portfolio corrected for book-to-market value and size. Remarkably, takeovers (+56.2%) outperform mergers (+7.1%) for the sample period of 1970-89 and as expected cash paid transactions gained more than stock payment. If the target firm in a merger is publicly traded, Rau and Vermaelen (1998) found a high abnormal return. Negative returns are found for Limmack (1991) and Datta et al. (2001) using the market model as benchmark for a period of 24 or 36 months after the event. Overall, table 2.1 panel B indicates a small positive return for acquirers on the long run. These findings support the overall positive combined abnormal return on the short run, table 2.1 panel A.

Table 2.1 Summary of studies regarding historical transaction profitability

Study	Region	Period (years)	Sample size	Event Window (days)	CAARs Target (%)	CAARs Acquirer (%)	CAARs Combined (%)
Panel A: Short-term studies							
Morck et al. (1988)	US	1975-87	326	(-2 , +1)		- 0.7	
		1975-79	34			+ 1,54	
		1980-87	57			+ 2,88	
		1975-79	120			+ 0.23	
		1980-87	115			- 4.09 [2]	
Franks et al. (1991)	US	1975-84	399	(-5 , + 5)	+ 28.04 [1]	- 1.02 [3]	+ 3.90 [1]
Servaes (1991)	US	1972-87	577	(0 , close)	+ 21.89 [1]	- 0.16	+ 3.29 [1]
Kaplan and Weischbach (1992)	US	1971-82	271	(-5 , +5)	+ 26.90 [1]	- 1.49 [1]	+ 3.74 [1]
Healy et al. (1992)	US	1979-84	50	(-5 ,close)	+ 45.60 [1]	- 2.20	+ 9.10 [1]
Smith and Kim (1994)	US	1980-86	177	(-5 , +5)	+ 30.19 [2]	+ 0.50	+ 8.88 [2]
				(-60 , -6)	+ 7.98 [2]	+ 0.67	+ 3.26 [2]
				(+6 , +60)	- 2.95 [2]	+ 2.76 [2]	+ 1.90 [3]
Higson and Elliott (1998)	UK	1975-90	830	(0 , close)	+ 37.50 [1]	+ 0.43	
				(0 , 20)	+ 31.50 [1]	+ 0.20	
Schwert (1996)	US	1975-91	959	(-42 , -1)	+ 11.90 [2]	+ 1.40	
				(0 , close)	+ 4.90 [2]	- 3.40	
Maquiera et al. (1998)	US	1977-96	47 U	(-40,+ 40)	+ 41.65 [1]	- 4.79 [3]	+ 3.28
			55 R		+ 38.08 [1]	+ 6.14 [2]	+ 8.58 [1]
Mulherin and Boone (2000)	US	1990-99	281	(-1 , +1)	+21.20 [1]	- 0.37	+ 3.56 [1]
Campa and Hernando (2004)	EU	1998-00	182	(-1 , +1)	+3.86 [2]	+ 0.61	+ 1.33 [2]
Holmen and Knopf (2004)	Sweden	1985-95	121	(-5 , +5)	+ 16.99 [1]	+ 0.32	+ 4.12 [1]

Table 2.1 (continued) Summary of studies regarding historical transaction profitability

Study	Region	Period (years)	Sample size	Event Window (months)	CAARs Acquirer (%)
Panel B: Long-term studies					
Franks et al. (1991)	US	1975-84	399	(0 , +36)	+ 0.05
Loughran and Vijh (1997)	US	1970-89	100 TO	(0 , +60)	+ 56.20 [2]
			434 M		+ 7.10
Rau and Vermaelen (1998)	US	1980-91	316 TO	(0 , +36)	+ 8.85
			2823 M		- 4.04 [1]
Limmack (1991)	UK	1977-86	448	(0 , +24)	-4.67 [2]
Datta et al. (2001)	US	1993-98	437 M	(0 , +36)	- 10.67 [1]
			48 TO		+ 6.20

This table presents the public stock performance of target and acquiring firms over the short and long term.

The following notations are used CAAR: cumulative average abnormal return, U: unrelated mergers, R: related mergers, M: mergers and TO: takeovers.

Significance level: [1,2,3] statistical significance at 1%, 5% and 10% respectively.

Volatility

Most event studies use abnormal return to measure the valuation impact of M&As. The abnormal return is adjusted for market and industry effects. Volatility in stock returns around M&As is often not measured, as it is already incorporated in the abnormal return. Existing literature has taught us a lot about stock returns surrounding M&A transactions, but very little about long-run changes in volatility and risk. A clearly abnormal return is an objective measure for overall M&A evaluation, but in this paper volatility of asset returns is also included. According to Mitchell and Mulherin (1996), M&As are a response to economic turbulence in the industry and the poor performance of acquirers is due to industry developments. Bharath and Wu (2005) found that there is a run up in volatility prior to the M&A and continues to increase one year after the merger. After that period, the volatility of the stock is declining slowly which is consistent with the risk of post-merger integration of the target firm.

Operating performance

Synergy in M&A is driven by an improvement in the operating performance of the combined firm. To study improvements in operating performance, normally, a set of accounting measures is used to study the pre- and post-merger performance. In most studies, operating performance is measured based on growth, return on assets, profit margin and cash flow expectations. For return on assets and equity Mueller (1980) studied 247 transactions during 1962-72 for a period of three years after the merger and found a decline in returns after the merger. Further, a decline in the growth rate of assets and sales

was found for this sample. Similar results are found by Peer (1980) for a small Dutch sample and Ryden and Edberg (1980) for a Swedish sample during the same period. However, they found increased growth in sales and assets. On the contrary, Cable et al. (1980) found an increase in returns for a sample of 134 German transactions during almost the same period. For operating performance measured in profit or net income the results are diverse as well. Gugler et al. (2003) found an increase in profitability to assets but a decline in sales to assets. These results indicate a relative decrease in the costs of sales and overheads of the combined firm. In contrast, Odgiri and Hase (1989) found a decrease in gross profit over assets for Japanese transactions during 1980-87 for horizontal mergers. An increase in expected cash flow in a relative short term of 100 days after the merger occurs, which is remarkable since the premium is often financed by free cash flow, Seth (1990).

Concluding statements must include the fact that long-term performance studies suffer from the same problems as long-term shareholder wealth studies. Since a long time frame is included, it is hard to construct a focus non-biased data set and results might change over macro-economic developments and cross country effects. Another possible bias is changing accounting standards during the time after a merger had occurred.

Table 2.2 Summary of studies regarding operating performance

Study	Region	Period (years)	Sample size	Event Window (months)	Performance Measures	Results
Mueller (1980)	US	1962-72	247 M	36	ROE, ROA, ROS	$\downarrow^{2}$,↓,↓
Peer (1980)	NL	1962–73	35	36	ROS, ROE, ROS	↓,↓,↓
Ryden and Adberg (1980)	Sweden	1962–76	25	36	ROE, ROA, ROS	$\downarrow^{2}$,↓,↓
					Sales, asset growth	↑
Cable et al. (1980)	Germany	1964–74	134 M	60	ROA, ROE, ROS	↑
					Sales, asset growth	±
Gugler et al. (2003)	WORLD	1981–98	1250	60	ROA, ROS	$\uparrow^{1}$, $\downarrow^{2}$
Odgiri and Hase (1989)	Japan	1980–87	33 H	36	Gross profit	$\downarrow^{1}$
Seth (1990)	US	1962-79	102 TO	3	Expected cash flow	$\uparrow^{1}$

This table presents the operating performance on the long term.

The following notations are used ROE: Return on Equity, ROA: Return on Assets, ROS: return on Sales

M: mergers, TO: takeover and H: Horizontal transaction.

Significance level: ^{1,2,3} statistical significance at 1%, 5% and 10% respectively

CHAPTER 3 Methodology

In this chapter, the methodology used for testing post-merger shareholder wealth and synergy realization is explained. A number of hypotheses will be tested in this research to arrive at conclusions of synergy in M&A transactions within the markets included through a selected sample of events. The hypotheses are listed below before the methodology is further explained.

3.1 Hypotheses

I. *The combined abnormal return of M&As are expected to be positive on the short run.*
II. *Shareholders of the acquiring firms are not expected to earn an abnormal return.*
III. *The abnormal return of M&A activity in the Anglo Saxon areas (The UK and the North American region) are expected to be higher than in Europe.*
IV. *The abnormal return of a related acquisition is expected to be higher than the abnormal return of unrelated acquisitions.*
V. *The volatility in asset returns is expected to increase before the announcement and one year after the announcement.*
VI. *The operating performance of the post-merger combined firm compared with an industry adjusted prediction for the individual firms is the same.*
VII. *Financial synergies: acquiring firms are able to lower financial expenses post-merger.*

In order to test hypothesis VI and VII, the variables Sales, Earnings Before Interest and Taxation, Operating Profit margin, Asset Turnover (Sales/Assets), Return on Assets and relative Capital Expenditure (Capital Expenditure/Assets) are used. The model used is further explained in paragraph 3.4.

Regression cross sectional analysis

In order to test the effects of firm and deal characteristics, paragraph 3.5 explains the methodology of the cross sectional regression analysis for the explanatory variables summarized in table 3.1. The explanatory variables used and their hypothesized relation with the dependent variables for M&A profitability are given. For the dependent variables in the analysis operating performance and shareholder value are included. For the operating performance the growth rate for the variables Earnings before Interest and Tax (EBIT) and Return on Assets (ROA) are used for one, three and five years after the M&A announcement. EBIT provides an unbiased indicator for the operating results and ROA for the overall return of the combined firm. For the short run there are not sufficient data available. For shareholders value CAR is used as a measure for the short run (0, 30) and the long run (1, 3 and 5 years after M&A announcement).

Table 3.1 Variables used for the cross sectional analysis

Variable	Description	Hypotisized sign
Panel A: Dependent variables		
Growth EBIT	The growth rate in EBIT of the acquirer 1, 3 and 5 years after the M&A announcement related to the combined EBIT one year prior to the M&A announcement.	
ROA	The growth rate in ROA of the acquirer 1, 3 and 5 years after the M&A announcement related to the combined ROA one year prior to the M&A announcement.	
CAR	Cumulative Abnormal Return in the 1, 3 and 5 years period after the M&A announcement.	
Panel B: Explanatory variables		
M&A characteristics		
Industry Utilities	A dummy for the utilities industry	-
Cross border	A dummy for a local or cross border M&A, where local is 0 and cross border 1.	+/-
Related / unrelated	A dummy for related or unrelated M&A's, where related is 0 and unrelated 1.	-
Relative size	The relative size of the target vs. the acquirer in terms of assets.	+/-
Operational variables		
R&D / Sales	R&D expenditure to sales for the target and acquirer one year prior the M&A announcement.	+
Operating Cash Flow	Operating Cash Flow to sales for the target one year prior the M&A announcement.	+
Profitability target	The operational margin of the target company one year prior the M&A announcement.	+
Profitability acquirer	The operational margin of the acquiring company one year prior the M&A announcement.	+
Sales growth target	The growth rate of sales for the target two years prior the M&A announcement.	+
Industry growth target	The industry groth rate in terms of sales two years prior to the M&A announcement.	+
Financial variables		
Leverage acquirer	The leverage of the acquirer stated as the debt to equity ratio one year prior the M&A announcement.	-
Leverage target	The leverage of the target stated as the debt to equity ratio one year prior the M&A announcement.	-
Cash acquirers	Cash and cash equivalents related to total assets for the acquirer one year prior to the M&A announcement.	-
Market to Book ratio target	Market to book value of the target company prior the M&A announcement.	+/-

This table presents the definition of the explanatory accounting variables and their hypothesized relation with the dependent variable used to measure the M&A profitability.

Unrelated transactions are expected to benefit less from M&A than related M&As, Morck et al. (1988) and Loughran and Vijh (1997). Highly leveraged acquirers and targets are not expected to have a positive influence on profitability. High costs for capital or financial stress factors are not expected to benefit future earnings. In the case of a high leveraged acquirer the capital used to finance goodwill or the premium paid for the transaction further increases the cost of capital. This is basically the same for a high leveraged target. Firms with substantial R&D activity are based on past literature expected to exploit synergy advantages. Targets that realized high operational cash flow are expected to increase profitability of the combined firm as well as its sales growth and industry growth rate. In accordance with existing literature on this subject, an acquirer who holds a large amount of free cash is not expected to make profitable acquisitions.

3.2 Methodology issues

To estimate synergy in merger transactions, two overall methods are used: the Cumulative Abnormal Return (CAR) and the observed improvement in accounting variables. For the return study the CAR is used a measure for synergy and is valued in market expectations of the combined firm and in the operating performance study direct measures are tested.

Weighted combined pre-merger calculation

For all evaluation measures there are two parties involved. For determining cumulative abnormal returns and accounting ratios the relative size of the combined acquiring and target firm must be calculated for evaluation. To deflate the variables for the target and acquirer Healy et al (1992) and Gosh (2001) use the market value (MV) of the equity traded for both firms prior to the transaction. This market based deflator is used instead of accounting based variables such as sales or assets because it simplifies a comparison over different countries and industries. A market based method is also not biased by firms´ accounting policies or regulation issues. The formula used here is,

$$WACPM = \frac{MV^{T}_{(t-1)i} PI^{T}_{(t-1)i} + MV^{A}_{(t-1)i} PI^{A}_{(t-1)i}}{MV^{T}_{(t-1)i} + MV^{A}_{(t-1)i}} \qquad (3.1)$$

where *WACPM* is the weighted average combined performance measure, $MV^{T}_{(t-1)i}$ is the market value of the target one day prior to the effective merger date of event *i*, $MV^{A}_{(t-1)i}$ is the market value of the acquirer one day prior to the effective merger date of event *i*, $PI^{T}_{(t-1)i}$ is the performance indicator for the target and $PI^{A}_{(t-1)i}$ is the performance indicator for the acquirer. Market value is determined one day prior to the announcement of the transaction. All market values are converted to the dollar value.

Note that this calculation can be used for nominal variables (for example operating profit and cash flow) as well as for relative variables (for example asset returns - CAR - and sales/assets).

Event date

In the event study, all included transactions are effectuated. In the Efficient Market Hypothesis (EMH) theory, according to the strong hypotheses, all information available to investors is directly transmitted into asset prices. Following the strong hypotheses the event date used in this study is the announced date of the M&As. Most previous studies follow this approach using the announced date.

3.3 Investors performance: an event study

In this thesis an event study is used to test for investors' performance,. In the following paragraph the methodology used for an event study for abnormal returns is explained.

Returns study

The methodology in this part explains the calculation of abnormal returns in an event study. The valuation effects assigned to this event are to be compared to the normal returns of the investigated assets. The risk adjusted normal returns is determined according to the market model, Singh and Montgomery (1987),

$$R_{it} = \alpha + \beta Rm + \varepsilon_{it} \qquad (3.2)$$

where R_{it} is the return of stock i, α en β are the market model parameters and ε_{it} is the disturbance term. The model controls market influence through the control variable *Rm*. This study used daily market and stock data. It is to be determined if monthly data should be chosen above daily data because monthly data are more constant over daily. This thesis uses daily data because precision is required as merger announcements influence daily prices and returns heavily. Moreover, daily data are less influenced by other disturbances not related to the event. Brown and Warner (1980) provide an extensive discussion on the use of monthly and daily data for research. Normal returns provide a benchmark for security performance related to the events included in this research. The evaluation window for the total research is one year prior and five years after the event. The parameters for the calculation of the normal returns estimated by the CAPM model using formula 3.2 are based on the estimation window of one year of daily data between two years and one year prior to the event. For this study abnormal returns are used to measure the difference between the benchmark and actual performance, expressed as follows:

$$AR_{it} = R_{it} - R_{it}^{*} \qquad (3.3)$$

Here AR_{it} is the abnormal return, R_{it} is actual realized return and R_{it}^{*} is normal return. Hence, the abnormal return can be rearranged by the following formula:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_m) \tag{3.4}$$

Here $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated parameters for stock *i*. According to the EMH theory, investors should be able of pricing future expected synergy advantages in the asset prices under consideration. Following the strong EMH, investors should price synergy advantages in the first day after the announcement is published. To incorporate these time effects, there are different time frames used to measure the AR. Moreover, the abnormal return is measured over a longer time frame after the announcement to measure if investors' expectations become reality. To measure the abnormal returns over a certain time frame, it is necessary to construct the cumulative abnormal returns following the formula:

$$car_{ikT} = \sum_{t=k}^{T} AR_{it} \tag{3.5}$$

In this formula car_{ikT} is the cumulative abnormal return for asset i for the time frame k,T. In order to measure the equally weighted portfolio of the samples cumulative returns:

$$CAR_{kT} = \frac{1}{N} \sum_{i=1}^{N} car_{ikT} \tag{3.6}$$

The CAR of the sample calculated using 3.6 is the simple average of the abnormal return during a certain timeframe.

Risk: volatility in asset returns

The investor's expectation of the future value of the firm is one part of the performance of assets. In this perspective the difference in risk before and after the merger should be included. There are different methods and variables to evaluate the change of risk in an event study. Some arguments are reasonable to regress the systematic risk of the firm using the market model (3.2). For this analysis we use the relative assets variance as a measure for risk,

$$RAR = \frac{\text{var}(r_i)}{\text{var}(Rm)} \tag{3.7}$$

where *RAR* is the relative asset risk calculated to measure the variance of asset r_i compared to the variance of the market index.

Performance

Till now we have calculated abnormal returns and risk adjustment before and after the event. Although the abnormal return is adjusted for risk, it is useful to combine assets return and risk as a measure for asset performance. Here, standardised return is the actual return compared to the standard deviation of the returns:

$$SR = \frac{r_{iKt}}{\sigma(r_{iKt})} \tag{3.8}$$

In this formula SR is the standardized return as performance indicator for the cumulative return of asset *I* for time frame K,t related to the standard deviation of asset *i* for time frame K,t.

3.4 Prediction-based method

The change in operating performance can be evaluated using the prediction-based method, Gugler et al. (2003). This method compares the predicted operating performance measure against the actual performance. Both measures use industry-adjusted data for comparison in order to exclude influences not related to the merger.

In order to conclude whether the operating performance has improved, the predicted performance is calculated separately for both firms involved in the M&A transaction. The predicted and actual performances of the combined company are compared. Industry benchmarks are used for the prediction of the future performance. To predict the operating performance the following formula is used:

$$OP_{t+n}^{COMB} = OP_{t-1}^{TAR} \frac{OP_{t+n}^{INDT}}{OP_{t-1}^{INDT}} + OP_{t-1}^{ACQ} \frac{OP_{t+n}^{INDA}}{OP_{t-1}^{INDA}} \tag{3.9}$$

Here OP^{COMB} is the predicted operating performance indicator of the combined firm after the merger has become effective, OP^{TAR} for the target company, OP^{ACQ} for the acquired firm and OP^{INDT} and

OP^{INDA} for the operating performance of the industry benchmark for the target and acquired firms respectively.

Predictions are made for different time frames until five years after the M&A announcement. For the prediction model the variables Sales, Earnings Before Interest and Taxation, Operating Profit margin, Asset Turnover, Return on Assets and relative Capital Expenditure are used. The relative difference between the actual and predicted values is compared. The mean and median of the differences in the variables are used to show a wide spread. In order to reduce the effects of extreme outcomes in the mean difference, the minimal difference is -75% and the maximal is +150%. In order to visualise the motive for this correction, Appendix B shows the graphs for the uncorrected mean and median and the corrected mean and median for the variable sales over time.

3.5 Regression analysis explanatory variables

In order to measure the effects of the explanatory variables introduced in paragraph 3.1 for the likelihood of takeover success, multiple regression is used,

$$y = \alpha + \beta_1 x \,\mathrm{var}1 + \beta_2 x \,\mathrm{var}2 + \ldots + \beta_x x \,\mathrm{var}X + \varepsilon_{it} \qquad (3.10)$$

Here *y* stands for the independent variables in the three year post-merger change in EBIT, ROA or CAR (0,900). According the method used by Huyghebaert and Luypaert (2010), the dependent variable is a dummy variable for the increased EBIT, ROA or a positive CAR[1]. The explanatory variables 1 until X are explained in paragraph 3.1.

[1] Dummy variable: the variable is 0 if the EBIT and ROA is decreased or the CAR is negative and one otherwise.

CHAPTER 4 Regions, Industries, Transactions and Performance indicators

For this study a sample of transactions is selected and based on a variation of segments for comparison of the samples for test results. In the sample there are different regions, sectors, merger periods and different types of merger strategies. In order to find a qualified sample, some requirements are opposed for the included transactions in the sample.

In recent history, M&A transactions were performed in a number of waves. Martynova and Renneboog (2008) distinguished six M&A waves in their literature review: the early 1890s-1903, 1910-1929, 1950-1973, 1981-1989, 1993-2001 and a new wave starting in 2003 after the IT crash and the 9/11 act of terrorism. This concluded that every wave is different from it predecessors, but the different waves had some common characteristics. The number of M&A deals seems to grow during the recent period from 2009 after the financial turmoil in the macro economy and stock market. Equity in times of booming financial markets is relatively overvalued and is therefore a cheap way to finance real assets purchases through M&A, Myers and Majluf (1984). Support and an extension of their results are given by Shleifer and Vishny (2003) who add that M&A activity during bull markets is caused by a short-term overvaluation of stocks. Figure 4.1 shows the number of M&As by North American and European acquirers during 1980 and 2010 (the first three quarters of 2010 are included) including transactions from 500 million dollar in deal value. Figure 4.2 presents the value of those transactions. The merger waves mentioned by Martynova and Renneboog can clearly be found in the figures.

In this paper M&A activities during 1981 and 1999 for North America, Europe and the UK area are included. Since 1999 was the last year the most recent M&As are not included. This period was chosen because the operating performance study requires enough post-merger data. At first, 10 years of post-merger data seemed necessary for evaluation. During the research the post-merger evaluation frame to was reduced to five years.

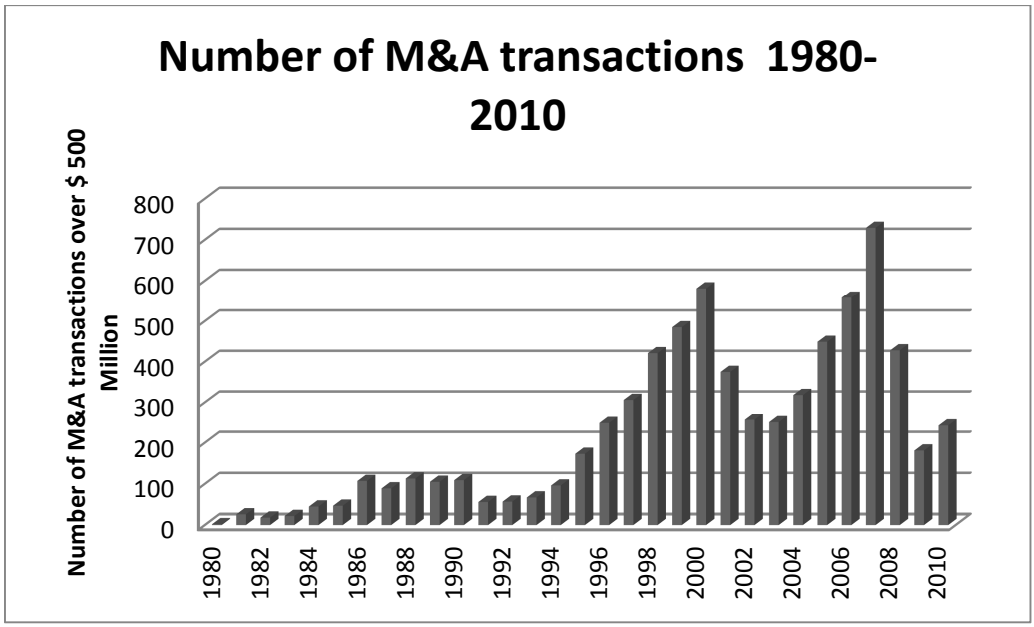

Figure 4.1 Number of transactions by North American and European acquirers 1980-2010
Source: Thomson Mergerstat

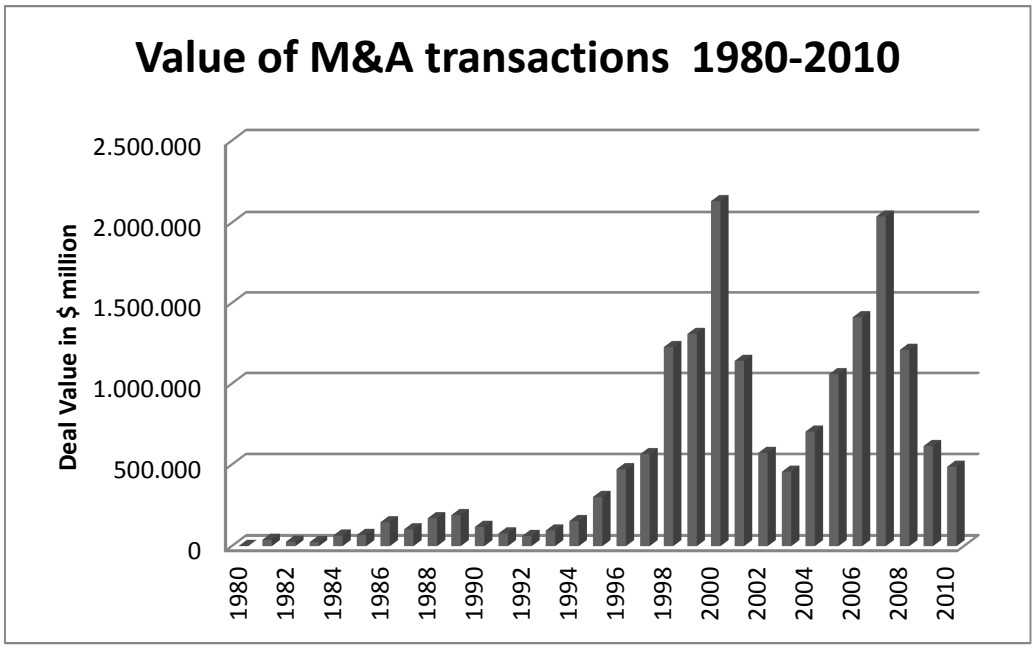

Figure 4.2 Value of transactions by North American and European acquirers 1980 - 2010
Source: Thomson Mergerstat

4.1 Sample selection

In the selected period, 528.879 transactions of acquirers was used for North America, Europe and UK and 500.117 meeting the criteria that the targets were based in the same regions. The Thomson and Datastream database were used to acquire the M&A deals, firm characteristics and financial statement data. The requirement that both the acquirer and target were publicly traded holds good for 57.894 transactions. On the other hand, 6.064 transactions are within the timeframe of this research and equity is fully transferred. The deal value was above $ 500 million for 1.067 M&As and 479 were within the selected industries for research. A number of transactions were omitted because SEDOL codes were unavailable or the target was acquired by a parent with the same SEDOL code. A qualified sample of 216 events[2] is useful. In appendix A, the announcement dates, firms and industries of the selected transactions are reported.

The regions are selected for making a comparison in results based on the regulations in the mergers and acquisitions. Furthermore, the time frame is selected to cover two mergers waves during 1981-1989 and 1993-2001 as mentioned in the introduction and described by Martynova and Renneboog (2008). Unfortunately, there were no transactions during 1981 and 1984 that met the requirements needed to be included in the sample. Therefore, three periods are distinguished namely 1985-1989, 1990-1992 and 1993-1999. The included transactions are announced during the time frame of 1980 and 1999. There are different selected industries covered in the sample. The selected industries are Manufacturing, Utilities and Other services. The selected industries are conventional industries and therefore expected not to be biased with industry influences, like the IT or banking industry lately. Within the selected transactions there are related and unrelated transactions based on the sector of the firm. Table 4.1 summarizes the transactions included in the sample.

The results of the test included in this thesis will be evaluated within different aspects of the sample segments. The results will be reported for the different regions for the target company, related vs. unrelated transactions, industries for the acquirer and the three merger periods.

[2] Requirements of the included transactions in the sample:

I. SEDOL codes are available for the target and the acquirer.
II. SEDOL codes are not the same for parent firms within the target and the acquirer, because these transactions are within the parent firm though not suitable for this research.
III. Both the target and acquirer are publicly traded.
IV. The value of the transaction is at least 500 million dollar in deal value.
V. The number of shares acquired in the transaction is 100%.
VI. Data for industry adjusted measures of operating performance are available.

Table 4.1 Summary of transactions

	Shareholder profitability		Operating Performance	
Panel A: Region	Acquirer	Target	Acquirer	Target
North America	154	184	91	107
UK	39	24	28	22
Europe	23	8	16	6
Panel B: Period				
1981 - 1989	14		9	
1990 - 1992	9		7	
1993 - 1999	193		119	
Panel C: Related / Unrelated				
Related	153		97	
Unrelated	63		38	
Panel D: Industries				
Utilities	57		37	
Manufacturing	120		75	
Other Services	39		23	
Panel E: deal characterastics				
	MEAN	MEDIAN	MIN	MAX
Equity Value Target (mill. $)	3,107.5	1,319.9	73.0	89,165.6
Transaction Value (mill. $)	3,384.2	1,543.2	516.1	89,167.7

This table presents the M&A sample and deal characteristics. The deal characteristics are reported in millions.

4.2 Operating Performance measures

The operating performance measurements included in the tests as described in the methodology part are briefly summarized here. Because not all the firms involved in the 216 M&A transactions reported sufficient data for their operational performance, only 135 M&A transactions are included in the operational performance part of this study. Table 4.1 summarises the sample for the analysis of Operating Performance as well. Panel E only reports the deal characteristics of the sample including 216 deals. Different measures for operating performance are included for analysis. Besides accounting data such as earnings, sales and profits, operating cash flow is also used as a variable for operating performance. Earnings are influenced by accounting policies chosen by firms or changing reporting standard regulations which are likely to bias the test results. Besides the bias influence from accounting earnings operating, cash flow is a better measure for firm valuation models. Among others, the use of operating cash flow for analysing takeovers is proved to be optimal by Barber and Lyon

(1996). Table 4.2 presents the statistics for the acquiring and target firms and table 4.3 provides the statistics for explanatory variables used for the cross sectional regression as described in paragraph 3.1.

The firms' characteristics reveal that the acquirers are larger than the targets. The average total assets, sales and operating earnings of the acquiring firms are almost four times the average of the target firms. The assets and sales of the acquirers are spread from minimal 17 and 20 million to 84.679 and 42.895 respectively. For the targets the spread for assets and sales is less 60 and million to 12.636 and 14.332 million. The mean ROA of acquirers is slightly higher (8,2%) than the targets (6,0%). The mean leverage of the acquirers is higher as well (D/E 112% vs. 76%). For the regression variables the dependent variables' mean three year EBIT and ROA growth rates are negative (-186% and -53%). The median is less negative which implicates that the mean is influenced by a number of events. The mean three year CAR is 10,9% negative and lies more near the median. The explanatory variable relative target firm size is 25.9% in terms of assets on average. The mean R&D expenses are 5.1% of sales. The bidding firms show an average return on assets which is higher (8.17%) than the target firms (6.04%), which is in line with operating performance, 12.16% and 8.85% respectively. Sales growth of the target firms and their industry growth rates are 28% and 10% respectively. Regarding the financial variables, the average leverage of target firms (69.7%) is larger than the bidding firms (49.7%). The market to book ratio of the targets before the M&A announcement is 2.59. Again the average is much higher than the median (1.58) indicating that the average is largely influenced by a number of target firms.

Table 4.2 Firm Characteristics at M&A announcement statistics

	MEAN	MEDIAN	MIN	MAX
Panel A: Acquirers				
Total Assets (mill. $)	8,464.9	4,746.9	17.1	84,679.5
Sales (mill. $)	8,208.5	4,752.2	20.1	42,895.0
Return on Assets (%)	8.2	7.9	-60.6	28.7
EBIT (mill. $)	881.4	508.7	-497.8	9,171.0
Debt to Equity (%)	112.6	85.3	-810.1	1,218.5
Panel B: Targets				
Total Assets (mill. $)	1,858.7	1,075.1	60.2	12,636.7
Sales (mill. $)	1,698.0	935.3	10.9	14,332.0
Return on Assets (%)	6.0	6.6	-52.9	23.3
EBIT (mill. $)	150.9	73.1	-749.4	2,443.4
Debt to Equity (%)	77.0	62.2	-211.4	2,687.7

This table presents the firm characteristics in the year of the M&A announcement in million dollars or as a percentage.

Table 4.3 Variables for Regression Analysis statistics

Variable	MEAN	MEDIAN	MIN	MAX
Dependent variables				
Growth EBIT (3 year)	-186,50	-11,73	-26.892,86	11.089,81
ROA (3 year)	-52,77	-47,15	-3.116,92	6.256,37
CAR (3 year)	-10,89	-6,69	-126,78	180,50
Independent variables				
Relative size	0,26	0,23	0,00	0,91
R&D / Sales	5,15	4,03	0,01	159,10
Operating Cash Flow	7,04	4,24	-0,69	159,34
Profitability target	12,16	10,99	-228,20	50,17
Profitability acquirer	8,85	10,74	-416,38	51,04
Sales growth target	0,28	0,12	-1,00	5,62
Industry growth target	0,10	0,07	-0,11	0,59
Leverage acquirer	49,78	54,91	-1.765,22	349,83
Leverage target	69,71	65,44	-1.157,67	756,69
Cash acquirers	0,01	0,00	-0,40	0,50
Market to Book ratio target	2,59	1,58	0,47	25,44

This table presents the explanatory variables' characteristics in the year of the M&A announcement in million dollars or as a percentage.

4.3 Benchmarks

For the abnormal return studies the Standard and Poor World index is used to construct Market Adjusted Return data for calculating abnormal returns. In order to measure the benchmark growth rates for the operational performance variables as explained in paragraph 3.5, a portfolio of firms is created for each industry segment used. The benchmark portfolios are only necessary to estimate the relative annual growth of the variable under consideration. In order to create a comparable portfolio, some selection requirements are used. The firms included in the benchmark portfolio have sales over 10 million USD and total assets over 15 million USD. These requirements are chosen in accordance with the firms' characterises of the sample target firms as presented in table 4.2. Furthermore, only firms of the regions under consideration in this thesis are included. The industry selection for Utilities, Manufacturing and Services are based on the GIC codes. The number of firms included in the benchmark is 155, 400 and 138 respectively. Of the selected firms the median is used to set the industry development over each year. In Appendix C the medians of the benchmarks are shown for each accounting variable used from 1985 until 2009.

CHAPTER 5 Results

This chapter reports the test results of this thesis. The descriptions of the results are divided in three parts. First, the results of the event study for shareholder returns is described, second the results of the prediction based operating performance and third the regression analysis of the operational explanatory variables.

5.1 Investors performance: shareholder returns

Here the event study results for the abnormal returns are presented. The results are included for different event windows surrounding M&A announcement dates regarding the bidders, targets and combined abnormal returns. All tables in this paragraph state nominal results and are not annualised. The results are given for the short run, longer run (300+ days after announcement), variance for the shareholders of acquiring firms, the performance of the assets and the segmented results.

Short run abnormal returns

Table 5.1 reports the event studies' abnormal returns regarding the acquirer, target and the weighted combination of both firms for the short run for the full sample. The table reports a significant positive return for the acquirers and targets for one month prior to the M&A announcement. Therefore, shareholders of both the target and the acquiring firm benefit in the one month period prior the announcement. The positive return is substantial for the targets (11.056%) and modest for the acquirers (1.532%). For the weighted combination during the run up period, the abnormal return is 3.289% in the 30 days prior to the announcement. In the ten-day period prior to the announcement the targets and the combined results show similar, although a bit lower significant positive abnormal returns. The largest part of the abnormal return is earned during the 10 days prior to the announcement. The target firms gain substantial abnormal returns in the short run. The results are strongly significant for all event windows. These results are consistent with the overall conclusions of previous studies as given in paragraph 2.3. The mean returns are in all event windows slightly higher than the median. This might indicate that for some events the target abnormal returns have a large impact on the mean results. The five-day prior and past announcement event window reports a mean 27.982% abnormal return and the ten-day period reports 30.534%. A large part of this mean abnormal return lies around the day of the M&A announcement. These results are in accordance with most previous empirical research.

Table 5.1 Abnormal return total sample short term acquirers / targets / combined

Event period	Acquirer		Target		Combined	
	Mean (%)	Median	Mean (%)	Median	Mean (%)	Median
CAR (-30, 0)	**1.532** [2]	0.125	**11.056** [3]	8.018	**3.289** [3]	2.084
	(1.978)		(9.019)		(3.843)	
CAR (-10, 0)	0.107	-0.494	**8.672** [3]	6.557	**1.695** [3]	1.071
	(0.232)		(10.131)		(3.076)	
CAR (-5, 5)	**-1.316** [2]	-1.722	**27.982** [3]	24.283	**3.665** [3]	3.029
	(-2.264)		(20.560)		(5.027)	
CAR (-1, 1)	**-1.793** [3]	-1.358	**21.001** [3]	16.891	**2.239** [3]	1.602
	(-4.168)		(15.463)		(3.937)	
CAR (0, 10)	**-1.579** [3]	-1.287	**24.095** [3]	20.298	**2.905** [3]	3.159
	(-2.876)		(17.736)		(4.605)	
CAR (0, 30)	**-2.349** [3]	-3.007	**24.960** [3]	21.266	**2.639** [3]	2.423
	(-2.685)		(16.245)		(2.830)	
CAR (-10,10)	**-1.478** [2]	-2.428	**30.534** [3]	28.472	**4.004** [3]	2.864
	(-2.034)		(21.634)		(4.487)	
CAR (-10, 50)	**-2.997** [2]	-3.913	**32.472** [3]	28.454	**3.489** [2]	3.535
	(-2.107)		(18.172)		(2.285)	
CAR (-30, 30)	-0.824	-2.935	**33.783** [3]	31.590	**5.332** [3]	4.080
	(-0.629)		(18.562)		(3.647)	

This table reports the CARs to acquirers, targets and the combined weighted average for the short term for different event periods. The combined weighted average is based on the market value of the acquirer and target. The table presents the results for the full sample. Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero. Significance level: [1,2,3] statistical significance at 10%, 5% and 1% respectively.

The overall combined result for all the short run periods is positive and strongly significant. Over the period one month prior and after the announcement an abnormal combined return of 5.332% is earned. The annualized combined abnormal return for this period is about 26.6%. For the period after the announcement the combined one month abnormal return is 2.639% and annualized 26.3%. The weighted combined returns are positive in the short run, which is not consistent with hypothesis I in chapter 3.

Long run abnormal returns acquiring firms

Empirical studies are less consistent in their results for acquirers on an event window for six months or longer after the event. Overall, the results show a negative abnormal return or a modest slightly positive return. Table 5.2 reports the long run abnormal return for the acquirers of full sample. The results are clearly negative for the case of the acquiring firms. The table reports the mean abnormal return, the median and the percentage of positive abnormal returns during different time frames for 300 or more days after the M&A announcement.

Table 5.2 Abnormal long run return

Event period	Mean (%)		Median	Positive	
CAR (-300, 300)	**-10.981**	[2]	-14.837	**0.398**	[3]
	(-2.011)			(-2.993)	
CAR (0, 300)	**-13.261**	[3]	-9.928	**0.370**	[3]
	(-3.989)			(-3.810)	
CAR (0, 600)	**-24.027**	[3]	-19.213	**0.337**	[3]
	(-4.519)			(-4.762)	
CAR (10, 300)	**-11.601**	[3]	-9.602	**0.365**	[3]
	(-3.635)			(-3.946)	
CAR (30, 300)	**-11.004**	[3]	-7.089	**0.384**	[3]
	(-3.651)			(-3.402)	
CAR (-30, 900)	**-41.977**	[3]	-30.267	**0.356**	[3]
	(-5.432)			(-4.218)	
CAR (-30, 1200)	**-44.994**	[3]	-33.490	**0.375**	[3]
	(-4.735)			(-3.674)	
CAR (-30, 1500)	**-46.115**	[3]	-35.240	**0.370**	[3]
	(-4.269)			(-3.810)	
CAR (-300, 1500)	**-45.683**	[3]	-40.399	**0.375**	[3]
	(-3.676)			(-3.674)	

This table reports the CARs for the long term for different event periods. The table presents the results for the full sample. Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero and below the Positive the z-statistic testing the hypothesis for percentage to be equal to 50 percent. Significance level: [1,2,3] statistical significance at 10%, 5% and 1% respectively.

The one-month period before the M&A announcements are included in some time frames in order to include the positive abnormal return prior to the announcement as reported in table 5.1. For all time frames by and large only one-third of the acquirers earn positive abnormal results. The stated percentages strongly significant are for all event windows. Over 300 days after the announcement the negative mean abnormal return is 13.261%. When the most turbulent days around the announcement are excluded, the event windows (10,300 and 30,300) are also negative and significant, although the returns are slightly less negative. The event windows over longer periods report even higher negative results, which are significant. One might suspect that the largest part of the shareholders' expectations is converted in asset prices within the first year after the M&A announcement. These results imply that the negative performance continues until the third year after the M&A announcement. The negative abnormal return is 41.977% in the three-year period. After four and five years (-44.994% and -46.115%) the effect of the M&A seems to flatten because the extra negative abnormal returns is by and large not increasing any more. These results imply that investors needed over three years to fully

price the negative abnormal returns in the asset prices of the acquiring firms, which is not consistent with the EMH theory.

The negative abnormal returns found for the long run are not according the results found by other authors, like Franks et al. (1991), Loughran and Vijh (1997) and Rau and Vermaelen (1998), although the latter found a negative significant result for mergers. On the opposite, the negative returns are in line with the conclusions of Limmack (1991) and Datta et al. (2001) and the results for the total sample are consistent with the expected negative results.

Volatility and asset performance of acquiring firms

The abnormal returns are calculated as the returns corrected for the market return. Here we focus the results on the difference in variance as a measure for risk. Table 5.3 reports the Relative Asset Risk of the total sample. The results are compared for a short time frame (-40,-10 and 10,40) and a long time frame (-300, -30 and 30,300).

Table 5.3 Risk and Asset Performance

Variance	Mean	RAR	Δ RAR		positive	
VAR (-40, -10)	0.0540	5.800				
Index	0.0126					
VAR (10, 40)	0.0473	4.881	**-0.918**	3	0.444	0
Index	0.0127		(-2.605)		(-1.632)	
VAR (-300, -30)	0.0474	4.549				
Index	0.0123					
VAR (30, 300)	0.0696	5.115	**0.566**	2	**0.615**	3
Index	0.0141		(2.356)		(3.402)	
	Mean (%)		Δ SP		% positive	
SR (-40, -10)	2.225		**-1.171**	2	0.449	0
SR (10, 40)	1.054		(-2.281)		(-1.496)	
SR (-300, -30)	14.069		**-8.190**	3	**0.356**	3
SR (30, 300)	5.879		(-5.866)		(-4.218)	

This table reports for the short and the long run the difference in the Relative Asset Risk and the Standardized Return for the full sample. The short run is calculated for the variance in the period 40 days till 10 days prior to the M&A announcement with that same period after the announcement. For the long run a period of -300 till -30 and 30 till 300 is used. Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero. Figures in parantheses below the % positive are the z-statistics testing whether the proportion of positive results within a particular sample is significantly different from 50 percent. Significance level: 1,2,3 statistical significance at 10%, 5% and 1% respectively.

The turbulent period around the announcement date are excluded because equity prices are most volatile during those days and this would have an undesired strong influence on the results. The mean

of the variance in asset returns of the acquirers are compared with the mean of the index (S&P World Index) during the same time frames.

For the short time frame the difference in RAR is significant and negative. This result implies that the acquirers' asset prices volatility on the short run is lower during the post-merger period. For the long time frame the results are the opposite. The RAR is positive and significant, which implies that the volatility in the acquirers' asset prices increases in the post-merger period. The increase in the volatility hold for the majority (61,5%) of the events in the total sample. The same tests are performed on a Standardized Return performance indicator (SR). In this thesis the SR is the asset return during a certain time frame compared with the volatility. In this measure the standard deviation is used as a measure for volatility. The measure is not corrected for benchmark results and is therefore less sophisticated than other measures, such as abnormal returns. For both the short and long time frame comparison the SR decreased, which implies that the return for volatility in the post-merger period decreased. Especially for the long run the SR decreased with 58.2% and only 35.6% of the acquirers realized at a higher SR.

Segmented results: time frames, regions, related/unrelated and industries

The detailed results for the acquirers' returns on the long run are presented for the total sample as well as divided over three different time frames, which are explained in chapter 4, for related and unrelated mergers and for the different industries. The different time frames are the periods 1985-1989, 1990-1992 and 1993-1995. Here the differences in the results regarding the total sample are discussed. Table 5.4 reports the asset performance of acquirers for the long run regarding differentiated sub-samples.

Martynova and Renneboog (2008) reported a merger wave during 1981-1989 and 1993-2001. The mean abnormal returns are less negative during the merger wave in the 1993-1999 sub-sample. On the short run, the transaction during 1981-1992 performed worse than after 1992. For the three-year event window the mean abnormal returns for the 1981-1989 and 1990-1992 period are significantly different from the full sample means and report much more negative abnormal returns. This also holds good for the five-year event window for the 1990-1992 sub-sample. The relative risk and asset performance is much more negative during the M&A wave of 1981-1989 but even worse for the transaction during the three years after the M&A wave. M&As during a merger wave are expected to be less profitable, because these transaction are often made in a high conjectural period. Transaction values are high and the acquiring firms' managements are considered less conservative in buying decisions. The segmented results for the different time frames are not supportive for this theory. Although I must report that the transactions included in the sample were for the largest part announced during 1993 and 1999 period, see table 4.1. Only nine included transactions were announced in during 1990 and 1992.

Table 5.4 Segmented results: event period

	Full sample		81-89				90-92				93-99			
	Mean		Mean		T-full		Mean		T-full		Mean		T-full	
Panel A: Periods														
CAR (10, 100)	**-5,340**	1	**-8,032**	3			**-11,336**	3			**-4,866**	2		
	(-2,478)		(-5,575)		1,038	0	(-6,231)		**2,126**	2	(-2,189)		-0,153	0
CAR (0, 300)	**-13,261**	3	**-14,543**	3			**-18,190**	3			**-12,939**	3		
	(-3.989)		(-5,502)		0,302	0	(-7,010)		1,169	0	(-3,773)		-0,068	0
CAR (0, 600)	**-24,027**	3	**-31,113**	3			**-28,717**	3			**-23,295**	3		
	(-4.519)		(-7,104)		1,029	0	(-6,774)		0,690	0	(-4,244)		-0,096	0
CAR (0, 1200)	**-44,994**	3	**-68,263**	3			**-65,580**	3			**-42,347**	3		
	(-4.735)		(-8,356)		**1,857**	1	(-10,241)		**1,797**	1	(-4,295)		-0,193	0
CAR (0, 1500)	**-46,115**	3	**-73,298**	3			**-93,253**	3			**-41,946**	3		
	(-4.269)		(-9,193)		1,538	0	(-11,281)		**3,443**	3	(-3,732)		-0,229	0
Risk														
Delta long term			**8,744**	3			**13,601**	3			**0,634**	2		
			(9,257)				(11,545)				(2,493)			
Performance														
Delta long term			**-126,363**	3			**-196,564**	3			**-9,166**	3		
			(-23,045)				(-28,742)				(-6,207)			

Considering the different regions where the target firms are located, the abnormal return for the target firms located in the Anglo Saxon areas are expected to be higher than in Europe. Again the sub-samples are not strongly differentiated over regions (only 8 target firms are located in Europe, 24 in the UK and 184 in North America). Remarkably the bidding firms that acquired a Europe-based firm reported a strong positive abnormal return of 14% and 27% for the four-year and five-year event-window respectively. The one-year asset relative risk of M&As with a European target is higher related to other regions and the one-year asset performance is worse. This could partly be explained by the small number of European targets. The results are significantly different from the average abnormal return in the full sample. On the other hand, bidding firms report significant abnormal returns for UK-based target firms which are less negative for the two-year event window and more negative for the four-year and five-year event window as compared with the full sample. This result could indicate that takeovers of UK-based firms are less profitable than firms in other regions. This difference in the returns on the takeover of firms based in Europe and the Anglo Saxon region might be caused by protective legislation opposed by the European Union on M&As.

Table 5.4 (continued) Segmented results: regions

	Full sample		NORTH AMERICA			EUROPE			UK		
	Mean		Mean	T-full		Mean	T-full		Mean	T-full	
Panel B: Regions											
CAR (10, 100)	**-0,053**	1	**-5,523**	2		1,244	0		**-6,137**	3	
	(-2,478)		(-2,452)	0,058	0	(,723)	**-2,388**	2	(-4,187)	0,306	0
CAR (0, 300)	**-13.261**	3	**-14,519**	3		**-6,729**	1		**-5,800**	2	
	(-3.989)		(-4,174)	0,261	0	(-2,269)	-1,466	0	(-2,675)	**-1,880**	1
CAR (0, 600)	**-24.027**	3	**-26,719**	3		-3,986	0		**-10,072**	2	
	(-4.519)		(-4,860)	0,352	0	(-,979)	**-2,993**	3	(-2,277)	**-2,018**	2
CAR (0, 1200)	**-44.994**	3	**-45,696**	3		**14,007**	1		**-59,279**	3	
	(-4.735)		(-4,654)	0,051	0	(2,006)	**-5,004**	3	(-6,772)	1,106	0
CAR (0, 1500)	**-46.115**	3	**-46,633**	3		**27,346**	2		**-66,641**	3	
	(-4.269)		(-4,187)	0,073	0	(3,263)	**-5,155**	3	(-6,795)	1,027	0
Risk											
Delta long term			**0,665**	2		**15,301**	3		**5,100**	3	
			(2,553)			(12,246)			(7,070)		
Performance											
Delta long term			**-9,615**	3		**-221,135**	3		**-73,712**	3	
			(-6,357)			(-30,486)			(-17,601)		

Table 5.4 (continued) Segmented results: related vs. unrelated

	Full sample		RELATED			UNRELATED		
	Mean		Mean	T-full		Mean	T-full	
Panel C: Related vs Unrelated								
CAR (10, 100)	**-0,053**	1	**-6,930**	3		-1,479	0	
	(-2,478)		(-3,092)	0,511	0	(-,760)	-1,330	0
CAR (0, 300)	**-13.261**	3	**-15,473**	3		**-7,891**	2	
	(-3.989)		(-4,671)	0,471	0	(-2,274)	-1,118	0
CAR (0, 600)	**-24.027**	3	**-25,904**	3		**-19,471**	3	
	(-4.519)		(-4,769)	0,247	0	(-3,642)	-0,604	0
CAR (0, 1200)	**-44.994**	3	**-42,034**	3		**-52,184**	3	
	(-4.735)		(-4,250)	-0,216	0	(-5,615)	0,541	0
CAR (0, 1500)	**-46.115**	3	**-40,454**	3		**-59,866**	3	
	(-4.269)		(-3,627)	-0,252	0	(-5,611)	0,637	0
Risk								
Delta long term			**0,800**	3		**1,943**	3	
			(2,800)			(4,364)		
Performance								
Delta long term			**-11,563**	3		**-28,081**	3	
			(-6,971)			(-10,864)		

The event study is also done for the related and unrelated M&A sub-samples. This differentiated result does not report significant differences from the full sample, although all abnormal returns reported are significant. For the one-year and two-year event window the abnormal returns for the unrelated M&As are higher. The same accounts for the increase in risk and decrease in asset performance after the announcement. For the four-year and five-year event window, however, the abnormal returns are less negative for the related M&As.

Table 5.4 (continued) Segmented results: industries

	Full sample		Utilities			Manufactoring			Other Services		
	Mean		Mean		T-full	Mean		T-full	Mean		T-full
Panel D: Industries											
CAR (10, 100)	**-0,053**	1	**-13,601**	3		-1,954	0		**-3,686**	3	
	(-2,478)		(-6,345)		**2,718**	3 (-,812)		-1,048	0 (-2,981)		-0,666	0
CAR (0, 300)	**-13.261**	3	**-15,380**	3		**-14,298**	3		**-6,977**	3	
	(-3.989)		(-4,188)		0,428	0 (-4,056)		0,214	0 (-2,919)		-1,535	0
CAR (0, 600)	**-24.027**	3	**-30,293**	3		**-26,753**	3		-6,486	0	
	(-4.519)		(-5,002)		0,777	0 (-4,816)		0,354	0 (-1,647)		**-2,651**	3
CAR (0, 1200)	**-44.994**	3	**-83,269**	3		**-30,916**	3		**-32,372**	3	
	(-4.735)		(-7,855)		**2,689**	3 (-3,080)		-1,019	0 (-4,287)		-1,040	0
CAR (0, 1500)	**-46.115**	3	**-90,676**	3		**-30,213**	2		**-29,923**	3	
	(-4.269)		(-8,138)		**3,119**	3 (-2,546)		-1,115	0 (-3,753)		-1,050	0
Risk											
Delta long term			**2,148**	3		**1,020**	3		**3,139**	3	
			(4,588)			(3,162)			(5,546)		
Performance											
Delta long term			**-31,036**	3		**-14,742**	3		**-45,361**	3	
			(-11,421)			(-7,871)			(-13,807)		

This table reports for the long run the mean CARs, the delta on variance and the delta on asset performance for different event periods. The results are segmented for different M&A periods (panel A), different Regions (Panel B), Related vs. Unrelated mergers (Panel C) and different Industries (Panel D). Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero. In the T-full colom the Wilcoxon T-statistics statistic testing whether the means of different sub samples are equal to the full sample. This statistic has a Student-t distribution under the null hypothesis that the means of both samples are equal. Significance level: 1,2,3 statistical significance at 10%, 5% and 1% respectively.

The table provides results for different industries included in the sample and they show interesting differences. The Utilities industry's performance is less profitable in terms of M&A activity. The four-year event window reports a significant negative abnormal return of 83.27% which is also significantly different from the full sample result. The Other Services industry seems to perform less negative in terms of M&A activity in reference to the full sample. Specifically, the returns on the one-year and two-year window are much better related to the other industries.

5.2 Operating performance

Table 5.5 reports the relative operating performance improvement for different accounting performance indicators. The table reports the relative difference (in terms of a percentage) between the actual acquiring firms' performance and the sum of the predicted industry adjusted performance of the acquiring and target firms in the event the firms were not merged. The results are reported for the year of the M&A announcement and for the years 1-5 after the M&A announcement. The full period is included for the years after the M&A announcement. For example, the three-year period shows improvement over the three years after announcement.

Accounting variables for Operating performance

The average sales improvement reported is for none of the periods significant. Although not significant, the overall results show an average negative growth in sales volumes in reference to predicted sales by the individual firms. The positive results are on the contrary significant and show that in the best case (one year) 42%, and only 34% in the worst case (four year), of the M&As increased sales over the predicted level. This result does not support the theory that M&A activity increases the merged firm's market power, mentioned by Kim and Singal (1993). Similar results are reported for Earnings Before Interest and Tax. The difference between the actual and predicted EBIT is even higher (14.6% negative for the four-year window) than the difference for sales. This implicates that the acquiring firms did not manage to improve sales levels or profit more from those revenues. The variable for operating margin[3] and the Asset Turnover report negative differences as well[4]. The results painfully point out that the acquiring companies did not manage to realize operating synergy advantages through sales growth or market power or through cost reduction or profitability. These findings do not support the operational synergy argument for M&A activity.

[3] The variable for Operating margin is included for instead EBIT is a ratio for EBIT/Sales. This ratio might report different results than the nominal variables (Sales and EBIT).

[4] The operating margin in the year of the M&A announcement show a positive difference with its predicted ratio. This might be the result of financial reporting differences in the year regarding the moment when the transaction becomes effective.

Table 5.5 Results Prediction model: Operating Performance

Period	SALES		EBIT		OPMargin	
	Mean	Positive	Mean	Positive	Mean	Positive
year ann.	-2,893 [0]	0,489 [0]	-3,789 [0]	0,444 [0]	**8,272** [2]	**0,644** [3]
	(- 1,451)	(- 0,258)	(- 0,888)	(- 1,291)	(2,312)	(3,357)
1 year	-1,433 [0]	**0,422** [1]	-3,048 [0]	**0,400** [2]	5,526 [0]	0,474 [0]
	(- 0,437)	(- 1,807)	(- 0,599)	(- 2,324)	(1,255)	(- 0,602)
2 years	0,503 [0]	**0,370** [3]	-6,468 [0]	**0,400** [2]	**-7,854** [1]	**0,400** [2]
	(0,120)	(- 3,012)	(- 1,114)	(- 2,324)	(- 1,804)	(- 2,324)
3 years	-4,015 [0]	**0,356** [3]	**-12,014** [2]	**0,341** [3]	-6,311 [0]	**0,415** [2]
	(- 0,904)	(- 3,357)	(- 2,049)	(- 3,701)	(- 1,418)	(- 1,980)
4 years	-4,429 [0]	**0,341** [3]	**-14,591** [3]	**0,341** [3]	**-10,661** [2]	**0,356** [3]
	(- 0,866)	(- 3,701)	(- 2,654)	(- 3,701)	(- 2,270)	(- 3,357)
5 years	-6,172 [0]	**0,348** [3]	**-10,208** [1]	**0,341** [3]	**-10,071** [2]	**0,363** [3]
	(- 1,184)	(- 3,529)	(- 1,736)	(- 3,701)	(- 2,076)	(- 3,184)

Accounting variables for Financial performance

The ratio of Return on Assets is a good indicator for the firms' overall financial performance. The reported differences do not favour the arguments for M&As. For all time frames the differences are significant and negative (from -13.0% till – 20.4%) and only a minority of the acquirers managed to report a better ROA than predicted (25.9% till 38.5%). This indicates that only a small group of the acquirers seem to increase their ROA by M&A activities. The capital expenses reported by the acquiring firms do not benefit on the short from financial synergies as expected[5]. Remarkably, they do benefit from financial synergies in the long run. A negative difference in the actual and predicted capital expenses is reported. The fact that lower capital expenses are reported not until two years after the announcement might be attributed to a lag because of the transaction effectuation and the time needed to renegotiate the financial contracts.

[5] In opposite to the other variables a negative difference for capital expenses is in favor for the case of financial synergy.

Table 5.5 (Continued) Results Prediction model: Operating Performance

Period	ASSET TURN OVER		RETURN ON ASSETS		CAPITAL EXPENSES	
	Mean	Positive	Mean	Positive	Mean	Positive
year ann.	**-10.526** [3]	**0.259** [3]	-5.994 [0]	**0.385** [3]	**14.922** [3]	0.556 [0]
	(- 0,4)	(- 0,6)	(- 0,1)	(- 0,3)	(0,4)	(0,1)
1 year	**-11.876** [3]	**0.304** [3]	**-15.743** [3]	**0.304** [3]	**19.515** [3]	0.541 [0]
	(- 0,5)	(- 0,5)	(- 0,4)	(- 0,5)	(0,4)	(0,1)
2 years	**-13.919** [3]	**0.252** [3]	**-13.002** [2]	**0.311** [3]	2.281 [0]	0.459 [0]
	(- 0,5)	(- 0,6)	(- 0,3)	(- 0,4)	(0,0)	(- 0,1)
3 years	**-17.276** [3]	**0.267** [3]	**-15.814** [3]	**0.341** [3]	**-8.066** [1]	**0.407** [2]
	(- 0,6)	(- 0,5)	(- 0,3)	(- 0,4)	(- 0,2)	(- 0,2)
4 years	**-19.735** [3]	**0.237** [3]	**-17.818** [3]	**0.259** [3]	**-13.845** [3]	**0.333** [3]
	(- 0,7)	(- 0,6)	(- 0,3)	(- 0,6)	(- 0,3)	(- 0,4)
5 years	**-19.229** [3]	**0.230** [3]	**-20.363** [3]	**0.274** [3]	**-14.283** [3]	**0.326** [3]
	(- 0,6)	(- 0,6)	(- 0,4)	(- 0,5)	(- 0,3)	(- 0,4)

This table reports the relative difference in the post-annoncement period in the actual and predicted operating performance variables. The results are reported for the year of the announcement (year ann.) and the differences one, two, three, four and five years after the announcement. Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero. Figures in parantheses below the (%) positive are the z-statistics testing whether the proportion of positive results within a particular sample is significantly different from 50%. Significance level: 1,2,3 statistical significance at 10%, 5% and 1% respectively.

Table 5.6 Segmented Results Prediction model: Related vs. Unrelated

Period	SALES	EBIT	OPMargin	ASSET TO	ROA	CAP. EXP.
Panel A: Related						
year ann.	-2,722 [0]	-3,861 [0]	6,236 [0]	**-7,511** [3]	-5,847 [0]	**13,227** [3]
	(- 1,383)	(- 0,856)	(1,638)	(- 2,726)	(- 1,268)	(3,20)
1 year	-2,290 [0]	-1,963 [0]	3,736 [0]	**-7,767** [3]	**-11,433** [2]	**18,101** [3]
	(- 0,760)	(- 0,378)	(0,821)	(- 2,772)	(- 2,50)	(3,648)
2 years	-0,307 [0]	-2,040 [0]	-6,047 [0]	**-9,144** [3]	-7,979 [0]	4,680 [0]
	(- 0,072)	(- 0,339)	(- 1,343)	(- 3,086)	(- 1,495)	(1,013)
3 years	-2,661 [0]	-7,955 [0]	-4,911 [0]	**-13,100** [3]	**-10,979** [1]	-2,633 [0]
	(- 0,564)	(- 1,297)	(- 1,059)	(- 4,277)	(- 1,981)	(- 0,531)
4 years	-1,464 [0]	-5,833 [0]	-7,208 [0]	**-14,214** [3]	**-11,855** [2]	-6,856 [0]
	(- 0,271)	(- 1,004)	(- 1,557)	(- 4,541)	(- 2,145)	(- 1,321)
5 years	-1,562 [0]	-2,770 [0]	-6,462 [0]	**-13,161** [3]	**-12,221** [2]	**-8,240** [1]
	(- 0,289)	(- 0,449)	(- 1,378)	(- 3,998)	(- 2,244)	(- 1,797)
Panel B: Unrelated						
year ann.	-0,171 [0]	0,072 [0]	2,036 [0]	**-3,015** [2]	-0,147 [0]	1,695 [0]
	(- ,083)	(0,020)	(0,673)	(- 2,173)	(- 0,033)	(0,460)
1 year	0,856 [0]	-1,085 [0]	1,790 [0]	**-4,109** [1]	-4,310 [0]	1,414 [0]
	(0,222)	(- 0,225)	(0,443)	(- 1,707)	(- 0,966)	(0,298)
2 years	0,810 [0]	-4,428 [0]	-1,808 [0]	-4,775 [0]	-5,023 [0]	-2,399 [0]
	(0,198)	(- 0,837)	(- 0,449)	(- 1,607)	(- 1,036)	(- 0,523)
3 years	-1,354 [0]	-4,058 [0]	-1,400 [0]	-4,176 [0]	-4,835 [0]	-5,433 [0]
	(- 0,371)	(- 0,769)	(- 0,352)	(- 1,337)	(- 0,873)	(- 1,436)
4 years	-2,965 [0]	**-8,758** [1]	-3,453 [0]	**-5,521** [1]	-5,963 [0]	**-6,989** [1]
	(- 0,684)	(- 1,793)	(- 0,691)	(- 1,720)	(- 1,031)	(- 1,732)
5 years	-4,610 [0]	-7,438 [0]	-3,609 [0]	**-6,069** [1]	-8,142 [0]	-6,043 [0]
	(- 0,970)	(- 1,440)	(- 0,673)	(- 1,834)	(- 1,448)	(- 1,395)

This table reports the mean relative difference in the post-announcement period in the actual and predicted operating performance variables in different segments. The results are reported for the year of the announcement (year ann.) and the differences one, two, three, four and five years after the announcement. Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero. Significance level: 1,2,3 statistical significance at 10%, 5% and 1% respectively.

Table 5.7 Segmented Results Prediction model: Industries

Period	SALES	EBIT	OPMargin	ASSET TO	ROA	CAP. EXP.
Panel A: Utilities						
year ann.	0,135 [0]	-1,916 [0]	-1,368 [0]	-0,879 [0]	-0,696 [0]	6,797 [0]
	(,077)	(- 0,380)	(- 0,298)	(- 0,326)	(- 0,144)	(1,394)
1 year	-3,053 [0]	-3,806 [0]	2,138 [0]	-2,540 [0]	-4,307 [0]	6,347 [0]
	(- 0,947)	(- 0,822)	(0,378)	(- 0,738)	(- 1,062)	(1,219)
2 years	-2,699 [0]	-0,861 [0]	-1,364 [0]	-2,238 [0]	-1,518 [0]	2,691 [0]
	(- 0,694)	(- 0,145)	(- 0,257)	(- 0,625)	(- 0,320)	(0,605)
3 years	-3,770 [0]	-0,863 [0]	1,026 [0]	-4,237 [0]	-0,107 [0]	0,134 [0]
	(- 0,869)	(- 0,149)	(0,188)	(- 1,371)	(- 0,019)	(0,030)
4 years	-3,257 [0]	-5,246 [0]	-3,620 [0]	-4,627 [0]	-4,577 [0]	-1,052 [0]
	(- 0,576)	(- 0,969)	(- 0,686)	(- 1,446)	(- 0,842)	(- 0,193)
5 years	-5,305 [0]	-3,912 [0]	-1,259 [0]	-4,258 [0]	-4,512 [0]	-0,664 [0]
	(- 1,068)	(- 0,733)	(- 0,233)	(- 1,219)	(- 0,898)	(- 0,145)
Panel B: Manufactoring						
year ann.	-1,885 [0]	-1,814 [0]	**8,018** [2]	**-8,871** [3]	-2,466 [0]	5,371 [0]
	(- ,864)	(- 0,471)	(2,476)	(- 4,593)	(- 0,521)	(1,453)
1 year	0,637 [0]	0,642 [0]	1,434 [0]	**-8,496** [3]	-7,896 [0]	**8,789** [1]
	(0,201)	(0,125)	(0,373)	(- 4,081)	(- 1,560)	(1,767)
2 years	0,761 [0]	-7,507 [0]	**-7,275** [1]	**-11,042** [3]	-9,088 [0]	-4,213 [0]
	(0,181)	(- 1,311)	(- 1,692)	(- 4,482)	(- 1,587)	(- 0,956)
3 years	-2,170 [0]	-8,257 [0]	**-7,462** [1]	**-11,773** [3]	**-10,221** [1]	**-9,535** [2]
	(- 0,502)	(- 1,393)	(- 1,746)	(- 4,134)	(- 1,796)	(- 2,156)
4 years	-2,229 [0]	-8,551 [0]	**-8,055** [1]	**-12,275** [3]	-6,547 [0]	**-14,069** [3]
	(- 0,481)	(- 1,562)	(- 1,839)	(- 4,295)	(- 1,073)	(- 3,471)
5 years	-2,210 [0]	-6,525 [0]	**-9,725** [2]	**-12,487** [3]	**-10,557** [1]	**-13,063** [3]
	(- 0,437)	(- 1,049)	(- 2,142)	(- 4,305)	(- 1,738)	(- 3,139)

Segmented results: related/unrelated and industries

The detailed results for the operating performance on the long run are divided for related and unrelated mergers and for the different industries. The results for operating performance are not reported for the different time frames and regions. For the time frames 1981-1989 and 1990-1992 only nine and seven events are included in the sample for operating performances respectively and targets are located only in Europe. Due to the small deviation between the M&As in regions and time frames these segmentations are not reported. The results for related and unrelated M&As are given in table 5.6. Only the asset turnover shows significant differences in favour for unrelated M&As. The results for different industries are given in table 5.7. Significant results are only found in the Manufacturing industry and they do not differ much from the full sample results.

Table 5.7 (Continued) Segmented Results Prediction model: Industries

Period	SALES	EBIT	OPMargin	ASSET TO	ROA	CAP. EXP.
Panel C: Other Services						
year ann.	-1.143 [0]	-0.060 [0]	1.622 [0]	-0.777 [0]	-2.831 [0]	2.754 [0]
	(- ,662)	(- 0,014)	(0,611)	(- 0,238)	(- 0,793)	(0,691)
1 year	0.982 [0]	0.116 [0]	1.954 [0]	-0.840 [0]	-3.539 [0]	4.379 [0]
	(0,272)	(0,021)	(0,503)	(- 0,274)	(- 0,964)	(0,873)
2 years	2.441 [0]	1.900 [0]	0.785 [0]	-0.639 [0]	-2.396 [0]	3.803 [0]
	(0,529)	(0,329)	(0,319)	(- 0,199)	(- 0,603)	(0,706)
3 years	1.925 [0]	-2.894 [0]	0.126 [0]	-1.265 [0]	-5.486 [0]	1.335 [0]
	(0,391)	(- 0,481)	(0,045)	(- 0,324)	(- 1,201)	(0,254)
4 years	1.058 [0]	-0.793 [0]	1.014 [0]	-2.833 [0]	-6.694 [0]	1.276 [0]
	(0,187)	(- 0,130)	(0,209)	(- 0,676)	(- 1,572)	(0,218)
5 years	1.343 [0]	0.229 [0]	0.914 [0]	-2.484 [0]	-5.295 [0]	-0.556 [0]
	(0,222)	(0,040)	(0,185)	(- 0,585)	(- 1,219)	(- 0,108)

This table reports the mean relative difference in the post-announcement period in the actual and predicted operating performance variables in different segments. The results are reported for the year of the announcement (year ann.) and the differences one, two, three, four and five years after the announcement. Figures in parantheses below the means are the t-statistics testing the null hypothesis that the mean is zero. Significance level: 1,2,3 statistical significance at 10%, 5% and 1% respectively.

5.3 Regression analysis explanatory variables

In the regression model presented here, the dependent variable is a dummy that is one if the measure under consideration is positive and zero otherwise. The regression is done for three different dependent variables in order to make a cross sectional analysis based on shareholders' value and operational performance. The regressions are done using short term abnormal returns. For the long run abnormal returns, EBIT and ROA for one, three and five years after the announcement are used for analysis. The dummy is positive if the abnormal return is positive or the actual EBIT/ROA is higher compared with the predicted value. The sample only includes the 135 events for which sufficient accounting data was applicable for the operational analysis as explained in paragraph 4.1. A regression is done over a number of explanatory variables as explained in paragraph 3.1.

The regression model results for the full sample are shown in table 5.8 for the dependent variables using abnormal returns and in table 5.9 for the operating performance variables. The regression results for the full abnormal returns did not report significant relations between the dependent and explanatory variables. A high targets market to book ratio has a negative influence only for the abnormal return in the first month.

Cross border M&As are positive and significantly related with EBIT and ROA improvements[6]. This indicates that acquirers who use M&As to expand sales power in different countries performed more effectively. Besides, during the first month after the M&A announcement, there is no significant relation reported fr the case of cross border M&As in the model using abnormal returns. The Utilities industry has a negative influence on the abnormal returns and EBIT for the returns and EBIT in the first year.

Table 5.8 Regression results dependent variable: returns

	CAR (0,30)	CAR (0,90)	CAR (0,150)	CAR 1 year	CAR 3 years	CAR 5 years
C	**0,4032**	**0,4314**	**0,4530**	**0,4401**	**0,4401**	**0,4054**
	(0,0048)	(0,0044)	(0,0044)	(0,0028)	(0,0028)	(0,0057)
INDUSTRY UTILITIES	**-0,2174**	**-0,2883**	**-0,3108**	-0,1704	-0,1704	-0,0673
	(0,0420)	(0,0113)	(0,0113)	(0,1192)	(0,1192)	(0,5366)
DOMISTIC vs CROSS BORDER	**0,1821**	0,0322	0,0799	0,0405	0,0405	0,1777
	(0,0924)	(0,7776)	(0,7776)	(0,7138)	(0,7138)	(0,1096)
RELATED UNRELATED	-0,1048	-0,0201	-0,0291	-0,0832	-0,0832	-0,0806
	(0,2798)	(0,8443)	(0,8443)	(0,4025)	(0,4025)	(0,4179)
SIZE	0,3337	0,2365	0,1312	-0,3209	-0,3209	-0,3210
	(0,1693)	(0,3568)	(0,3568)	(0,1975)	(0,1975)	(0,1978)
R&D/SALES	0,0114	0,0081	-0,0003	0,0007	0,0007	-0,0008
	(0,0935)	(0,2615)	(0,2615)	(0,9166)	(0,9166)	(0,9075)
CASHFLOW/SALES	0,0028	0,0025	0,0037	-0,0007	-0,0007	-0,0022
	(0,3357)	(0,4185)	(0,4185)	(0,8070)	(0,8070)	(0,4668)
PROFITABILITY TARGET	0,0060	0,0035	-0,0021	-0,0025	-0,0025	-0,0027
	(0,1360)	(0,4187)	(0,4187)	(0,5541)	(0,5541)	(0,5190)
PROFITABILITY ACQUIRER	-0,0017	-0,0007	0,0014	-0,0008	-0,0008	-0,0007
	(0,1295)	(0,5791)	(0,5791)	(0,4748)	(0,4748)	(0,5621)
SALES GROWTH TARGET	0,0482	-0,0097	0,0259	0,0902	0,0902	-0,0293
	(0,4472)	(0,8847)	(0,8847)	(0,1667)	(0,1667)	(0,6527)
GROWTH INDUSTRY	0,1105	0,2331	0,4550	0,3172	0,3172	-0,3437
	(0,7675)	(0,5563)	(0,5563)	(0,4087)	(0,4087)	(0,3712)
LEVERAGE ACQUIRER	0,0000	0,0001	0,0000	0,0000	0,0000	0,0001
	(0,9031)	(0,6736)	(0,6736)	(0,9861)	(0,9861)	(0,7972)
LEVERAGE TARGET	-0,0002	0,0001	0,0000	0,0003	0,0003	0,0004
	(0,3852)	(0,8108)	(0,8108)	(0,3170)	(0,3170)	(0,1745)
CASH ACQUIRER	0,6070	0,3557	0,5362	0,5804	0,5804	-0,4333
	(0,2507)	(0,5245)	(0,5245)	(0,2843)	(0,2843)	(0,4240)
TARGET M/B	**-0,0433**	-0,0004	-0,0019	0,0030	0,0030	0,0055
	(0,0121)	(0,9819)	(0,9819)	(0,8640)	(0,8640)	(0,7553)
R-squared	0,1844	0,0963	0,1078	0,1059	0,1059	0,0968
Observations	135	135	135	135	135	135

The dependent variable in this table equals one if the merged firm performed better than predicted and zero otherwise. The calculation of the predicted performance is explained in paragraph 3.4. The explanatory variables are described in table 3.1. The p-values are stated in parantheses and variables that are significant at 10% are stated in bold numbers.

[6] The dummy for the explanatory variable for cross border M&As holds a one for acquiring firms that merge with a cross border located target firm and zero otherwise.

Besides the cross border variable, no significant relations are reported for the regressions analysis using the full sample. In the sample, no relation is found for an influence of related and unrelated M&As. Only the coefficient for the leverage of the target firm reports a slightly positive relation on EBIT improvement. This relation was not expected. One could explain an improvement in the ROA by the acquiring firm's capability to lower capital expenses as was found in the operational performance event study in paragraph 5.2. EBIT does not incorporate interest costs so this explanation of the positive relation as indicated by the coefficient was not expected.

Existing literature by Lehto and Lehtoranta (2004) and Cassiman et. al. (2005) mentioned R&D activity has a positive impact on overall profitability improvement. This relation is not supported by the regression models. A negative relation is found for the ROA over five years. The target firms operating profitability and sales growth reported negative coefficients as for the model ROA after five years. The financial variables included for leverage and the targets market to book value did not explain the likelihood of M&A profitability.

Table 5.9 Regression results dependent variable: Operating performance

	EBIT 1 year	EBIT 3 years	EBIT 5 years	ROA 1 year	ROA 3 years	ROA 5 years
C	**0,5347**	0,2139	**0,2748**	**0,4130**	**0,3212**	**0,5426**
	(0,0004)	(0,1247)	(0,0550)	(0,0035)	(0,0229)	(0,0001)
INDUSTRY UTILITIES	**-0,1911**	0,0821	-0,1104	-0,1252	0,0545	-0,1174
	(0,0875)	(0,4329)	(0,3040)	(0,2342)	(0,6047)	(0,2431)
DOMISTIC vs CROSS BORDER	0,0030	**0,2805**	0,1110	-0,0068	**0,2146**	-0,0543
	(0,9786)	(0,0091)	(0,3084)	(0,9490)	(0,0464)	(0,5935)
RELATED UNRELATED	-0,0342	-0,0305	-0,1598	0,0323	-0,1439	-0,0937
	(0,7359)	(0,7493)	(0,1041)	(0,7361)	(0,1360)	(0,3068)
SIZE	**-0,5311**	-0,0090	-0,0909	-0,3820	-0,0027	-0,1266
	(0,0379)	(0,970)	(0,7102)	(0,1123)	(0,9909)	(0,5802)
R&D/SALES	0,0016	-0,0107	0,0003	0,0048	-0,0048	**-0,0116**
	(0,820)	(0,1126)	(0,9676)	(0,4714)	(0,4770)	(0,0723)
CASHFLOW/SALES	-0,0018	-0,0029	-0,0019	-0,0016	-0,0042	-0,0013
	(0,5529)	(0,3135)	(0,5088)	(0,5785)	(0,1455)	(0,6352)
PROFITABILITY TARGET	0,0021	-0,0053	0,0017	0,0040	-0,0022	**-0,0065**
	(0,6250)	(0,1835)	(0,6728)	(0,3211)	(0,5860)	(0,0896)
PROFITABILITY ACQUIRER	-0,0011	-0,0015	0,0009	0,0006	-0,0005	0,0003
	(0,3417)	(0,1837)	(0,4064)	(0,6108)	(0,9658)	(0,7707)
SALES GROWTH TARGET	-0,0163	0,0066	-0,0924	-0,0731	-0,0831	**-0,1274**
	(0,8065)	(0,9152)	(0,1505)	(0,2448)	(0,1879)	(0,0351)
GROWTH INDUSTRY	0,4144	-0,3977	-0,1087	0,1068	-0,0362	0,1668
	(0,2914)	(0,2815)	(0,7737)	(0,7728)	(0,9222)	(0,6371)
LEVERAGE ACQUIRER	0,0001	0,0002	0,0002	0,0002	0,0002	0,0002
	(0,5851)	(0,3440)	(0,3103)	(0,4796)	(0,4299)	(0,4645)
LEVERAGE TARGET	0,0003	**0,0005**	0,0003	0,0002	0,0002	0,0002
	(0,2916)	(0,0758)	(0,2218)	(0,3622)	(0,4809)	(0,4614)
CASH ACQUIRER	0,5143	-0,4160	0,2447	0,2497	0,3058	0,3334
	(0,3529)	(0,4240)	(0,6462)	(0,6322)	(0,5594)	(0,5039)
TARGET M/B	-0,0069	0,0154	0,0222	-0,0248	-0,0171	0,0026
	(0,6982)	(0,3605)	(0,1993)	(0,1424)	(0,3134)	(0,8709)
SALESGROWTH	0,0926	0,1431	0,0990	0,0833	0,1301	0,1097
Observations	135	135	135	135	135	135

The dependent variable in this table equals one if the merged firm performed better than predicted and zero otherwise. The calculation of the predicted performance is explained in paragraph 3.4. The explanatory variables are described in table 3.1. The p-values are stated in parantheses and variables that are significant at 10% are stated in bold numbers.

CHAPTER 6 Conclusions

This thesis empirically investigates M&As in North America, the United Kingdom and Europe during the fourth and fifth merger waves as reported by Martynova and Renneboog (2008). The subjects under consideration are the short run abnormal returns for acquiring and target firms, the long run acquirers' shareholder profitability, risk and the operational performance improvement based on accounting variables. Furthermore, the abnormal return and operating performance are subjected to multiple regressions in order to analyse the likelihood of success for a number of explanatory variables.

On the short run, the data reports a modest positive abnormal return for the combination of acquiring and target firms' shareholders, negative returns for acquiring firms and a large positive return for target firms. These results are in accordance with most previous empirical research. On the long run, the results do not report positive returns for acquiring firms' shareholders. For almost all event windows that are used the acquiring shareholders earned a significantly lower return than they would have earned holding a benchmark portfolio (S&P world index). The results over related/unrelated, industries, deal periods and regions delivered some interesting findings. Related M&As do not outperform unrelated M&As as was suggested by existing literature; although there was no evidence found to support the opposite. The data did not report lower returns for acquiring firms during merger waves as was expected. The theory that managers are less picky in M&A transactions during M&A boom periods is thereby not supported by the findings in this study. The acquiring firms' shareholders in M&As where the target firm is located in Europe earned a higher return than M&As with a target firm located in the United Kingdom or North America. Against the strong negative 45% abnormal return for the total sample on a four-year basis, shareholders who acquired a Europe-based firm earned a positive abnormal return of 14%. This does not support the idea that acquisitions under the more protective European legislation are less profitable. Furthermore, M&A activity in the Utilities industry report significant lower returns than the other industries included in the sample. The same results were found in the regression analysis. Finding an explanation for the underperformance of M&As in the different industries was not part of the research subjects.

Often used motives for M&As are operational and financial synergies in order to perform cost reduction by economies of scale, exploit market power, integrate R&D activities and minimize capital expenses. The result found in this thesis does not report operational performance improvement. The level in sales and EBIT in the actual post-merger period is lower than the predicted levels for the individual firms based on industry benchmark performances. This implies that the acquiring company on average did not manage to benefit sales growth or to translate cost reductions into higher EBIT

levels. Not surprisingly the overall return on assets did not improve either. On the contrary, the result does suggest evidence for the financial synergy motive. The average capital expenses by the acquiring firms decreases within two years after the M&A announcement related to the predicted capital expenses for the individual firms. After four years, two-third of the acquirers managed to decrease their expenses on capital.

Overall, results of the event studies for abnormal returns and operating performance do not support the synergy advantages for acquiring firms in the selected industries. The shareholders of firms involved in M&As earned a significant lower return than they would have if the merger never happened. Only transactions with a target firm based in Europe might be better off earning a higher return. The selected firms are within clearly defined regions and industries. Although some results are highly significant, one must be careful on making general conclusions based on these findings.

The regression model for explanatory variables and the dependent variables' abnormal returns and post-merger operating performance improvement did not report many significant relations. Overall, only a relation for cross border M&As is indicated by the regression results. This indicates that acquirers are successful in operating profitable takeovers abroad. R&D activity does not increase the likelihood for a profitable unrelated M&A. A target firm performing pre-merger with a high operating margin and sales growth have a negative influence on ROA improvements in the long run.

The findings in this research provide some useful implications for future research. Hence, the following limitations must be considered. Although some differentiated results are significant for the different merger waves and regions, the sample only included a few transactions before 1993 and eight target firms in Europe. Further research is necessary to obtain stronger evidence on this subject. Moreover, this study did not make any attempt in explaining the differences in the differentiated results. More literature and empirical studies are needed to explain the differences in the event study returns found for the regions, industries and merger waves. The results of the regression analysis do not find many significant control variables. Furthermore, the sample is constructed using M&As during 1981 and 1995. In future researches more recent events should be included to provide useful insights in recent M&As activity.

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APPENDIX A M&A Transactions included in sample

Date Announced	Acquiror Name	Target Name
12-06-1985	Hanson Trust PLC	Imperial Group PLC
01-16-1987	APV PLC	Baker Perkins PLC
03-09-1987	Chrysler Corp	American Motors Corp
07-21-1987	FKI Electricals PLC	Babcock International PLC
07-29-1987	PacifiCorp	Utah Power & Light Co
12-23-1987	American Home Products Corp	AH Robins Co Inc
01-25-1988	Eastman Kodak Co	Sterling Drug
10-04-1988	Grand Metropolitan PLC	Pillsbury Co
01-26-1989	Stone Container Corp	Consolidated-Bathurst Inc
02-06-1989	Cooper Industries Inc	Champion Spark Plug Co
03-31-1989	Beecham Group PLC	SmithKline Beckman Corp
06-22-1989	Hanson PLC	Consolidated Gold Fields PLC
07-27-1989	Bristol-Myers Co	Squibb Corp
09-22-1989	Procter & Gamble Co	Noxell Corp(Procter & Gamble)
03-16-1990	Midwest Energy Co	Iowa Resources
04-25-1990	Cie de Saint-Gobain SA	Norton Co(Cie De Saint-Gobain)
07-09-1990	Lyonnaise des Eaux SA	Dumez SA
01-31-1991	Hasbro Inc	Tonka Corp
09-16-1991	Hanson PLC	Beazer PLC
11-22-1991	Newell Co	Sanford Corp
12-10-1991	Redland PLC	Steetley PLC
10-29-1992	Tomkins PLC	Ranks Hovis McDougall PLC
06-10-1993	The New York Times Co	Affiliated Publications Inc
06-30-1993	Hanson PLC	Quantum Chemical Corp
03-10-1994	Northrop Corp	Grumman Corp
05-02-1994	Roche Holding AG	Syntex Corp
07-05-1994	Wellfleet Communications	SynOptics Communications Inc
08-22-1994	Johnson & Johnson	Neutrogena Corp
08-30-1994	Martin Marietta Corp	Lockheed Corp
12-20-1994	De La Rue PLC	Portals Group PLC
02-28-1995	Hoechst AG	Marion Merrell Dow Inc
04-03-1995	Raytheon Co	E-Systems Inc
06-05-1995	Intl Bus Machines Corp{IBM}	Lotus Development Corp
06-26-1995	Energy Ventures Inc	Enterra Corp
07-17-1995	Kimberly-Clark Corp	Scott Paper Co
08-01-1995	Westinghouse Electric Corp	CBS Inc
09-20-1995	Seagate Technology Inc	Conner Peripherals Inc
10-19-1995	Johnson & Johnson	Cordis Corp
11-06-1995	International Paper Co	Federal Paper Board Co
12-18-1995	Steris Corp	AMSCO International
02-15-1996	Rentokil Group PLC(Sophus)	BET PLC
03-07-1996	Sandoz AG	Ciba-Geigy AG
04-02-1996	Allegheny Ludlum Corp	Teledyne Inc
04-15-1996	Texas Utilities Co	ENSERCH Corp
05-07-1996	Lucas Industries PLC	Varity Corp
05-24-1996	Scottish Power PLC	Southern Water PLC
06-20-1996	Westinghouse Electric Corp	Infinity Broadcasting Corp
07-19-1996	Enron Corp	Portland General Corp

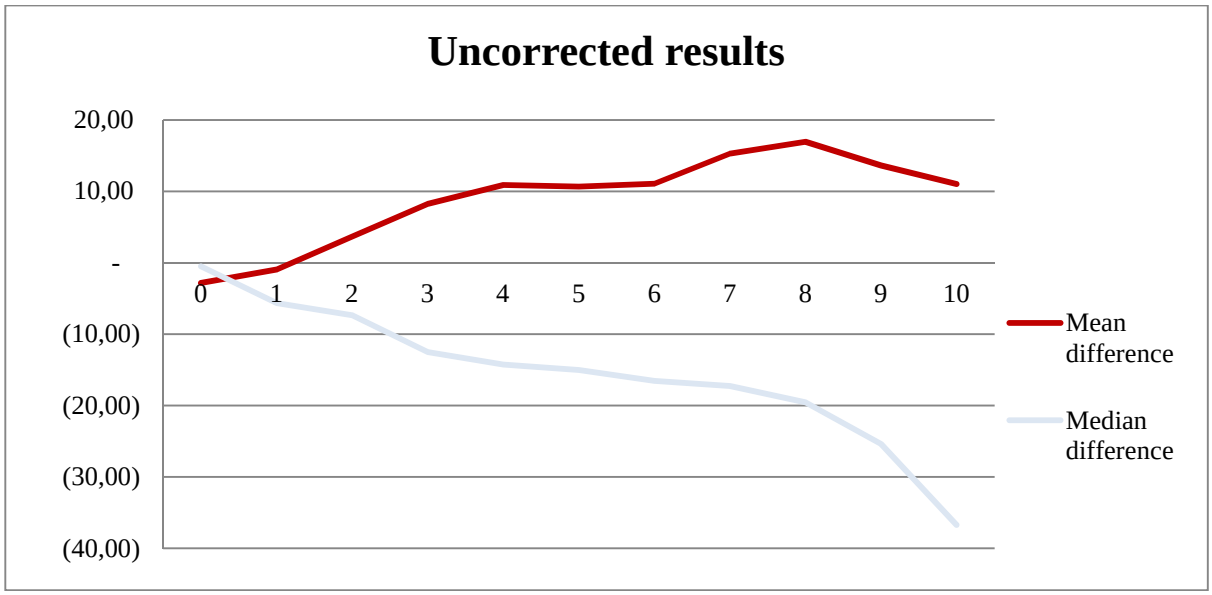
09-12-1996	Gillette Co	Duracell International Inc
09-16-1996	Ohio Edison Co	Centerior Energy Corp
11-18-1996	Mattel Inc	Tyco Toys Inc
11-25-1996	Duke Power Co	PanEnergy Corp
12-17-1996	Boeing Co	McDonnell Douglas Corp
02-18-1997	NGC Corp	Destec Energy Inc
02-26-1997	Baker Hughes Inc	Petrolite Corp
02-27-1997	Camco International Inc	Production Operators Corp
03-18-1997	Canadian Occidental Petroleum	Wascana Energy Inc
03-25-1997	IBP inc	Foodbrands America Inc
03-31-1997	Ascend Communications Inc	Cascade Communications Corp
04-09-1997	Procter & Gamble Co	Tambrands Inc
04-15-1997	Ultramar Diamond Shamrock Corp	Total Petroleum(North Amer)Ltd
04-21-1997	ITT Industries Inc	Goulds Pumps Inc
04-23-1997	Hewlett-Packard Co	VeriFone Inc
04-28-1997	Cambridge Shopping Centres Ltd	Markborough Properties Inc
05-05-1997	Northrop Grumman Corp	Logicon Inc
05-06-1997	Durco International Inc	BW/IP Inc
05-21-1997	LG&E Energy Corp	KU Energy Corp
06-23-1997	Compaq Computer Corp	Tandem Computers Inc
07-03-1997	BAA PLC	Duty Free International Inc
07-24-1997	Mallinckrodt Inc	Nellcor Puritan-Bennett
07-28-1997	National Semiconductor Corp	Cyrix Corp
09-04-1997	Tyson Foods Inc	Hudson Foods Inc
09-05-1997	Misys PLC	Medic Computer Systems Inc
09-11-1997	Pillowtex Corp	Fieldcrest Cannon Inc
09-22-1997	BF Goodrich Co	Rohr Inc
10-06-1997	Federal Express Corp	Caliber Systems Inc
10-10-1997	Kennametal Inc	Greenfield Industries Inc
10-13-1997	Lafarge SA	Redland PLC
10-17-1997	BTR PLC	Exide Electronics Group Inc
11-03-1997	Allegheny Teledyne Inc	Oregon Metallurgical Corp
11-21-1997	TRW Inc	BDM International Inc
12-12-1997	Bethlehem Steel Corp	Lukens Inc
12-18-1997	NIPSCO Industries Inc	Bay State Gas Co
12-19-1997	DR Horton Inc	Continental Homes Holding
01-26-1998	TransCanada Pipelines Ltd	NOVA Corp of Alberta Ltd
01-26-1998	Compaq Computer Corp	Digital Equipment Corp
02-09-1998	United States Filter Corp	Culligan Water Technologies
02-16-1998	Tellabs Inc	Coherent Communications Sys
02-26-1998	Halliburton Co	Dresser Industries Inc
03-03-1998	EVI Inc	Weatherford Enterra Inc
03-09-1998	Bowater Inc	Avenor Inc
04-15-1998	Call-Net Enterprises Inc	Fonorola Inc
04-17-1998	Akzo Nobel NV	Courtaulds PLC
04-21-1998	GEC PLC	Tracor Inc
04-27-1998	Siebe PLC	Eurotherm PLC
04-27-1998	Danaher Corp	Fluke Corp
04-29-1998	Elan Corp PLC	Neurex Corp
05-04-1998	Atlantic Richfield Co	Union Texas Petroleum Holdings

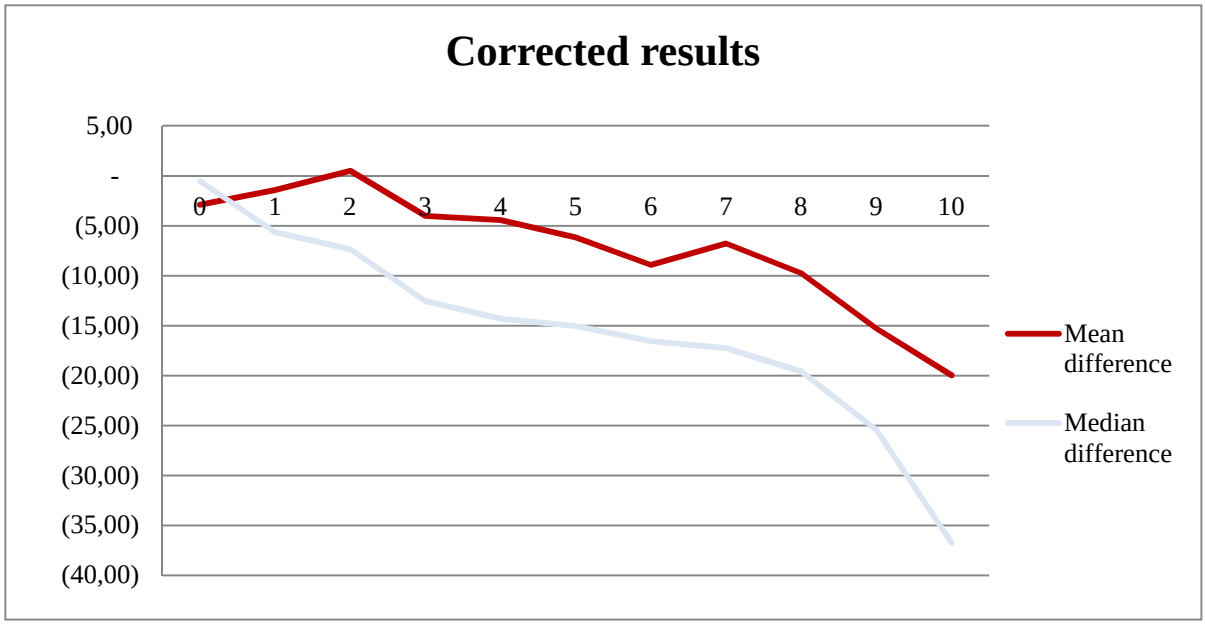
05-06-1998	Seton Healthcare Group PLC	Scholl PLC
05-11-1998	Consolidated Edison Inc	Orange & Rockland Utilities
05-11-1998	Baker Hughes Inc	Western Atlas Inc
05-11-1998	Jefferson Smurfit Corp	Stone Container Corp
05-29-1998	USX-Marathon Group	Tarragon Oil and Gas Ltd
06-04-1998	Alcatel Alsthom CGE	DSC Communications Corp
06-15-1998	Northern Telecom Ltd	Bay Networks Inc
06-17-1998	Micro Focus Group PLC	Intersolv Inc
06-18-1998	Lyondell Petrochemical	ARCO Chemical Co
06-29-1998	Medtronic Inc	Physio-Control International
07-20-1998	SPX Corp	General Signal Corp
07-24-1998	Enron Corp	Wessex Water PLC
07-29-1998	Koninklijke Philips	ATL Ultrasound Inc
07-30-1998	Hercules Inc	BetzDearborn Inc
08-03-1998	Ascend Communications Inc	Stratus Computer Inc
08-05-1998	Laporte PLC	Inspec Group PLC
08-06-1998	Service Corp International	Equity Corp International
08-12-1998	CalEnergy Co Inc	MidAmerican Energy Holdings Co
09-01-1998	Scottish Hydro-Electric PLC	Southern Electric PLC
09-20-1998	Lockheed Martin Corp	COMSAT Corp
10-05-1998	ALZA Corp	SEQUUS Pharmaceuticals Inc
10-15-1998	Kerr-McGee Corp	Oryx Energy Co
10-16-1998	Laidlaw Inc	Greyhound Lines Inc
10-19-1998	Clorox Co	First Brands Corp
10-19-1998	Kroger Co	Fred Meyer Inc
10-21-1998	Newell Co	Rubbermaid Inc
10-30-1998	Loblaw Cos Ltd	Provigo Inc
11-02-1998	Medtronic Inc	Sofamor Danek Group Inc
11-02-1998	BMC Software Inc	Boole & Babbage Inc
11-16-1998	Vulcan Materials Co	CalMat Co
11-20-1998	AES Corp	CILCORP Inc
11-23-1998	Siebe PLC	BTR PLC
11-23-1998	BF Goodrich Co	Coltec Industries Inc
11-24-1998	America Online Inc	Netscape Communications Corp
11-24-1998	International Paper Co	Union Camp Corp
11-30-1998	Medtronic Inc	Arterial Vascular Engineering
12-02-1998	Sanofi SA	Synthelabo SA(L'Oreal SA)
12-07-1998	Scottish Power PLC	PacifiCorp
12-07-1998	GKN PLC	Interlake Corp
12-14-1998	National Grid Group PLC	New England Electric System
12-18-1998	BorgWarner Inc	Kuhlman Corp
12-18-1998	Alltel Corp	Aliant Communications Inc
12-21-1998	CRH PLC	Ibstock PLC
12-23-1998	Kimberly-Clark Corp	Ballard Medical Products
01-13-1999	Rohm & Haas Co	Morton International Inc
01-13-1999	Lucent Technologies Inc	Ascend Communications Inc
01-28-1999	TRW Inc	LucasVarity PLC
01-29-1999	New England Electric System	Eastern Utilities Associates
02-01-1999	Eaton Corp	Aeroquip-Vickers Inc
02-17-1999	SCANA Corp	PSNC

02-22-1999	Dominion Resources Inc	Consolidated Natural Gas Co
02-22-1999	United Technologies Corp	Sundstrand Corp
02-26-1999	Koninklijke Philips	VLSI Technology Inc
03-01-1999	Danisco A/S	Cultor Oy
03-01-1999	Gilead Sciences Inc	NeXstar Pharmaceuticals Inc
03-02-1999	Jones Apparel Group Inc	Nine West Group Inc
03-02-1999	Alcatel SA	XYLAN Corp
03-04-1999	Intel Corp	Level One Communications Inc
03-15-1999	El Paso Energy Corp	Sonat Inc
03-22-1999	Vivendi SA	United States Filter Corp
04-01-1999	BP Amoco PLC	Atlantic Richfield Co
04-13-1999	Cisco Systems Inc	GeoTel Communications Corp
04-15-1999	Imperial Metal Industries PLC	Polypipe PLC
04-23-1999	Energy East Corp	Connecticut Energy
04-26-1999	GEC PLC	FORE Systems Inc
04-28-1999	TI Group PLC	Walbro Corp
05-04-1999	Huhtamaki Oy	Royal Packaging Inds Van Leer
05-05-1999	URS Corp	Dames & Moore Group
05-06-1999	Litton Industries Inc	Avondale Industries Inc
05-10-1999	Georgia-Pacific Corp	Unisource Worldwide Inc
05-17-1999	General Dynamics Corp	Gulfstream Aerospace Corp
05-17-1999	Precision Castparts Corp	Wyman-Gordon Co
05-21-1999	AK Steel Holding Corp	Armco Inc
05-24-1999	Seton Scholl Healthcare PLC	London International Group PLC
06-01-1999	Intel Corp	Dialogic Corp
06-01-1999	Crompton & Knowles Corp	Witco Corp
06-07-1999	AlliedSignal Inc	Honeywell Inc
06-07-1999	British Steel PLC	Koninklijke Hoogovens NV
06-14-1999	Vivendi SA	Superior Services Inc
06-14-1999	Stagecoach Holdings PLC	Coach USA Inc
06-15-1999	Energy East Corp	CMP Group Inc
06-15-1999	Northeast Utilities	Yankee Energy System Inc
06-15-1999	Pharmacia & Upjohn Inc	SUGEN Inc
06-25-1999	Suez Lyonnaise des Eaux SA	Nalco Chemical Co
06-28-1999	Wisconsin Energy Corp	WICOR Inc
07-05-1999	Koninklijke Numico NV	General Nutrition Cos Inc
07-06-1999	Berisford PLC	Scotsman Industries Inc
07-08-1999	Abbott Laboratories	Perclose Inc
07-12-1999	Intl Bus Machines Corp{IBM}	Sequent Computer Systems Inc
07-21-1999	Johnson & Johnson	Centocor Inc
07-23-1999	Texas Instruments Inc	Unitrode Corp
07-26-1999	Shire Pharmaceuticals Grp PLC	Roberts Pharmaceutical Corp
07-27-1999	Cooper Tire & Rubber Co	Standard Products Co
08-04-1999	Dow Chemical Co	Union Carbide Corp
08-09-1999	Ashland Inc	Superfos A/S
08-09-1999	EMC Corp	Data General Corp
08-11-1999	Alcoa Inc	Reynolds Metals Co
08-20-1999	Phelps Dodge Corp	Cyprus Amax Minerals Co
08-22-1999	Carolina Power & Light Co	Florida Progress Corp
08-23-1999	Sun Microsystems Inc	Forte Software Inc

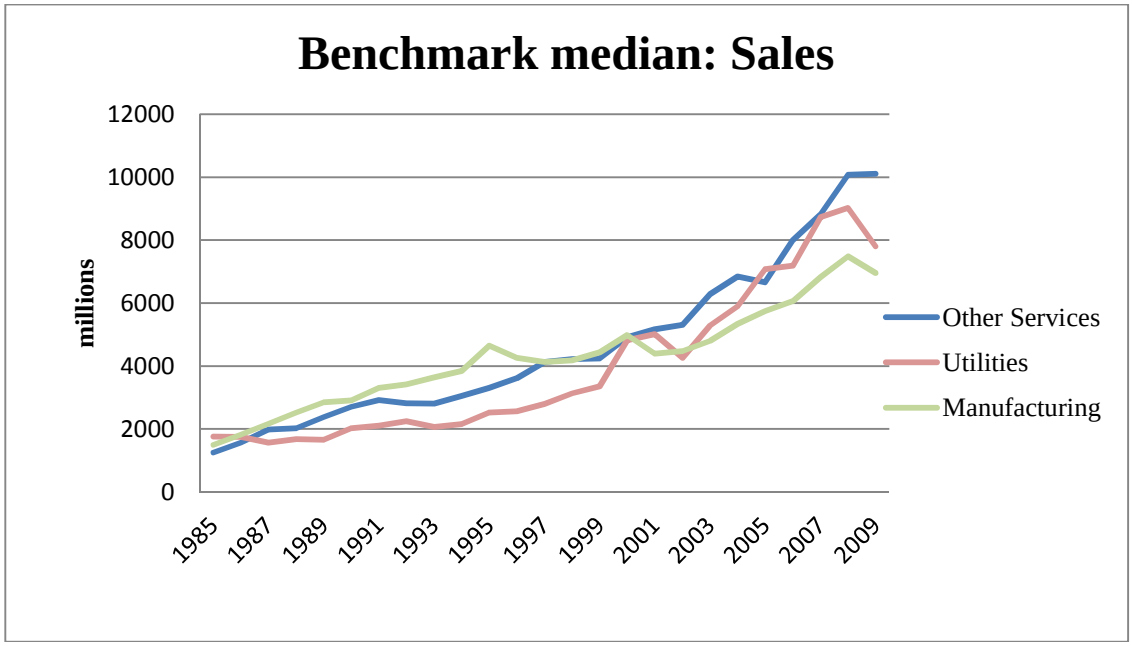
09-02-1999	Dyckerhoff AG	Lone Star Industries Inc
09-09-1999	Illinois Tool Works Inc	Premark International Inc
09-13-1999	LVMH Moet-Hennessy Louis SA	TAG Heuer International SA
09-15-1999	Microsoft Corp	Visio Corp
09-20-1999	Cie de Saint-Gobain SA	Furon Co Inc
10-04-1999	Gemstar International Group	TV Guide(Tele-Communications)
10-05-1999	DTE Energy Co	MCN Energy Group Inc
10-14-1999	Intel Corp	DSP Communications Inc
10-18-1999	Nortel Networks Corp	Clarify Inc
11-04-1999	KeySpan Corp	Eastern Enterprises
11-04-1999	Pfizer Inc	Warner-Lambert Co
11-08-1999	RMC Group PLC	Rugby Group PLC
11-14-1999	Corning Inc	Oak Industries Inc
11-17-1999	Kimberly-Clark Corp	Safeskin Corp
11-22-1999	Whitbread PLC	Swallow Group PLC
11-22-1999	Thames Water PLC	E'town Corp
12-01-1999	Informix Corp	Ardent Software Inc
12-20-1999	Honeywell International Inc	Pittway Corp

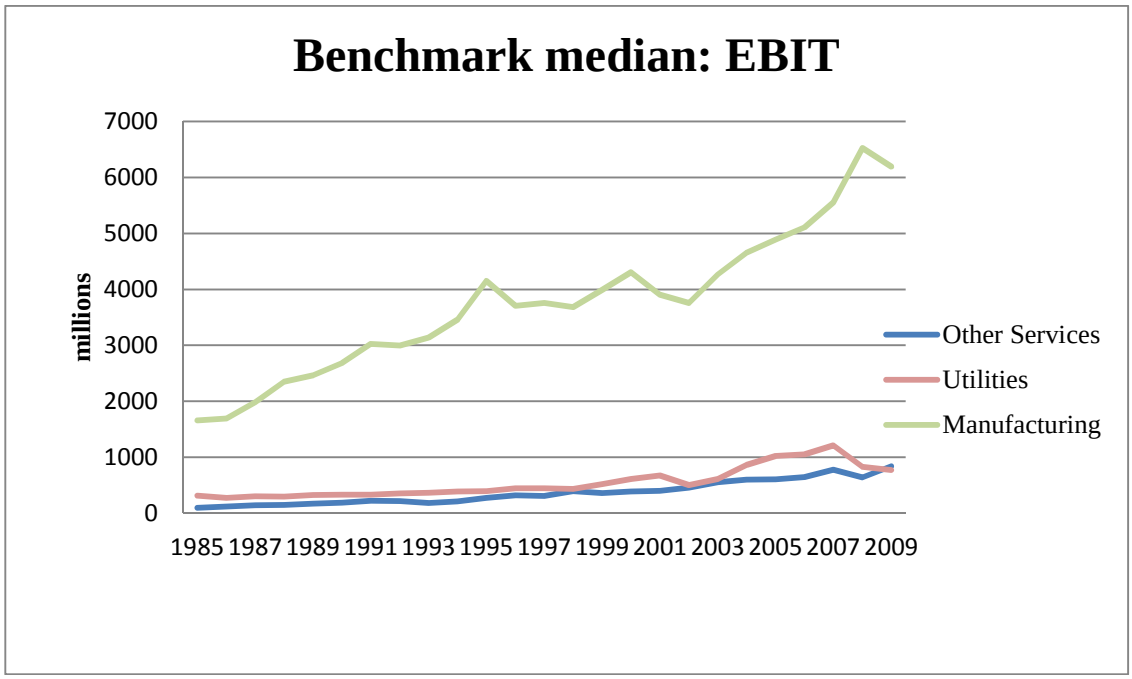
APPENDIX B Graphs results operation performance difference Sales

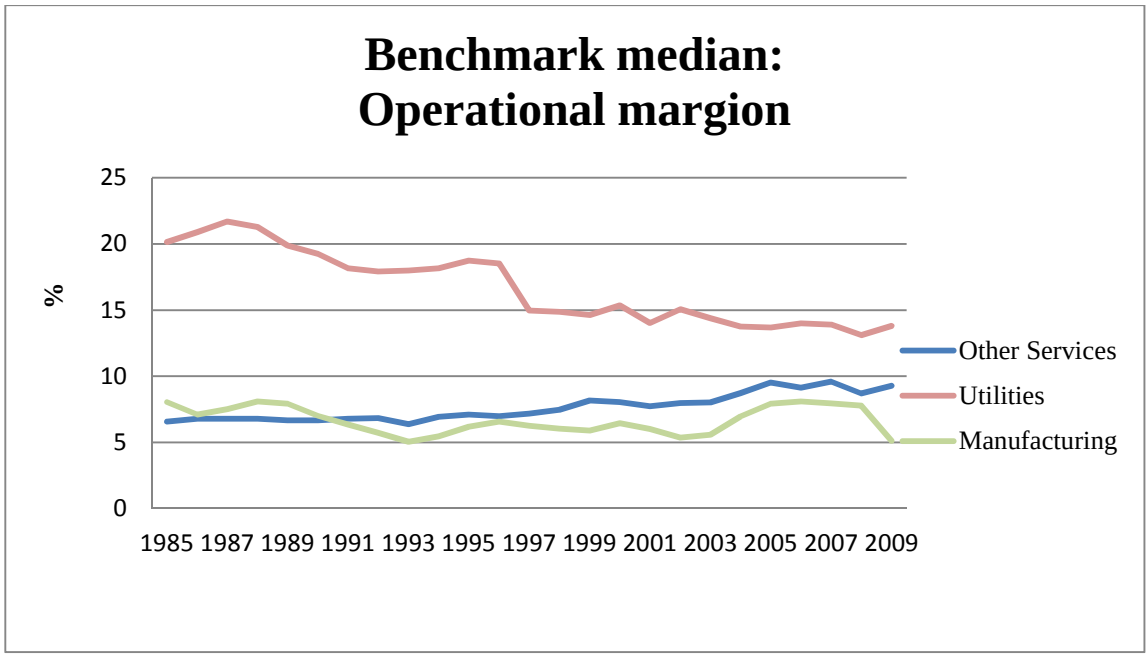


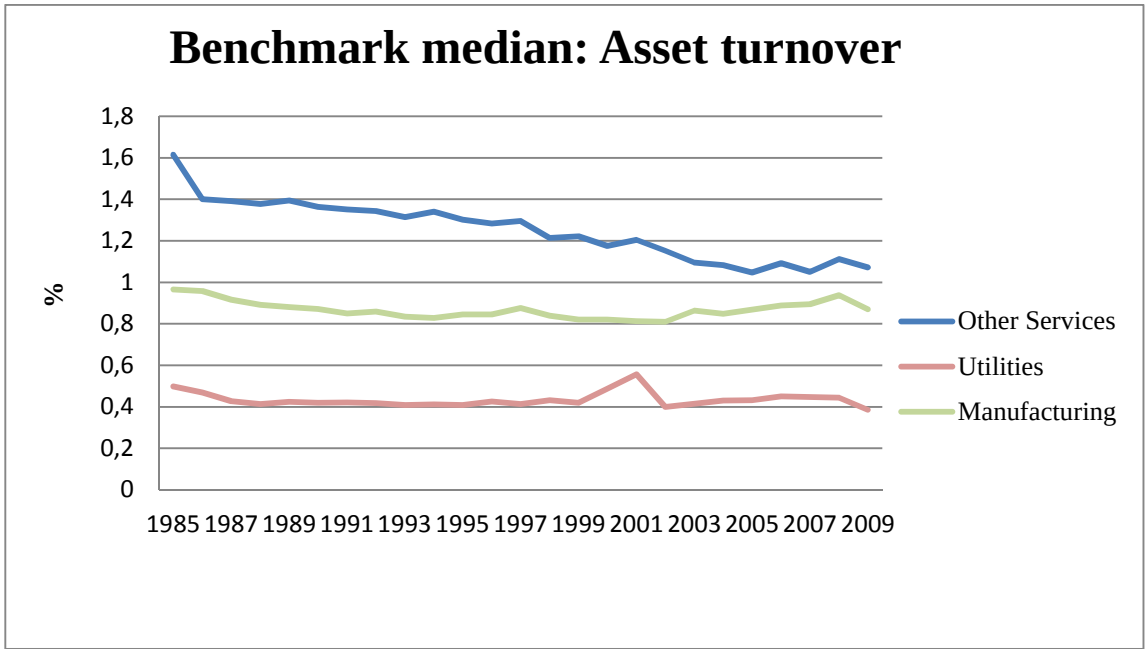


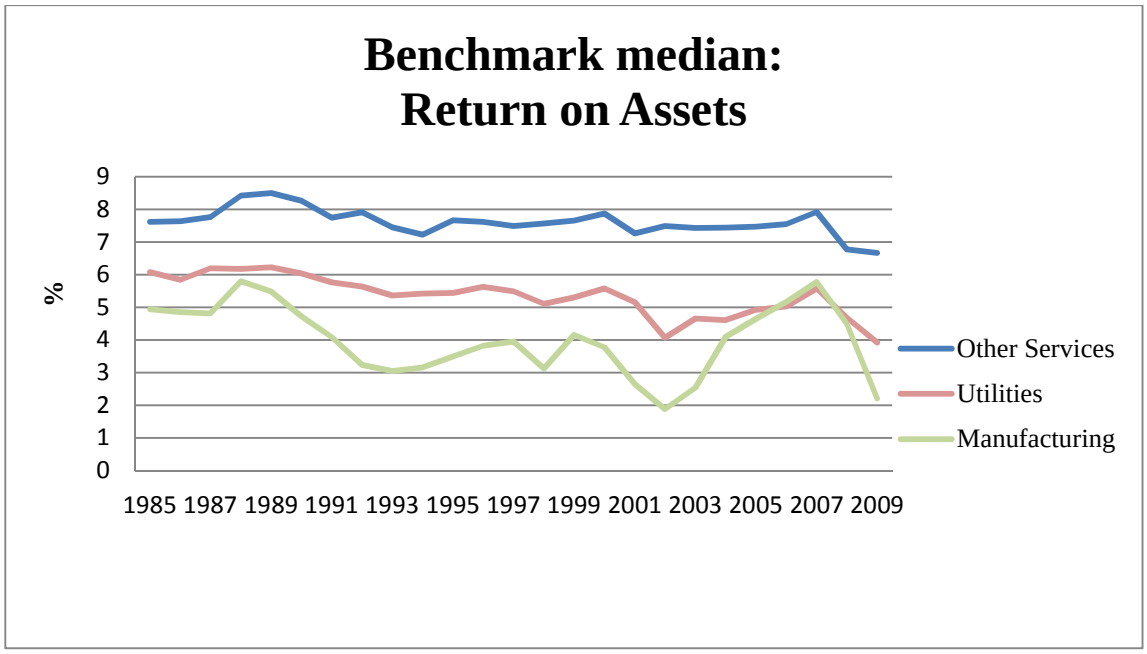
APPENDIX C Graphs - Industry medians

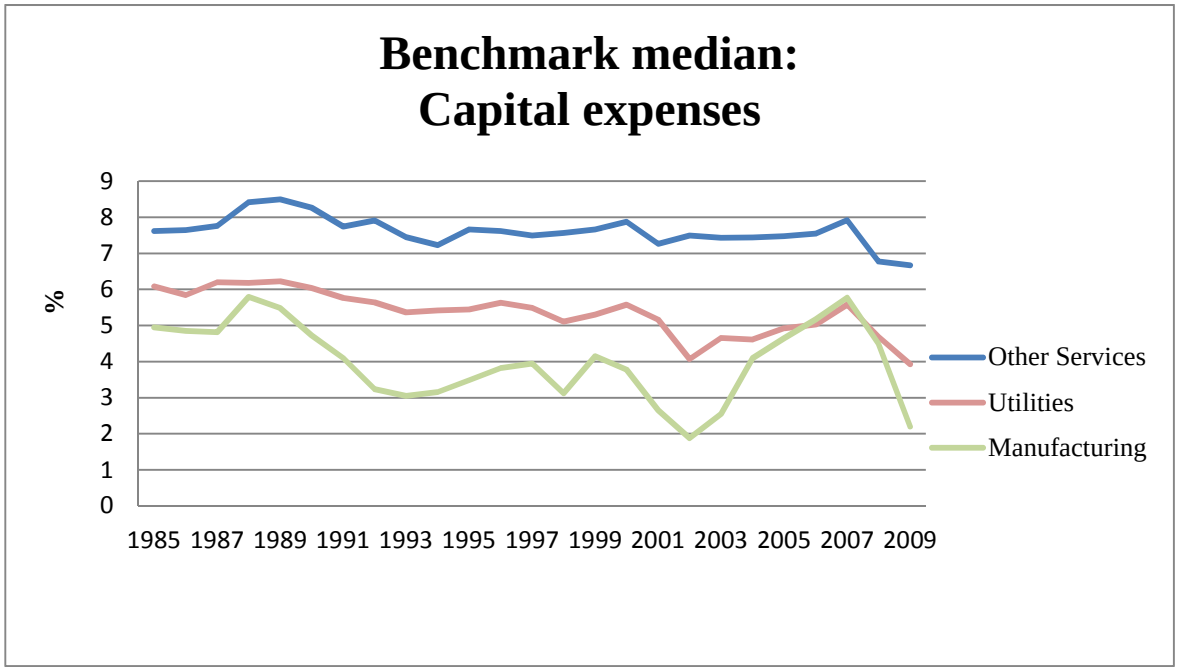





Benchmark median:
Operational margion
%
25
20
15
10
5
0
1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009
Other Services
Utilities
Manufacturing


Benchmark median: Asset turnover
%
1,8
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009
Other Services
Utilities
Manufacturing


Benchmark median:
Return on Assets
%
9
8
7
6
5
4
3
2
1
0
1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009
Other Services
Utilities
Manufacturing


Benchmark median:
Capital expenses
%
9
8
7
6
5
4
3
2
1
0
1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009
Other Services
Utilities
Manufacturing