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Value creation through mergers and acquisitions

– A study on the Swedish market

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Key words:	Mergers and Acquisitions (M&A), Cumulative Abnormal Returns (CAR), Value Creation, Event Study, Determinants and Regression Analysis
Purpose:	The aim of our study is two folded. We wish to investigate to what extent M&A have created value for the acquiring companies' shareholders on the Swedish stock exchange. We also seek to answer what determinants affect the success or failure of the deal.
Methodology:	A quantitative approach using event study and cross sectional regression analysis has been used.
Theoretical perspectives:	The theoretical perspective takes it starting point from the market efficiency theory and continue with theory of value creation through mergers and acquisitions.
Empirical Foundation:	Mergers and acquisitions during 1997-2009 done by Swedish public companies have been studied empirically.
Conclusions:	Mergers and acquisitions on the Swedish market 1997-2009 have created value of approximately 3.5 percent on average measured as abnormal returns. The results are statistically significant. No significance was found for the explanatory regressions and thus we can not find any guidance for managers of when it is preferable to engage in M&A transactions.

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1. Introduction

1.1 Background

Monday morning of September 15, 2008, Lehman Brothers Holdings Inc. announced that it would file for Chapter 11 bankruptcy protection. Over the weekend before September 15, US authorities had failed to broker a takeover and one of the biggest credit events in history was a fact. This triggered and intensified the ongoing credit crisis (Fender and Gyntelberg, 2008).

Since the financial crisis broke out in the second half of 2008, mergers and acquisitions (M&A) has suffered from managerial risk aversion and problems of finding debt financing. The whole M&A industry has suffered from a huge downturn. However, a report by Granth Thornton (2009) states that the European and Swedish M&A activity is on its way up again. Their survey concludes that managers are predicting liquidity to return to the market within a few years. As a result of this they also plan for more M&A activity. More and more of the managers of European firms plan major acquisitions within the next three years (Grant Thornton, 2009).

Another study by KPMG (2009) states that 2009 will likely see a further downturn in M&A activity but that deal activity should slowly return late this year. As Stephen Barrett, Corporate Finance chairman at KPMG puts it:

"I believe that those people who ended 2008 feeling battle fatigued in the face of endless bad news stories have started the New Year with a desire to kick-start the deals market – something that will be facilitated by the opportunities which will inevitably emerge for value investors in certain regions and sectors" (KPMG, 12/1 2009).

Considering the reports above a new merger wave could be close. When financing gets easier and risk taking more attractive again, companies will likely find many opportunities of making acquisitions. Under such circumstances it is more important than ever to consider the strategic rationale behind the deals rather than just "go with the flow". It seems highly

relevant to conduct further research to answer the question to what extent M&A actually creates value and try to give managers some guidance in the M&A jungle.

1.2 Problem discussion

Do corporate control transactions such as mergers and acquisitions create shareholder value? This is a question often debated within the field of corporate finance. As practitioners and theorists argue for and against, one can conclude that the market stays sceptical.

There are typically three different questions that have been asked within this field of research. First, if the target's stockholders earn positive abnormal returns from acquisitions. Second, if the acquirer's shareholders earn a positive abnormal return from tender offers and the third, if acquirers earn positive returns from mergers (Kargin, 2001). Many researchers have addressed these questions but there are still several issues that are unsolved.

Most studies show evidence that target firms earn significant abnormal returns when proposed with a merger or tender offer. See for example Dodd (1980) and Franks, Harris and Titman (1991). However, regarding the second two questions, evidence from previous studies show mixed results.

In theory there are many ways that a merger or an acquisition can create value for the acquiring firm and its stockholders. Some of the main sources of value are improvements, synergies, increased market power etc. However, evidence from stock exchanges in America and Europe imply that more than 50 percent of mergers and acquisitions fail to create shareholder value (Bieshaar, Knight and van Wassenaer, 2001). The reason for this failure is often argued to be that deals are done for the wrong reasons. Some managers have personal interests in building and controlling a big a firm as possible. This is often referred to as management "empire building" (Halpern, 1982). As a result of the separation of ownership and control in public firms, this human behaviour can lead to mergers and acquisitions being conducted for other reasons than sound, rational strategic arguments. Thus, shareholder value creation might not always be the foremost objective in a transaction.

As mentioned above the market seems to be sceptical about M&A. But, even though the market seems to frown on the average deal, many deals actually creates value (Bieshaar *et al*, 2001). Therefore, an important issue is to separate what kind of deals that create value and what kind that destroy value. This information could be used as guidance for management teams of public firms to decide under what circumstances to engage in M&A transactions.

Further, to our knowledge, there is just one study published on the Swedish market (Doukas, Holmén and Travlos, 2002). This study is though limited in its scope since it does not test the same variables as most studies on other markets have done. It is also a bit dated since the time period it covers is 1980-1995. Thus we find it interesting to see what drives value in acquisitions on the Swedish market today.

1.3 Purpose

The purpose of our study is divided into two parts. First we aim to study to what extent mergers and acquisitions have created value for the acquiring companies' shareholders on the Swedish stock exchange. Our second aim is to map out and statistically test what determinants affect the success or failures of an M&A deal.

1.4 Thesis outline

Chapter 2 gives the theoretical background that is needed for our study with focus on how and why acquisitions might create value. Chapter 3 outlines our initial hypotheses which follow the theoretical background. Chapter 4 describes the method used and the methodological problems that has to be considered. In chapter 5 we present our empirical findings and in chapter 6 we analyze the empirical findings and compare our results to our initial hypotheses. In the last chapter, 7, conclusions of the study are made and some suggestions for further research is given.

2. Theoretical background

In this chapter we will give a theoretical background to value creation through mergers and acquisitions. Previous research will be reviewed and compared both for CAR studies and for the determinants of M&A success or failure.

2.1 Value creation through mergers and acquisitions

2.1.1 Definitions

The basic definition of a merger is when an acquirer buys the shares of a target firm. The merger proposal from the bidder must be accepted by the board of directors of the target and then stockholders vote to approve or reject the bid. However, the stockholders never get the chance to vote on bids that management has already rejected. In acquisitions (or tender offers) management has no veto power. Then the bidder proposes the shareholders of the target to sell their shares for a specified purchase price. The decision to accept or reject is then up to each individual shareholder (Kargin 2001). The success of the acquisition depends on what proportion of the stockholders accepts the offer. According to the IFRS accounting rules (FAR, 2008), applicable to Swedish listed companies, an acquirer should consolidate a target when it owns 50 percent or more of the target's voting rights.

M&A are commonly categorized as horizontal, vertical or conglomerate (Gaughan, 2007, p. 13). An acquisition is categorized as horizontal when two firms that are competitors combine. Combinations of two firms acting at different stages of the production chain are referred to as a vertical merger. A conglomerate merger is when one company acquires a company in another industry.

2.1.2 Shareholder value perspective

The most fundamental questions when researching value creation from mergers and acquisitions is when and how value is created. The first question is who management should create value for. The discussion often sets shareholders against other stakeholders (e.g. employees, social responsibilities, the environment).

Koller, Goedhart and Wessels (2005, p.19) argue that companies that are dedicated to value creation are healthier and build stronger economies, higher living standards and more opportunities for individuals. The legal frameworks in the US and the UK clearly state the shareholders as the owners of the firm and the board of directors as their elected representatives. Thus it is the objective goal of the firm to maximize shareholder value. Studying the Swedish law for limited liability companies indicates that similar conditions are valid in Sweden as well.

Koller *et al* (2005, p. 19) further argues that pursuing shareholder value does not mean neglecting other stakeholders' interests. They take the example of the employees as a stakeholder. In the corporate world of today attracting and retaining good people gets more and more important. Thus, trying to increase profits by treating employees badly, will backfire in the long run. Hillman and Keim (2001) argue that building better relations with primary stakeholders can help firms develop intangible assets that create competitive advantage. Thus, stakeholder value is consistent with shareholder value. Further, to our knowledge, all previous studies done in the field of M&A value creation, including Doukas *et al* (2002) on the Swedish market, use the premise that boards and managers should have shareholder value maximization as their primary objective. Given this, value creation from M&A can be measured as changes in a company's stock price.

2.1.3 The realization of shareholder value – market efficiency

In previous studies bidder performance is typically measured with the method of an event-study. A pre specified event-window must then be developed based on theoretical arguments. Both long and short-run event windows have been used frequently (Tuch and O'Sullivan,

2007). The question is then when value creation is realized in an M&A transaction. When will the market capitalization reflect the full effect of a deal? The answer to this question is highly dependent on what level of efficiency the market is believed to show. Thus, we seek our answer through a review of the well established theory and empirical evidence of efficient markets.

The effective market hypothesis is a controversial and often debated theory. The hypothesis claims that it is impossible for an investor to obtain abnormal returns since the stock price fully reflects all available information (Fama, 1965).The established definition of market efficiency was introduced by Fama (1970). He defines a market as efficient if security prices reflect all available information. In his article he also presented three different levels of market efficiency; weak, semi-strong and strong.

Under the weak form of market efficiency, today's stock price reflects all information contained in historical prices. Under the semi-strong form, stock prices will immediately adjust to publicly available information. All available information is therefore reflected in the security price. An example of information that a stock price will adjust for is an announced acquisition. On the other hand, if the market shows strong form of efficiency, all information available, both public and private, is reflected in the stock price. This implies that not even insiders can expect to earn an abnormal return. Further, in this case, an acquisition announcement should not affect the stock price, as the announcement is already expected and incorporated in the stock price.

Previous studies in the field of M&A value creation (see e.g. Tuch and O´Sullivan, 2007 and Bieshaar *et al*, 2001) assume semi-strong market efficiency and thus assume that share prices react well-timed and unbiased when new information reaches the market.

2.1.4 Review of acquirer performance – cumulative abnormal returns (CAR)

Both the results and research methods vary considerably between previous studies of shareholder value creation with M&A. There are many studies published and to sort out and

summarize previous research we have collected the main studies[1] and reviewed the evidence they present. This is presented in table 2.1 sorted after the year the article got published.

Table 2.1 Summary of previous CAR studies

Year	Author	Period	Market	No. of deals	Event-window		CAR
1980	Firth	1969-1975	UK	642	[-1, 1]	months	-
1980	Dodd	1970-1977	US	151	[-40, 40]	days	-
1989	**Franks and Harris**	**1955-1985**	**UK**	**1058**	**[- 4, 1]**	**months**	**+**
1990	**Mitchell and Lehn**	**1980-1988**	**US**	**232**	**[-1, 1]**	**days**	**-**
1991	Franks, Harris and Titman	1975-1984	US	399	[-5, 5]	days	+/-
1991	Lang *et al*	1968-1986	US	87	[-5, 5]	days	+/-
1994	**Smith and Kim**	**1980-1986**	**US**	**177**	**[-1, 0]**	**days**	**-**
1997	**Holl and Kyriazis**	**1979-1989**	**UK**	**178**	**[0, 2]**	**months**	**-**
1998	Higson and Elliot	1975-1990	UK	1660	[0, 3]	months	+
2000	**Walker**	**1980-1996**	**US**	**556**	**[-2, 2]**	**days**	**-**
2003	**Sudarsanam and Mahate**	**1983-1985**	**UK**	**519**	**[-1, 1]**	**days**	**-**
2004	**Gupta and Misra**	**1980-1998**	**US**	**285**	**[-10, 10]**	**days**	**-**
2004	**Song and Walkling**	**1985-2001**	**US**	**5726**	**[-1, 0]**	**days**	**+**
2004	**Campa and Hernando**	**1998-2000**	**EU**	**262**	**[-30, 30]**	**days**	**-**
2006	**Ben-Amar and Andre**	**1998-2000**	**Canada**	**238**	**[-1, 1]**	**days**	**+**

Studies highlighted in bold find statistically significant results

As can be seen from the table a vast majority of previous studies have been conducted on the US or the UK market. A few studies cover other markets such as Europe as a whole and Canada. A majority of studies have found negative returns to bidders although not consistently significant. However, the dispersion of both significant and insignificant results of both positive and negative abnormal returns concludes to a remarkable lack of consensus. We can not see any consistent trend in previous research. Worth noting however is the tendency of the more recent studies, with a very short event-window, to show significantly positive returns. Further a study on the Swedish market (Doukas *et al*, 2002), less focused on average CAR and more on the difference of CAR for focused and conglomerate deals find signs of positive CAR on average on the Swedish market.

Remarkable is also the lack of consistency in the choice of event windows. This is not enough to explain the dispersed results however as results are ambiguous even when the exact same window is used.

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[1] We have used and modified a list from Tuch and O'Sullivan (2007) to identify the major studies within this area of research.

2.2 The strategic motives for M&A

The value of a company is driven by profit margin, revenue growth, capital utilization and the cost of capital (Koller *et al*, 2005, pp. 437-461). These factors are known as the general market value drivers. To change value through an acquisition it is necessary to affect at least one of these variables. In theory there are many different strategic motives for mergers and acquisitions. Here we will go through the most common ones.

2.2.1 Intrinsic vs. market value

The net value of an acquisition is found by comparing the gross value of the acquired assets (intrinsic value of target plus net present value of synergies) to the total price paid (market value of target plus premium paid). According to Koller *et al* (2005, pp. 437-461) executives often motivate an acquisition by stating that the target is undervalued by the market. Halpern (1982) states that the managers of the bidder might attempt to take advantage of an information asymmetry. This is if they think them posess information that is not available to the market and thus that this information is not discounted into the stock's price. The information might be that there are more efficient operating strategies that could be applied to the target firm. If the target's management knew these strategies they could create more value.

It could also be the case that the managers of the target have decided not to take decisions that maximize shareholder value. Jensen and Meckling (1976) suggest that the valuation of a stock reflect the fact that managers might not have their shareholders best interest in mind. This occurs because monitoring, contracts and incentive systems work less than perfect and this will be discounted into the stock price. The announcement of an acquisition should signal to the market the true value of the firm's shares. This theory is consistent with a premium paid for the target, but it does not explain why bidders should receive positive gains and thus gives no incentive for bidders to undertake a costly acquisition (Halpern, 1982).

Over longer periods market value should be reverting to the intrinsic value. In a shorter perspective assets could be over- or under valued as a result of market overreactions (depending on how effective the markets are). Thus, value could be created by making an acquisition when the stock market is in a down cycle and selling in an up cycle. These

opportunities are very small in practice though since the market seems to be reasonably effective and the fact that high premiums over market value is often paid in an acquisition (Koller *et al*, 2005, pp. 437-461).

To really create value it should be necessary to increase the net present value of future free cash flows of the combined company. This is done by realizing synergies between the combining firms.

2.2.2 Synergies

Before delving into the different ways synergies might create value we will make some definitions. Synergy is when two factors combine to an entity that is worth more than the sum of the two parts. In an acquisition this would mean that the corporate combination is more profitable than the sum of the two combined companies themselves. Therefore positive abnormal returns to a bidder are consistent with synergies in an M&A deal (Halpern, 1982).

The value of an acquisition could be measured as Net Acquisition Value (Gaughan, 2007, pp. 117-136).

$$NAV = V_{AB} - [V_A + V_B] - P - E \tag{1}$$

Where:

NAV = Net Asset Value of Acquisition

V_{AB} = Value of the combination of firm A and B

V_A = Standalone value of firm A (acquirer)

V_B = Standalone value of firm B

P = Premium paid for B

E = Expenses for the acquisition

Reorganizing the terms in equation 1 will highlight the synergy effect and the premium paid.

$$NAV = [V_{AB} - (V_A + V_B)] - (P + E) \tag{2}$$

Where:

$$[V_{AB} - (V_A + V_B)] = \text{Synergy effect}$$

$$(P + E) = \text{Premium paid} + \text{Expenses for acquisition}$$

As long as the first term is bigger than the second the acquisition is justified. If the second term is larger than the first company A have overpaid for company B. Thus the value of an acquisition depends on if the synergies will outweigh the costs.

The literature generally separates between two types of synergies; operating and financial. Operating synergies refers to either revenue improvement or cost reductions while financial synergies mean lowering the weighted average cost of capital.

2.2.2.1 Operating synergies

There are many possible sources of operating synergies. They could be either revenue enhancing or cost reducing. Examples of a revenue enhancing synergy is when a company with good products but without the right market channels combines with a firm that has a strong distribution network. According to Gaughan (2007, pp. 117-136) revenue enhancing synergies are difficult to achieve and measure since they are hard to quantify in valuation models. Cost related synergies are therefore generally more highlighted in the acquisition process.

Cost reducing operating synergies often refers to either economies of scale or economies of scope. Economies of scale decrease the average-cost of production when the scale of the company's operations increases. The typical example of a firm that can benefit from operating synergies is a capital intensive manufacturing firm. With high fixed costs the average cost can decrease substantially by increasing volume. Economies of scope refer to the ability of a firm to utilize one set of inputs to provide a broader range of products and services. Economies of scope can potentially generate cost advantages when output is increased, not in one product, but in the number of products offered (Halpern, 1982). Gaughan (2007, pp. 117-136) states that these kinds of synergies are common arguments in acquisitions in the banking industry.

Consolidation in an industry also implies that the acquiring firm will increase its market power.

For example Sharur (2005) studied announcement returns from horizontal M&A deals 1987-1999 on the US market. He found that the combined bidder/target returns where significantly positive. The result were interpreted as the market saw that the deals where making the combined firms more efficient than they where on a standalone basis. Similar results where found earlier by Fee and Thomas (2004), also on the US market. Healy, Krishna and Ruback (1992) also find results that indicate that merged firms realize statistically significant improvements in operating cash flows following the deal. The results come from improved asset productivity in comparison with their respective industry. Walker (2000) compared horizontal deals to vertical deals. The conclusion was that horizontal deals created more value. This was interpreted as that it is easier to realize synergies in horizontal deals since the business overlap is higher. However, just because there has been evidence that horizontal mergers create value does not imply that this is always the best and most efficient way of pursuing economies of scale.

As a conclusion of the above we can see that empirical evidence points in one direction regarding operating synergies. Deals with a high level of industry relatedness create more value. To our knowledge there are no studies finding a significant negative relationship between industry relatedness and CAR for acquisitions. The results are remarkably consistent for different methods since all of the above mentioned studies use different event-windows ranging from a short window of three days to a longer window of five years.

2.2.2.2 Financial synergies

Financial synergies refer to an acquisitions effect on the weighted average cost of capital (WACC) to the acquiring firm. One argument is that if two firms whose cash flows are not perfectly correlated merge, risk is reduced. If the merger reduces volatility in future cash flows then investors will see the firm as less risky and demand less return on their stake. Halpern (1982) argues that diversification benefits in an acquisition can reduce the probability of default. Thus, a deal can increase the debt capacity of the new firm and could therefore increase the market value of the new entity. However, uncorrelated cash flows are often present when firms are making M&A to diversify. Diversification, or conglomerate deals, are

a debated subject and have empirically shown to have a negative relation to value creation with M&A. For a more detailed discussion of this see section 2.3.3 and table 2.2.

Halpern (1982) further argue that acquisitions allow for redeployment of excess cash held by either the bidder or the target. However, high cash balances in a firm might be a signal to the market that a takeover is likely. Thus, the market value of those shares should reflect this probability of takeover. Therefore the economic gain from this source is likely to be small.

Another argument for financial synergies to increase the value of the combined firm is financial economies of scale. According to Gaughan (2007, pp. 117-136) bigger firms face lower costs of raising capital. Partly because they are considered less risky and partly because issuing bonds are cheaper. This is because the floatation cost per dollar of raised debt is less for a bigger issue than for a smaller. Empirical evidence does not support this hypothesis though. Franks *et al* (1991) compare CAR by post-merger firm size and find that smaller firms significantly outperform bigger. There is however not exhaustive evidence from different markets and methods regarding this hypothesis.

2.2.2.3 Growth

One of the value drivers mentioned above is growth and this is a common motive for acquisitions. Basically, a company can grow in two different ways; organic or through M&A. It is worth noting that growing only creates value when the company can earn a return on new invested capital (RONIC) that is higher than the WACC. If a company earns a negative economic profit (EP) from growing it will destroy value.[2]

If a firm is growing within its own industry, organic growth might not always be an optimal or even feasible alternative. Reasons can be the firm has to act rapidly on a new opportunity and internal growth will not be fast enough. In many circumstances firms have to act quickly not to loose ground to faster moving competitors. In such circumstances it could be too cumbersome to grow organically when competitors are gaining market shares by making acquisitions. Making acquisitions can thus be a way of expanding into new regions and markets faster than competitors and thus gaining market share (Gaughan, 2007, pp. 117-136).

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[2] EP=RONIC-WACC, (Koller *et al*, 2005, p. 118)

In the case of international expansion, cross border acquisitions have shown to be successful. Doukas and Travlos (1998) showed positive returns when companies acquired a target in a country where they previously where not present. Similar results where found by Markides and Oyon (1998). Bieshar et al (2001) also found that deals that where part of a geographic expansionist strategy genreated 1.1 percent abnormal returns on average. The reasons behind the successful cross border transactions could be that country specific knowledge is needed when entering new geographic markets. There are many possible barriers to cross border markets such as language, customs, political and cultural factors. In such circumstances M&A could be the fastest and least risky alternative by utilizing targets know-how, staff and distribution network. Further Bieshar *et al* (2001) found that deals that focused on gaining new distribution channels where particularly favoured by the market. Those deals earned a significant 4.2 percent abnormal return. From the above we can conclude that there is consistency in the empirical results that when growing in areas where you do not have particular expertise, M&A can create value for shareholders.

Another possible advantage with acquisitions is that they can be used to pursue growth in a slow growth industry. When demand in an industry weakens it becomes more and more difficult keep up with historical growth. M&A is then a way to continue to grow. Buying other firms within the same industry will add revenue. However, it is important to notice that the bigger the firm gets it will also be increasingly complex to manage (Gaughan, 2007, pp. 117-136). This statement moves us on to the next section; arguments against acquisitions.

2.3 Arguments against acquisitions

2.3.1 Jensen's free cash-flow hypothesis

The free cash flow hypothesis was formulated by Jensen (1988). It states that managers will rather undertake investments in negative net present value (NPV) projects than distribute cash as dividends when they have free cash flow at their disposal.[3] Lang, Stultz and Walkling (1991) investigated this hypothesis on a sample of acquisitions (which are in fact just

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[3] Jensen defines free cash flow as the cash that is left when all positive NPV projects are taken.

investments). They study the hypothesis that firms with high cash flow and low investment opportunities will engage in value destroying M&A. The hypothesis implies that the bidders' abnormal return should show a negative relationship to firms with high cash flow and low investment opportunities. In their empirical analysis they find significant support for this hypothesis. It is worth noting though, that the validity of the results from this method is highly dependent on to what degree it is possible to measure the free cash flow and investment opportunities available to a firm which is hard to do objectively as an outsider. A firm with low or negative cash flow for several years can have a lot of liquid assets to use in an acquisition. Thus, free cash flow is unlikely to exclusively capture managers´ discretion too engage in bad acquisitions. As consequence, Lang *et al* (1991) also use cash holdings as a variable. Keeping the hypothesis the same, empirical results are unchanged but slightly weaker.

Smith and Kim (1994) examine to which extent takeovers mitigate Jensen's free cash flow problem. They test the hypothesis that mergers between firms with high cash flow and slack-poor firms will giver higher returns. Their results show that mergers with a combination of such firms on average give higher returns. Further they find that the return of an acquiring firm with high free cash flow is significantly negative. Similar findings are presented by Harford (1999) who give evidence that acquisitions by firms with a lot of cash are value destroying.

From these previous studies we can conclude that firms with high cash holdings and low investment opportunities tend to engage in value decreasing M&A. The problem with high free cash flow (excess cash holdings) is related to the problem of manager's hubris and empire building, which we discuss further below.

2.3.2 The hubris hypothesis

Hubris (overconfidence) of managers can explain why acquiring firm's pays too much for their targets (Roll, 1986). In a takeover attempt, the bidder's valuation of the target must at least equal the current target firm's market value for an offer to be made. Even when no objective potential synergies or other reasons for takeover exist, some firms still engage in transactions. The reason behind this could be managers' overconfidence in their ability to

realize synergies. Roll (1986) states that the hubris hypothesis would imply a price decline in the bidder's stock price on announcement of a bid. For example Dodd (1980) and Varaiya (1985) find that, at the bid announcement, the bidders stock shows statistically significant negative return which is in line with the hubris hypothesis.

One objection raised against the hubris hypothesis is that the theory implies that the management of a firm deliberately acts against shareholder interest. However, managers making bids that are based on an incorrect valuation of the target firm is sufficient for the hubris hypothesis to hold. Management intensions can thus be in line with shareholder interests, but the actions can turn out to be wrong. Another argument against the hubris hypothesis is that it actually implies inefficiency in the market for corporate control. If all takeover attempts were encouraged by hubris, shareholders could forbid managers to make acquisitions. Since this never has been observed, hubris cannot by itself explain the takeover phenomena. If takeover deadweight costs are relatively small, stockholders will be indifferent to a hubris-inspired bid. A well diversified investor would gain from the target stock what he loses from the bidding stock (Roll, 1986).

2.3.3 Management empire building

Halpern (1982) discusses the problem of management empire building in corporate acquisitions. He states that acquisitions done for the reason that management want to control a large empire generally have no economic gains to be divided by the companies engaged in the transaction. Given the cost of negotiation and potential problems of coordination of a larger firm, a net economic loss is likely. Any positive gains by the target shareholders would be offset by losses for the bidder's shareholders. As opposed to positive and significant returns for non-diversifying deals, Maquieira, Megginson and Nail (1998) found negative returns for diversifying, conglomerate deals. He interpreted this as a sign that empire building is bad for the bidder's stockholders.

Bieshaar *et al* (2001) found that deals classified as transformative (portfolio refocus or business diversification) earned a significant negative 5.3 percent abnormal return. They interpreted this result by stating that even when a transformative deal promise synergies, those synergies are less predictable than synergies from a deal done within an industry. They argue

that it is easier for an investor to verify the stated potential synergies when the deal is done within the core business of the acquirer. However they do not draw the conclusion that transformative deals should be avoided in general. For them, the lesson to managers is to place those deals under closer scrutiny and possibly let them pass higher hurdle rates to make sure that they create value. Bruner (2004) also argue that diversification might pay sometimes. When a combination of firms in unrelated businesses facilitates knowledge transfers among different businesses, creates financial synergies through lower risk of distress and emphasizes better monitoring and transparency. His theories find empirical support by Anslinger and Copeland (1996) that examined 21 conglomerate firms and found that they generated 18 to 25 percent yearly through non industry related acquisitions.

However, the vast majority of studies investigating the effect of conglomerate strategies on CAR in an acquisition find negative relationships, se table 2.2. The results that diversifying deals are negatively related to value creation are also in line with the results mentioned in 2.2.2.1 about operating synergies stating that industry relatedness has a positive relationship to CAR. Thus we can conclude consensus in the empirical results regarding this theory.

Table 2.2 Summary of previous studies regarding conglomerate vs. non-conglomerate deals

Year	Author	Period	Market	No. deals	Event-window		Congl.	Non-Congl.
1990	**Morck *et al***	**1980-1987**	**US**	**172**	**[-1, 1]**	**days**	**-**	**+**
1996	Sudarsanam *et al*	1980-1990	UK	429	[-20, 40]	days	-	+
1998	**Maquieira *et al***	**1963-1996**	**US**	**260**	**[-2, 2]**	**months**	**-**	**+**
2000	**Walker**	**1980-1996**	**US**	**278**	**[-2, 2]**	**days**	**-**	**+**
2001	**Bieshaar *et al***	**1994-1998**	**EU**	**231**	**[-5, 5]**	**days**	**-**	**-**
2002	**Doukas *et al***	**1980-1995**	**SWE**	**102**	**[-5, 5]**	**days**	**-**	**+**

Studies highlighted in bold find statistically significant results

2.4 Other factors influencing M&A

2.4.1 Method of payment

Transactions can be paid in many different ways. The most common are cash, securities or a combination thereof. When payment is done with stocks the two participants in the transaction must agree upon the value of the stocks. E.g. the value could be set as a fixed or a

floating ratio. A floating exchange ratio is often an average of a stock's price during a specific period (Gaughan, 2007, pp. 117-136).

In previous literature many theories around the method of payment and its determinants are presented. Kargin (2001) states that with symmetric information, no transaction costs and no taxes; the medium of exchange is irrelevant. However, this is not the case in the real world. Many factors will influence the choice of payment method in a transaction. Factors influencing the financing choice include the characteristics of the acquirer and target firms and the characteristics of the environment of the firms. In the following we review the main theories literature brings up and tests regarding this choice. We then summarize the empirical evidence from previous research in table 2.3.

The pecking order theory, formulated by Myers (1984) explains how firms choose to finance potentially profitable investments (such as acquisitions). Managers prefer to invest with retained earnings and if that is not possible they will go to the capital markets. There they will issue the safest and cheapest security first, debt, then hybrid securities and as a last resort issue new equity. The reason why equity is placed in the bottom is that investors will see a secondary offering as a negative signal. Share issues are also the most expensive form of financing because of high administrative and transaction costs.

Managers are assumed to know more about the firm's value than any investor. Due to this information asymmetry and hence adverse selection problem, raising new equity is an expensive form of financing. There exists an extra degree of risk since managers of overpriced companies tend to issue equity and thus investors will believe those firms to be overvalued (Myers and Majluf, 1984). Following the same rationale an undervalued firm will use debt as financing. Tuch and O'Sullivan (2007) argue that equity financing of M&A have a similar adverse selection effect as new share issues. In line with this theory Loughran and Vijh (1997) argue that M&A transactions will be done with stocks only when the bidder's stock is overvalued and thus a negative relationship between stock financing and CAR is expected. There are however researchers who suggest that this relationship should be the opposite.

Hansen (1987) presents a theory that when bidders assume that the target firm knows its value better than the bidder, they will rather pay with stock than cash. The reason is that when a

firm tries to buy the assets of another firm and the target has proprietary information on the state if its asset a "lemon"[4] problem occurs. The target will only sell its asset when its value is less than the offer made. To protect itself from this adverse selection, an acquirer will base its bid on the expected value conditional on the offer being accepted. The acquirers will expect to get a lemon and thus pay for a lemon. The consequence is that deals might not go through even though it would be good for both parts ex post. To deal with this problem an acquirer might offer its own stock as payment. This will induce the same cost (in terms of money) to the acquirer but will make the targets accept more offers since they can share the benefits of the acquisition through the bidders increased share price. This is referred to as stocks contingent-pricing characteristics. The value of what the target shareholders get is contingent upon the true value of what they sell.

Eckbo, Giammarino and Heinkel (1990) develop this theory further by handling two-sided information asymmetries between bidder and target. By allowing also the bidder to have proprietary information on its own assets, another "lemon" problem occurs. The acquirer will not offer stocks when the target underestimates the value of the offer. However, they argue that this problem can result in equilibrium of an optimal mix of cash and stock payment.

Table 2.3 Summary of previous studies regarding the method of payment

Year	Author	Period	Market	No. of deals	Event-window		Cash	Equity	Mix
1987	**Travlos**	**1973-1982**	**US**	**167**	**[-1, 0]**	**days**	**+***	**-**	
1990	**Eckebo** *et al*	**1964-1982**	**Canada**	**182**	**[0, 1]**	**months**			**+***
1996	**Sudarsanam** *et al*	**1980-1990**	**UK**	**429**	**[-20, 40]**	**days**	**+***	**-**	**+**
1997	Loughran and Vijh	1970-1989	US	947	[0, 5]	years	+	-*	-
2000	**Walker**	**1980-1996**	**US**	**556**	**[-2, 2]**	**days**	**+***	**-**	**-***
2002	**Doukas** *et al*	**1980-1995**	**SWE**	**101**	**[-5, 5]**	**days**	**+***		
2004	Song and Walkling	1985-2001	US	5726	[-1, 0]	days	+	-	
2004	**Moeller** *et al*	**1980-2001**	**US**	**9712**	**[-1, 1]**	**days**	**+**	**-***	**+***
2005	**Dong** *et al*	**1978-2000**	**US**	**3732**	**[-1, 1]**	**days**	**+***	**-***	

*Articles highlighted in bold find statistically significant results. * indicates that a particular method is significant*

As can be seen from table 2.2 there seems to be empirical consensus that deals done with cash are more successful than those done with shares. Therefore Hansen's theory that stocks have preferable contingent-pricing characteristics and thus that stock payment should be better seems not to hold in practice. On the other hand, when Eckebo *et al* (1990) develops Hansen's theory and allow for two-sided asymmetries empirical support is found. Deals with a mixed

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[4] The expression "lemon" in this context was introduced by Ackerlof (1970).

method of payment (both cash and stock) shows higher positive returns than pure cash or stock transactions. Further studies testing the effect of a mixed method of payment show ambiguous results as can be seen in table 2.3. There are however a limited amount of studies discussing a mixed method of payment and thus we can not conclude that there is empirical consensus regarding the implications of this method of payment.

2.4.2 Pre-bid performance of acquirer

Some literature examines the pre-bid market performance of the acquirer on post-bid performance. Pre-bid market performance is often measured as market-to-book (MTB) ratios. High market valuation in relation to book value is often regarded as positive because it implies high expectations on future performance (Tuch and O'Sullivan, 2007). However, empirical evidence suggests a negative relationship between pre-bid performance and CAR. Rau and Vermalen (1998) find that lower market-to-book acquirers realize significantly higher gains than high market-to-book firms. Similar results are found by Sudarsanam and Mahate (2003) and Conn, Cosh, Guest and Hughes (2005). The authors often refer to Roll's (1986) hubris hypothesis of M&A as an explanation, see section 2.3.2. When managers have experienced success previously it is more likely that they get over-confident in the future.

High market-to-book acquirers are argued to be overvalued because of their previous outstanding performance. Low market-to-book acquirers on the other hand might have been forced to evaluate their deals more carefully because of their previous poor performance (Sudarsanam and Mahate, 2003). There are relatively few studies that have investigated this hypothesis but the evidence that exist points in the same direction. Therefore, some consensus exists.

2.4.3 Size of the deal

The size of the deal is argued to have a positive relationship to abnormal return. This is since a bigger deal should have more potential synergies and thus be more value creating. Beishaar *et al* (2001) finds no significance to support this hypothesis. Their explanation is that since, in their study, the market expects the average deal to destroy value; the risk of greater value

destruction outweighs the potential benefits. Further Sudarsanam (1996) find that smaller deals create more value. His explanation for this is that the smaller the target is the easier the integration process will be. The relative size of the deal is a rarely researched determinant on M&A success. The few previous results imply a negative relation between CAR and relative size if any.

3 Hypotheses

In this section we present the hypotheses to be tested in this paper. These are drawn from the theoretical discussion above. First, the hypothesis regarding the performance of mergers and acquisitions on the Swedish market is presented. Secondly, we present hypotheses regarding the determinants of the success or failure of an M&A deal.

3.1 Bidder performance of Swedish M&A – CAR

As mentioned in the theoretical discussion, if the market shows semi-strong efficiency a change in the fundamental value of a company should be immediately reflected in the share price. The price should rise if an acquisition with a net present value larger than zero is announced. The previous research on bidder performance shows ambiguous results, see table 2.1. There is not any clear consensus of whether the average M&A deal creates value or not. Results vary across geography and method of the studies. From previous research we can derive a weak tendency for more recent studies (Song and Walkling, 2004 and Ben-Amar and André, 2006) with a short event-window to show significantly positive CAR. Therefore we state our hypothesis that M&A on the Swedish market has created value on average.

Hypothesis 1: CAR is positive

3.2 Determinants of M&A success

3.2.1 Strategic purpose

Following the theoretical discussion, we raise the argument that when bidder and target operate within the same industry, synergies are easier to realize. Therefore conglomerate mergers should create less value than horizontal and vertical M&A. The management hubris and empire building hypotheses also argue against conglomerate deals. Therefore we state hypothesis 2:

Hypothesis 2: Conglomerate deals are negatively related to CAR

The issue of horizontal versus vertical deals is less researched. Both these types of deals can increase the combined firms' market power and hence affect growth and profit margin in positive direction. Vertical deals allow for vertical integration of an industry. Walker (2000) finds that vertical deals perform worse than horizontal deals. The reason could be that it is harder to realize synergies between firms that are vertically related than between firms that are horizontally related. Hence, we state our third hypothesis:

Hypothesis 3: Vertical deals are negatively related to CAR

3.2.2 Domestic and cross-border transactions

Previous literature, see 2.2.2.3, show very similar results regarding cross-border transactions. Evidence from different markets using different methods show positive relations between abnormal returns and deals with an international expansion strategy. The reasons for this positive relationship could be many barriers to cross border markets such as language, customs, political and cultural factors which make it hard to grow organically into new geographic markets. We thus state our fourth hypothesis:

Hypothesis 4: Cross-Border transactions are positively related to CAR

3.2.3 Method of payment

Previous literature show some consensus regarding what influence the method of payment an acquisitions should have on an acquisition. Loughran and Vijh (1997) argue that companies will pay with stock only when its stock is overvalued. Their results show that shares only deals underperform cash only deals significantly and so does a majority of other studies, see table 2.3. On the other hand Hansen (1987) applies a "lemon" theory on the method of payment and argues that shares have desirable contingent-pricing characteristics and thus that shares only deal should outperform cash only deals. Eckbo *et al* (1990) develops this and show that two-sided information asymmetry leads to a double "lemon" problem and thus that

deals with a mixed method of payment should represent equilibrium and be better than either cash only or shares only methods. We state hypothesis 5 and 6:

Hypothesis 5: Cash only deals are positively related to CAR

Hypothesis 6: A mixed method of payment is positively related to CAR

3.2.4 Excess cash-holdings

Jensen (1988) argued that firms with high cash holdings and low investment opportunities rather spend the money on negative NPV projects than distribute the cash to shareholders as dividends. This hypothesis states that managers take bad investments in lack of good investments when they have cash at their disposal. There seem to be empirical consensus regarding a negative relationship between high cash holdings and CAR. We state hypothesis 7:

Hypothesis 7: High cash holdings and low investment opportunities are negatively related to CAR

3.2.5 Pre-bid performance of bidder

According to Tuch and O'Sullivan (2007) the pre-bid performance is often approximated by a market-to-book ratio with the argument that high MTB suggest that a company have been performing well and is expected to continue to do so in the future. Rau and Vermalen (1998) find that high MTB companies experience significantly less positive abnormal returns than companies with low MTB ratios. More recent studies confirm those results. The reason that the track record of high MTB acquirers is bad is that they might experience very high expectations from the market because of their previous superior performance. Another argument is that managers of previously well performing companies might become over-confident in their ability to realize synergies and thus make hubris based deals. Further, weaker performers might have to place transactions under closer scrutiny before they can go through with them. We state our eighth hypothesis as follows:

Hypothesis 8: Market-to-book ratios are negatively related to CAR

3.2.6 Size of the deal

To our knowledge, the relative size of the deal is not included in many studies. Sudarsanam (1996) suggest that we should have a negative relationship between size and CAR since bigger deals bring about bigger problems of integration. More research is needed so we state our ninth hypothesis as:

Hypothesis 9: The size of the deal is negatively related to CAR

3.3 Summary of hypotheses

Table 3.1 Summary of hypotheses

Hypotheses	Expected sign
1 CAR is positive	+
2 Conglomerate deals are negatively related to CAR	-
3 Vertical deals are negatively related to CAR	-
4 Cross border transactions are positively related to CAR	+
5 Cash only deals are positively related to CAR	+
6 A mixed method of payment is positively related to CAR	+
7 High cash holdings and low investment opportunities are negatively related to CAR	-
8 Market-to-book ratios are negatively related to CAR	-
9 The size of the deal is negatively related to CAR	-

4. Method

In this chapter we will go through the methodological approach to the study and its reliability and validity. Next we go through the event study methodology and last the explanatory regression is explained.

4.1 Research approach

There are different relationships between theory and research. In this study we use a deductive approach, from the existing theory we formulate hypotheses. Then we collect data so that we can test the hypotheses in an appropriate way. The next step in the process of deduction is the findings. Here we can conclude if the hypotheses are to be rejected or not. The findings are then analyzed within the theoretical framework. In this last step there is a movement of induction, since the findings test if the theory holds and new theories can be formulated (Bryman and Bell., 2005, pp. 9-12). In the study a quantitative research strategy is used to test if M&A are value creating for the acquirer and if this can be inferred to some determinants.

4.2 Reliability

A research paper has a high reliability if we can generate the same results again if we repeat the study. For the research paper to be replicable it is important to describe all procedures in great detail, so the reader can follow and replicate the study. To assess our study's reliability we go through our collected data and the methods used.

Our initial sample of M&A deals and some deal and firm specific variables are collected from the Zephyr database. The information gathered from the database is deemed to be reliable. For example Le Nadant and Perdreau (2006) use this database to collect data for their article. We also double checked for some deals with the press releases to see if the information from Zephyr matched the information given from the bidder regarding the acquisition. The information matched in the cases we looked at. Further, since Zephyr did not display method of payment for all deals, we found the missing information by looking at the companies press

releases of the acquisition. The classification of method of payment was straight forward, but as it is done manual there could be mistakes.

Further information is gathered from DataStream and Reuters, which are reliable databases. From DataStream we collect stock prices, indices and some firm specific variables from Reuters we collect information about the classification of the deal. In this case we also double check with press releases. In fifteen cases information was missing in Reuters. We then used the press release to classify the deal as horizontal, vertical or conglomerate ourselves according to the definitions made in 2.1.1. As there is judgement and thus subjectivity involved in doing this a different result could be obtained if someone else classifies the deals. Another alternative would be to exclude observation lacking this information. However, we think that this would incur too much loss of information when the data is obtainable from the press releases.

All regressions are run by using the econometric software EViews, therefore statistical calculations using our data material should give correct results given our specifications.

4.3 Validity

Validity can be divided into internal and external validity. The internal validity concern that the study measures what we set out to measure. Can we draw the conclusion that one variable affect another variable? (Bryman and Bell, 2003, pp. 33-34)

In our research approach we first measure if the announcement of a bid is value creating or value destroying for the acquirer's shareholder. The first question we have to raise is if we can measure the effects of an announcement by studying the changes in share prices? If this is possible we then have to construct a model that can calculate the expected changes in stock price if the event would not have taken place. Previous studies use several different event windows to capture the effect of an announcement. There are also several different models used to calculate the normal performance. The methods that we have selected in this study are similar to previous studies regarding measuring the value creation for acquirers from an announcement. Thus we can conclude that the chosen model upholds validity.

Secondly, we try to measure if there is any causal relationship between a firm- or deal specific variables and the performance of the bidders stock. The variables that we use are specified according to previous research and thus we believe the chosen method to be valid.

The external validity is about if we can generalise the result of the study and apply it in other settings. The external validity is important as we use a quantitative approach with cross-sectional design (Bryman and Bell, 2003, p. 34). This issue is highly interesting and will further be discussed in the conclusion chapter. Obviously the results can never say something absolute certain about the future. Similar studies have been conducted in several different countries; some have found the same results. Our study can be replicated easily and be used in a different country. However the external validity of our conclusion will be known to us first in the future.

4.4 The event study

Since 1933 event studies has been used to measure how specific economic events impact stock prices. This method assumes that the market is efficient in such way that the economic event will immediately be reflected in stock prices (MacKinlay, 1997). Following MacKinlay (1997) we divide the description of the method used into several steps.

First step – Event definition

The purpose with this study is to measure the effect of M&A on the value of the acquirer firm. The first step to measure this is to define the event day. In the study we follow Brown and Warner's (1985) standard event study methodology where the event day is defined as the day of the announcement of a bid. Previous studies shows consistency in this question. A vast majority use the announcement day as the event day.

Secondly, we have to define the event window. These are the days surrounding the event day that are used to capture all changes in value derived from the deal. Assuming rationality in the markets (semi-strong efficiency) the effect of an acquisition will immediately be reflected in asset prices. Thus we can measure the impact of the acquisition using observed asset prices over a relatively short time period (Campell, Lo And MacKinlay, 1997, p. 149). From

previous research there is little consensus regarding how many days to include in the event window. See e.g. table 2.1 for an overview of different event-windows used. Therefore the choice of an event window has to be done based on theoretical arguments.

Similar to e.g. Sudarsanam and Mahate (2003) and Ben-Amar and André (2006), we apply a three day period [-1, 1] for measuring abnormal returns, where the announcement day is day 0. The reason for expanding the window to include the day after the announcement is to capture the price effects of the acquisition, which take place after the stock market closes on the announcement day (Campell et al, 1997, p. 151 and MacKinlay, 1997). Andrade, Mitchell and Stafford (2001) argues that the most statistically reliable results regarding M&A abnormal returns comes from short-window event studies. Therefore a commonly used event window is the three day window mentioned above. An advantage with a short window is that noise is less likely to distort the results. Using a long-run window makes it hard to separate the effect of a particular deal from other company specific events (Tuch and O'Sullivan, 2007).

Many previous studies use different short run windows and some use multiple event-windows (Tuch and O'Sullivan, 2007). We would like to argue that the validity of our results will increase if we can frame in our results using different windows. We therefore use three different short event windows [-1,1], [-3,3] and [-5,5]. This will allow the market to react slower to the announcement of M&A and still be captured in our models. Including more days before the announcement will deal with the potential problem of information leaking to the market before announcement. Including more days after will deal with the potential problem that the market might overreact on new information and subsequently correct for this.

Second step – Selection criteria

In this step the selection criteria for including a given deal in the study is defined.
We have chosen to study announcements of M&A by Swedish companies listed on Nasdaq OMX Stockholm stock exchange between 1997-01-01 and 2009-04-30. To get our sample of M&A made by Swedish companies between 1997 until now we have used the Zephyr transactions database by Bureu van Dijk Electronic Publishing. In the database we put the following restrictions on the data:

- The transaction is announced between January 1, 1997 (Zephyr does not have data prior to 1997) and April 30 2009.

- The deal status is: completed

- The acquirer is based in Sweden

- The acquirer is listed on the Nasdaq OMX Stockholm stock exchange

- The acquirer control less than 50 % of the shares of the target firm before, and more than 50 % after the transaction is completed.

The database does not include deals prior to 1997, therefore unfortunately our sample is limited as we can not include transactions before 1997. We require further that transactions are completed similar to e.g. Moeller, Schlingemann and Stulz (2004). As we are interested in investigating Swedish firm's involvement in M&A, we require the acquirer to be based in Sweden. We also require the acquirer to be a public firm listed on the Nasdaq OMX Stockholm during the event window (Moeller *et al*., 2004). This is because to be able to measure changes in shareholder wealth, we need to evaluate the share-price performance of the acquirers. To obtain share-prices the firms need to be publicly listed. Note that also firms that are not listed today but were during the event will be included, thereby avoiding any survival bias problems. The last requirement of a stake of at least 50 percent after the deal is due to the rules of consolidation. According to the accounting rules, applicable to Swedish listed companies firms owning at least 50 percent in another company they should consolidate it. With these criteria we have a sample of 449 deals

From this list we do further restrictions. First similar with Loughran and Vijh (1997) we exclude real estate investment trusts and closed-end funds. The reason is that these kinds of companies just manage assets and we will therefore lack some of the variables needed in our regression. Second in line with Asquith (1983) and Walker (2000) we remove all deals where the relative size is less then 10 percent. Relative size equals the transaction value of the deal divided by the acquiring firm's equity market value 3 months before the announcement date. Following this adjustment we only include such relative large deals that the impact of a profitable transaction on the bidder's stock price will be less difficult to detect (Halpern, 1982). Further we have removed those acquirers were we could not obtain data. This was the case for two deals where the acquirer's stock was not traded at all over the event period. This

should not incur any biases though, since it was only two deals. Finally we end up with a sample of 118 deals.

Third step – Normal and abnormal returns

In this step the normal returns are calculated for stocks that are included in the study. The normal return is defined as the expected return that would occur if the event would not have taken place. Thus we can investigate the impact of the event on the firm value through measuring any abnormal returns by comparing the actual and the expected (normal) returns in every time point in the event window.

The starting point is to calculate the actual returns on the stock in our sample over the event window. We begin with calculating the continuously compounded return for every time period, using the last transaction price when the market closes, see equation 3. Because of the bid-ask bounce it would be preferable to test our model using the average of the bid ask prices. As we can not obtain the last ask and bid price from DataStream before 2001-06-01, we will only use the last transaction price though. The potential problem with this is that closing prices of the stocks depend on if the last trade was done using the ask price or the bid price. Following this we could have variance in the stock even though its intrinsic value never changes. Later this could give an upward bias when measuring abnormal returns (Blume, 1983). This is a problem mostly for stocks of smaller firms and should be negligible for bigger firms. Since our sample consists of some smaller firms this could be a problem. We try to solve this by using several different event windows and different models for the normal return. Doing so will allow us to frame in the results.

$$R_{i,t} = \ln(P_{i,t=1} / P_{i,t=0}) \tag{3}$$

$P_{i,t=1}$ is the last transaction price today and $P_{i,t=0}$ is the last transaction price yesterday. The prices collected from DataStream are adjusted for dividends, new issues and splits. When both A and B shares are traded a value weighted portfolio of the two is created. When A shares are not traded, the return of the B shares is used as a proxy for the return on the A shares. This phenomenon exist because sometimes the founding family keeps the A shares when the firm is introduced on the stock exchange and only B shares are traded (Doukas *et al*, 2002). An

example of this phenomenon in our sample is Getinge AB where Carl Bennet AB holds all A-shares and the B-shares are traded on the Swedish stock exchange[5].

Secondly, to define abnormal returns we have to estimate the normal return that a stock would show if the event did not take place. According to MacKinlay (1997) several statistical methods to model normal return exists, but there are two common choices; the market adjusted return model and the market model.

The market adjusted return model assumes that the mean of specific stock is constant through time. The other model assumes a linear relationship between the stock return and the market return. The benefit of the market model against the market adjusted return model is that it removes a risk adjusted portion of the market's return since the risk of a stock should be captured in beta. Thus the variance in the abnormal return is reduced (MacKinlay, 1997). Brown and Warner (1985) found that those simple models often give the same results as more advanced models. Following the same arguments as under step one we think that using both models could increase validity of our results and thus we chose to employ both models. If both models generate the same results it should imply the estimates to be stable and reliable.

Hence, we calculate the normal returns with the market adjusted return model (4) and the market model (5):

$$\mathrm{Re}_{i,t} = R_{M,t} \tag{4}$$

$$\mathrm{Re}_{i,t} = \alpha_i + \beta_i R_{M,t} + \varepsilon_{i,t} \tag{5}$$

$\mathrm{Re}_{i,t}$, the expected return for an individual asset i, expressed as a function of the returns on the market $R_{M,t}$ at time t.

The abnormal return is then calculated as the *ex post* return of the stock over the event window minus the return that would be expected if the acquisition did not take place. We

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[5] This information is found in Getinge AB annual report 2007

estimate the abnormal return using two different models *Market Adjusted Return* and *Market model*:

$$AR_{i,t} = R_{i,t} - R_{M,t} \qquad\qquad (6)$$

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{M,t} \qquad\qquad (7)$$

Where $AR_{i,t}$, $R_{i,t}$ and $R_{M,t}$ are abnormal returns, actual return on share i on day t and return for the index for day t. $\hat{\alpha}$ and $\hat{\beta}$ are OLS parameter estimates from a pre-event estimation period.

Fourth step – Estimation procedure

To calculate the normal returns we have to estimate the parameters in the models for normal returns. The first choice is what index to use as an approximation of the market return. In this study Affärsvärldens General Index (AFGX) is used, which is similar to Doukas *et al* (2002). AFGX is a value weighted index and is adjusted for dividends, new issues and splits.

To estimate the parameters of the market model we need to use historical pre-event data. A choice has to be made both regarding the measurement period and the frequency of measurement. Merton (1980) argued that beta estimations improve the more frequently returns are measured. Scholes and Williams (1977) however argued that there are problems with frequently measured betas. Non-synchronous trading could result in biased estimations. Downward for assets with infrequent trading and upward for assets with frequent trading. Their solution to this is to use less frequent data such as weekly or monthly returns instead of daily. However, as Brown and Warner (1985) argues, the results from Scholes and Williams (1977) paper does not imply that non-synchronous trading will result in a misspecification of an event study using OLS estimates of alfa and beta. By including an intercept term in the regressions we will force the residuals from the market model to sum to zero for each security. By doing this, correct specification of an event study will be consistent with biased betas since this will be compensated by a bias in the intercept, alfa. Assuming stationarity (which we do since we use log returns) it can be shown that the event period excess returns for a security have a zero mean unconditional on the market return. Even though the excess

return on a given security could be biased this does not imply misspecification of the event study since the average bias should be zero (Brown and Warner, 1985).

Following the discussion above we feel confident in applying the methods suggested by Brown and Warner (1985) and Ahern (2006). We define our alfa and beta estimation periods using daily returns for 238 days in the window [-244, -6]. Thus the estimation period for the whole study including the event will be 250 days which equals a normal trading year.

Fifth step – Testing procedure

To conclude if abnormal returns exist, we calculate the average abnormal return for every period in the event window. Further we aggregate the individual securities average abnormal returns in the event window. This is equal to calculating the average of the individual CAR. CAR is defined for the event window $[\tau_1, \tau_2]$ Thus we can draw conclusions of the events impact on the stock prices in the event window as whole.

$$\overline{AR_\tau} = \frac{1}{N} \sum_{i=1}^{N} AR_{i\tau} \tag{8}$$

$$\overline{CAR}(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \overline{AR_\tau} \tag{9}$$

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^{N} CAR_i(\tau_1, \tau_2) \tag{10}$$

We calculate CARs for the three different periods [-1, 1], [-3, 3] and [-5, 5] around the announcement date. The average abnormal returns are aggregated over time for each event window.

We formulate the null hypothesis and the alternative hypothesis:

$H_0 : CAR_t = 0$

$H_1 : CAR_t \neq 0$

The hypothesis is tested with a t-test. To do this we need to estimate the variance in returns of our sample. Traditional event-study approaches use the pre-event asset returns to estimate this. Doing this implies that the null hypothesis is that there are no effects on the asset from the event, neither mean nor variance effect. In our study of M&A it is reasonable to assume that the event itself can induce higher variance in the stock returns. Variance can increase without affecting the mean i.e. create value. Thus, we are only interested in testing the mean effect and therefore the traditional approach could cause us to reject the null hypothesis too often. To find a remedy to this problem we can not rely on past returns in estimating variance. As suggested by Campbell *et al*, (1997, pp. 167-168) using a cross-sectional approach to estimating variance is one solution. Therefore we estimate variance as:

$$\hat{Var}\left[\overline{CAR}(\tau_1,\tau_2)\right] = \frac{1}{N^2}\sum_{i=1}^{N}\left(CAR_i(\tau_1,\tau_2) - \overline{CAR}(\tau_1,\tau_2)\right)^2 \qquad (11)$$

An assumption of uncorrelated abnormal returns is needed for this variance estimator to be consistent. Brown and Warner (1985) shows that this assumption holds when the event day is not the same for all firms in the sample. Thus, this assumption should hold for our data material. Given consistent variance estimators we can test our null hypothesis using the central limit theorem of normal distribution. We formulate the test statistic as follows:

$$t = \frac{\overline{CAR}(\tau_1,\tau_2)}{\sqrt{\hat{Var}\left[\overline{CAR}(\tau_1,\tau_2)\right]}} \qquad (12)$$

4.2 Explanatory regressions

We further test if the cumulative abnormal returns for each security are related to some firm- or deal specific variables. Through cross-sectional regression analysis we test several variables affect on the firm's cumulative abnormal returns around the announcement date. We formulate the following hypotheses:

4.2.1 Description of variables

4.2.1.1 Dependent variable - CAR

The dependent variable in our regressions is the cumulative abnormal return. The CAR for each deal is collected and used in the regression. We have chosen to run the explanatory regression with CAR from the [-1,1] since we think this is the most correct way of measuring abnormal return in the case of acquisitions, see above.

4.2.1.2 Explanatory variables

Strategic purpose

To test the hypothesis regarding the strategic purpose of the deal we classify all deals as horizontal, vertical or conglomerate. We will then make this into a dummy variable with three categories. With three categories we need two variables since we can threat the horizontal deals as a "base case". We construct the following variables:

$VERTDUM_i$ = Assigned the value 1 if the deal is classified as vertical and 0 otherwise

$CONGLDUM_i$ = Assigned the value 1 if the deal is classified as conglomerate and 0 otherwise

Domestic and cross-border transactions

To test the hypothesis that cross-border transactions are positively related to CAR we construct another dummy variable:

$CBDUM_i$ = Assigned the value 1 if the deal is classified as cross-border and 0 otherwise

Method of payment

We have stated two hypotheses regarding the method of payment in a transaction. To test those, we classified the transactions after the method of payment; cash only, shares only or a

mix of shares and cash. Here we need two dummy variables a we threat shares payment as a "base case".

$CASHDUM_i$ = Assigned the value 1 if the transaction method of payment is cash only

$MIXDUM_i$ = Assigned the value 1 if the transaction method of payment is a mix of cash and shares

Pre-bid performance of bidder

As the pre-bid performance of the bidder is often approximated by the market-to-book ratio of the acquirer we collect these ratios for all acquirers at the last year ended before the announcement of a bid. This method is in line with Conn *et al* (2005).

MTB_i = The market-to-book ratio of bidder in deal i

Excess cash holdings

To test the hypothesis that firms with high cash holdings and low investment opportunities are negatively related to CAR we set up a slope dummy variable, in line with Lang *et al* (1991). Tobin's q is used as an approximation of a firm's investment opportunities. We classify a firm as having low investment opportunities when having a Tobin's q below 1. Three variables are introduced in this step:

$CHTA_i$ = Ratio of cash holdings to total assets for bidder in deal i

$QDUM_i$ = Assigned value of 1 of if Tobin's q for bidder is <1

$CHTA*QDUM$ = The interaction variable

Size of the deal

To test if the size of the deal is negatively related to CAR we collect the market values of all bidders and targets in our sample. We then construct a ratio to show size of the deal as a percentage of the acquirer's market value:

$DEALSIZE_i$ = The ratio of deal value to bidder's market value

Table 4.1 Summary of hypotheses and variables

Hypotheses		Expected sign	Variable(s)
2	Conglomerate deals are negatively related to CAR	-	CONGDUM
3	Vertical deals are negatively related to CAR	-	VERTDUM
4	Cross border transactions are positively related to CAR	+	CBDUM
5	Cash only deals are positively related to CAR	+	CASHDUM
6	A mixed method of payment is positively related to CAR	+	MIXDUM
7	High cash holdings and low investment opportunities are negatively related to CAR	-	CHTA, QDUM and CHTA*QDUM
8	Market-to-book ratios are negatively related to CAR	-	MTB
9	The size of the deal is negatively related to CAR	-	DEALSIZE

4.2.2 The regression model

We test the above explanatory variables against CAR with the following multivariate regression model.

$$CAR_i = \alpha + \beta_1 CONGDUM_i + \beta_2 VERTDUM_i + \beta_3 CBDUM_i$$
$$+ \beta_4 CASHDUM_i + \beta_5 MIXDUM_i + \beta_6 MTB_i + \beta_7 CHTA_i \qquad (13)$$
$$+ \beta_8 QDUM_i + B_9 CHTA*QDUM_i + \beta_{10} DEALSIZE_i$$

The parameters α and β_i of the model will be estimated using the ordinary least squares (OLS) method. We will run several tests on our model to make sure the assumptions of the classic linear regression model are fulfilled.

The first assumption is that the average value of the error terms is zero. Since we have included a constant intercept term in the model this assumption will be fulfilled (Brooks, 2002, p. 146).

The second assumption is that the variance of the errors is constant – homoscedastic. To test if the assumption of homoscedastic residuals, we choose between using the Goldfeld and Quandt's test (1965) and White's test (1980). Our choice will be a White (1980) test because then we do not have to make a decision of where to split the sample as in the Goldfeld-Quandt test. Also, the White test makes no assumptions of the form of heteroscedasticity and thus is a

more general test. This test runs the squared residuals from the initial model as a function of the explanatory variables and looks for significant parameters. In case heteroscedasticity is found ordinary inference could be misleading since our estimates will no longer be the best linear unbiased estimators (BLUE). The problem could be corrected by running the regressions with White's (1980) modified standard error estimates. Another method to deal with problems of heteroscedasticity would be to use the method of generalized least squares. However, using White's heteroscedasticity consistent standard errors will not force us to make assumptions about the form of heteroscedasticity and thus we will prefer White's version to correct the problem if present (Brooks, 2002, pp. 147-155).

Further it is necessary that the explanatory variables are non-stochastic. Provided that the error term and the explanatory variables are independent this assumption will be fulfilled. The last assumption is of normally distributed error terms. As the number of observations is relatively high, we can rely on the central limit theorem to solve the problem for us. For large samples the sample distribution will tend to normality even if the population distribution is not normally distributed. As a consequence, no further actions are taken (Brooks, 2002, pp. 171-208).

An implicit assumption of the OLS method is also that the explanatory variables are not correlated. This does not violate any of the assumptions behind OLS and the estimated parameters will still be BLUE. However, it will be hard to get small standard errors and hence hard to get significance. In practice it is not likely that the correlations are zero i.e. some multicollinearity will be present. As long as the correlations are small though, this will not cause any problems (Brooks, 2002, pp. 171-208). As a first test for the presence of multicollinearity we will examine the variance-covariance matrix. Here we are using a rule of thumb of treating correlations under 0.8 as non-problematic (Brooks, 2002, pp. 147-208). To further test for multicollinearity we will also run auxiliary regressions. Each of the explanatory variables will be treated as dependent with the other variables as explanatory. If the R^2 value from any of these regressions is higher than that of the original regression it is likely that we have a problem with multicollinearity (Damodar, 2003, pp. 358-362).

Another implicit assumption of the OLS method is that the correct model is linear in the parameters. Here we use the Ramsey RESET test which is a general test for misspecification of the functional form. The test conducts another regression where the errors from the initial

regression are regressed on powers of the fitted values. If the model seems to be wrongly specified one of the new parameters will be significant (Ramsey, 1969).

5. Empirical findings

In this chapter our empirical findings are presented. We start with the cumulative abnormal returns and then move on with the explanatory regressions.

5.1 Cumulative abnormal return – CAR

In the charts below we present the average abnormal return over the maximum of eleven days we look at in the event. The average abnormal return for each day under the event is charted and presented in a table with p-values using both the market adjusted return model and the market model.

Figure 5.1

Average Abnormal Returns - Market Adjusted Return

	Average AR	p-value
t-5	0.27%	0.382
t-4	0.37%	0.214
t-3	-0.27%	0.25
t-2	0.25%	0.345
t-1	0.48%	0.074*
t	2.50%	0.000***
t+1	0.67%	0.13
t+2	-0.22%	0.457
t+3	-0.13%	0.623
t+4	-0.16%	0.626
t+5	-0.11%	0.655

Average Abnormal Returns - Market Model

	Average AR	p-value
t-5	0.22%	0.465
t-4	0.49%	0.098
t-3	-0.26%	0.26
t-2	0.30%	0.247
t-1	0.50%	0.06*
t	2.55%	0.000***
t+1	0.68%	0.124
t+2	-0.26%	0.358
t+3	-0.20%	0.45
t+4	-0.22%	0.468
t+5	-0.08%	0.748
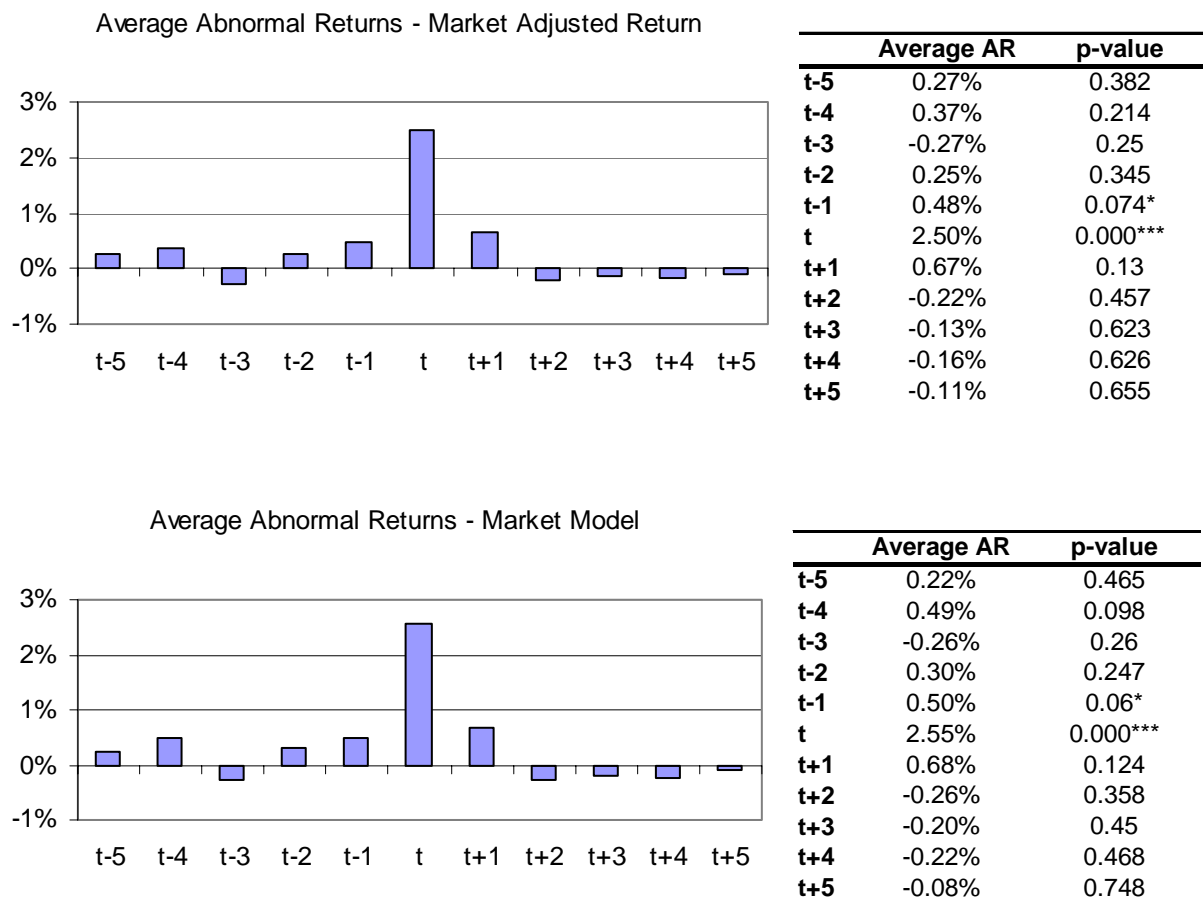
* / ** / *** indicates significance on the 10, 5 and 1 percent level respectively

As we can see both models yield almost the same results. We have a highly statistically significant 2.5 percent abnormal return for the event day. The day before the announcement also show some sign of abnormal return since we find significance on the 10 percent level here. This is a sign that some information leaks to the market before the announcement. What we can conclude from the above chart is that the short window if [-1,1] should capture all value creation from a deal. The theoretical arguments for choosing a short event window are consistent with our data.

We now proceed by taking a look at the cumulative abnormal returns, CAR for our different event windows and models. This is presented in table 5.1.

Table 5.1

Cumulative Abnormal Returns (CAR)				
		Window		
		[-1, 1]	**[-3, 3]**	**[-5, 5]**
Model	**Market Adjusted Returns**	3.65% (0.000)***	3.27% (0.000)***	3.65% (0.000)***
	Market Model	3.73% (0.000)***	3.33% (0.000)***	3.71% (0.001)***

P-values are displayed in parenthesis. *** indicates significance on the 1 percent level

Table 5.1 shows the results of the cumulative abnormal return for both the Market Adjusted Returns model and for the Market Model over the three event windows. We can conclude that we have an abnormal return for all models around 3.5 percent. Since all models and windows yield almost the same results and are all statistically significant on the 1 percent level we think we have framed in a valid result. Hence, we do not reject the hypothesis that mergers and acquisitions have created value on the Swedish market.

Since we assume that the expectations of an M&A transaction will be reflected immediately in a share price we will use the returns from the Market Model with event window [-1, 1] for further analysis in this chapter. This will be statistically preferable since it will filter out more noise unrelated to the acquisition than a longer event window. As we saw in chart 5.1 all value seems to be captured using this window. This leads us on to the next part of our empirical findings, the regressions to explain the cumulative abnormal returns.

5.2 Explanatory regressions

5.2.1 Analysis of the determinants

We start our regression analysis by looking at some descriptive statistics of our determinants to spot eventual problems. Table 5.2 on the next page presents the different categories of the dummy variables divided into yearly data.

We can conclude that no deal has made it through our restrictions of the sample in 1997. Further, se we can see from the table the data for strategic purpose is remarkably skewed. 110 of the 118 acquisitions in our sample are classified as horizontal. Hence it would not make any sense to include this as a dummy variable in the regression. By excluding variables for the strategic purpose of a deal we will not be able to test our hypotheses regarding this. This is a loss of generality in our study but there is nothing else plausible that we could do.

Next, we take a look at descriptive statistics for the numerical determinant variables in our regression. See table 5.3 on the next page.

Table 5.3 presents some descriptive statistics, mean, average, max, min and standard deviation of our numerical variables. We can use these tables to look for signs of outliers in the data. Since all three variables have maximum values far from the mean and median of the distribution there is reason to suspect that we have outliers that could seriously affect the parameter estimates in a regression. To investigate this further we construct plots of the data.

Figure 5.1

Plot of Market-To-Book ratios

Looking at the plot of market-to-book ratios in the sample we can clearly identify some outliers. As noted earlier these can have a large influence on the OLS parameter estimates. To avoid undue impact on our estimates we decide to remove the four largest observations seen in this plot.

Figure 5.2

Plot of Deal value / Market value acquirer
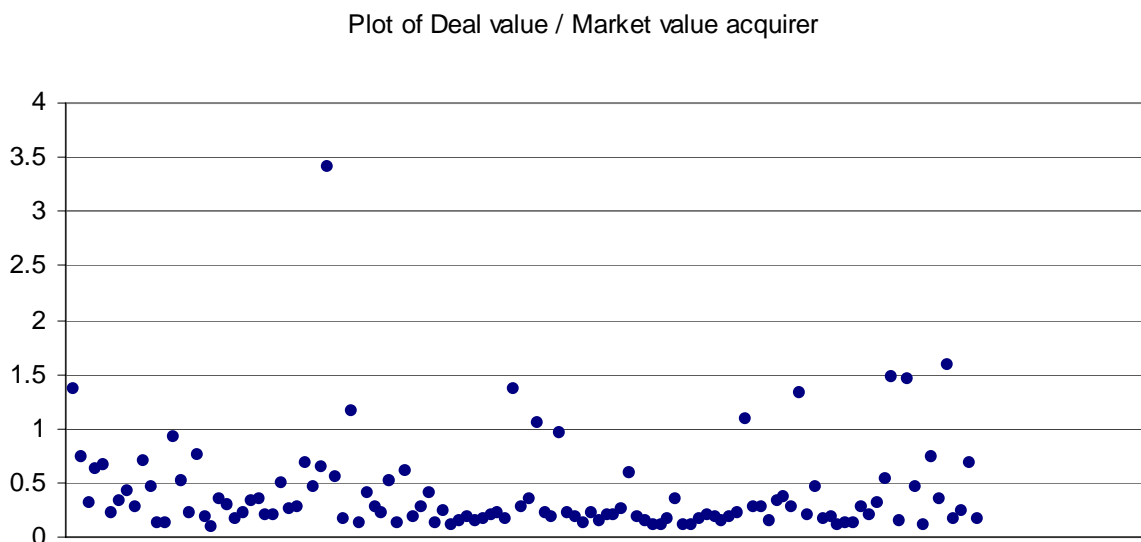
The plot of the variable DEALSIZE also reveals outliers. Here we decide to remove one observation from our sample.

Figure 5.3

Plot of Cash holdings
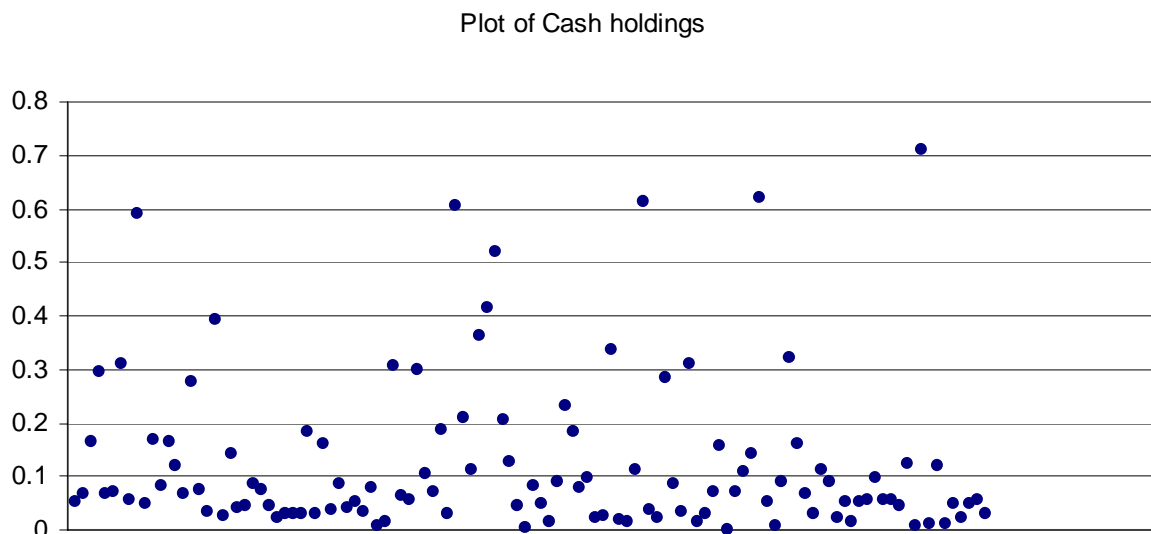
The plot of cash-holdings reveals no clear outliers and thus we do not remove any observations here.

When removing extreme observations we end up deleting the following deals from the sample.

Table 5.4 Removed deals

Announcement date	Acquirer	Target
2002-08-09	Aspiro AB	Picofun AB
2003-09-08	Boliden AB	Outokumpu Mining and Smelting
2003-10-14	Meda AB	Medic Team A/S
2005-01-20	Meda AB	Novartis AG Cibacen Cibadrex
2008-08-21	Feelgood Svenska AB	Haluxa AB

Removing these five deals could imply a loss of important information. However, as we have to make a trade-off between loss of information and undue impact on our parameter estimates we choose to make those deletions. The final regression will thus be made on a sample of 113 deals. We now move on to run our final regression.

5.2.2 Final Regression

The final regression model to be estimated follows from equation 5.1.

$$CAR_i = \alpha + \beta_1 CBDUM_i + \beta_2 CASHDUM_i + \beta_3 MIXDUM_i + \beta_4 CHTA_i$$
$$+ \beta_5 QDUM_i + B_6 CHTA * QDUM_i + \beta_7 MTB_i + \beta_8 DEALSIZE_i \tag{14}$$

Several statistical tests, explained in chapter 4, have been conducted on the model. To summarize we find no sign of heteroscedasticity by using White's test. Thus the regressions are run without standardized robust standard errors. Further we find non-normality in our residuals with a Jarque-Bera test. However because of the relatively many observations normality is assumed according to the central limit theorem. No evidence of multicollinearity is revealed by the variance-covariance matrix or the auxiliary regressions. A Ramsey-RESET test shows that the model has no sign of incorrect specification. The results of the final regression are presented in table 5.5:

Table 5.5

Regression				
Dependent Variable: CAR				
Sample: 113				
	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	0.024	0.026	0.924	0.358
CBDUM	0.013	0.017	0.748	0.456
CASHDUM	0.008	0.022	0.379	0.705
MIXDUM	0.007	0.023	0.301	0.764
CHTA	-0.084	0.060	-1.398	0.165
QDUM	-0.016	0.025	-0.649	0.518
QDUM*CHTA	0.155	0.132	1.176	0.242
MTB	-0.001	0.003	-0.410	0.683
DEALSIZE	0.028	0.024	1.162	0.248
R-squared	0.049			
Adjusted R-squared	-0.024			

As can be seen from table 5.5 we find no statistically significant relationships between CAR and any of the explanatory variables. This is also reflected in the low R^2 value. The model does not have any explanatory power. This will be summarized and analyzed in further detail in   chapter   6.

6 Analysis

In chapter six we present an analysis of our expectations and empirical findings.

6.1 Summary of expectations and findings

Table 6.1 Summary of expectations and findings

Hypotheses		Expected sign	Findings
1	CAR is positive	+	+
2	Conglomerate deals are negatively related to CAR	-	
3	Vertical deals are negatively related to CAR	-	
4	Cross border transactions are positively related to CAR	+	+
5	Cash only deals are positively related to CAR	+	+
6	A mixed method of payment is positively related to CAR	+	+
7	High cash holdings and low investment opportunities are negatively related to CAR	-	+
8	Market-to-book ratios are negatively related to CAR	-	-
9	The size of the deal is negatively related to CAR	-	+

Comparing our results with the initial hypotheses we find expected coefficient signs for all variables except for hypothesis seven and nine. Statistical significance is found only for hypothesis one. In the following we will go through each of the above hypotheses and discuss the results in relation to the theoretical framework.

6.2 Hypotheses analysis

Hypothesis 1: CAR is positive

Our results are in line with our hypothesis that CAR is positive around the announcement of an M&A transaction. The average deal on the Swedish market has created statistically significant abnormal return for the bidder's shareholders. As mentioned above previous research has shown no clear consistency regarding this hypothesis. Results have varied over time, markets and methods used. The one tendency we could find was that more recent studies with short event window had shown statistically significant positive returns, see Song and Walking (2004) and Ben-Amar and Andre (2006). Further, the study by Doukas *et al* (2002)

on the Swedish market showed that non-conglomerate Swedish deals have created value on average. Therefore we think that our results add to the empirical consensus in this question. More recent studies employing a short event-window with the assumption of efficient markets show significantly positive abnormal returns for bidders. Our results also add to the question of how to make the cut-off in the sample of deals. We used 10 percent of relative deal size, in line with Asquith (1982) and Walker (2000). This was to make sure that every deal included should have the potential to affect the value of a company enough to be captured and recognized in the share price. To our knowledge it is only those two studies that have used this exact method. Similar to our results Asquith found a significant 4.1 percent abnormal return. Walker's results showed negative CAR but only significant at the ten percent level.

Our results and the support it gets from previous studies imply that the average deal is done for the right reasons. Agency problems, information asymmetries and other arguments against value creation with M&A seem not to be so severe in practice. Instead the argument that significant synergies can be realized when combining two firms is consistent with our results.

Hypothesis 2: Conglomerate deals are negatively related to CAR
Hypothesis 3: Vertical deals are negatively related to CAR

Unfortunately we could not test our second and third hypotheses with our data material since our sample consisted almost entirely of horizontal deals. What we can say however, as an implication of the first hypothesis, is that horizontal deals on the Swedish market have created value on average. What we can not say is if vertical or conglomerate deals are negatively related to CAR. Previous research e.g. Fee and Thomas (2004) and Sharur (2005) has found horizontal deals to create value and Walker (2000) found that horizontal deals created more value than vertical deals. There is also many studies confirming that conglomerate deals are negatively related to CAR, see table 2.2. Our results are consistent with but can not confirm the mentioned results from previous research. One of the reasons that M&A is so successful on the Swedish market can be that most deals done here are horizontal and previous research agree that horizontal deals are value creating. Many of the problems mentioned with M&A e.g. empire building is more related to diversifying and conglomerate deals.

Hypothesis 4: Cross-border transactions are positively related to CAR

We find that that there is a positive relationship between cross-border transactions and CAR, but the relationship is not statistically significant. Thus, the sign of the coefficient was in line with what we expected and with previous research. The explanation for this positive relationship is that to reach a new market abroad a lot of barriers have to be broken. Thus acquiring a target, as opposed to growing organically, which is already established in the specific country, might be the fastest and least risky alternative to expand abroad. Our findings are in line with previous research here but we can not draw any conclusions since significance can not be found.

Hypothesis 5: Cash only deals are positively related to CAR

From the theory of Myers (1984) and Myers and Majluf (1984) we can expect cash only deals to be positively related with CAR. Since equity is the most expensive form of financing managers will prefer to use retained earnings to finance acquisitions. Given information asymmetry a firm that finances a transaction by equity will be regarded overvalued by the market. Given this, an acquiring firm that only use cash will send a positive signal to the market and therefore the market will value such deals higher. Both previous research and the sign of our coefficient speak in favor of this theory. Therefore it speaks against Hansen's (1987) theory.

According to Hansen (1987) stock has contingent-pricing characteristics and therefore the target is more likely to accept an offer since they can gain from the bidders increased share price. Since the target will accept stock deals when the bidder's stock price is likely to increase, we expect a positive relationship between share deals and CAR here. However research on the subject shows that deals paid with entirely cash are more successful than pure stock deals. Equity financed deals tend to be negatively related to CAR. Our findings are similar to these studies and we find that cash deals are positive related to CAR but we do not have any statistic significance.

Hypothesis 6: A mixed method of payment is positively related to CAR

Hansen's (1987) theory was further developed by Eckbo *et al* (1990). They argue that a mixed offer of cash and shares are preferable since there is a two-sided information asymmetry problem. The solution is that a mix of cash and shares are used as payment in an M&A transaction and will represent equilibrium. The previous research on the subject has found that deals with a mixed method of payment give higher positive returns to the acquirer than cash or stock transactions. However other studies have found that a mix method of payment has a negative relationship to CAR though not a statistical significant relationship. Our findings present a positive relationship between a mixed method of payment and CAR. This is in line with our hypothesis but as the results are statistically insignificant we cannot add any empirical finding to the research. As concluded above there is no empirical consistency regarding this theory. Unfortunately our findings can not shed further light to it.

The fact that our parameters regarding the method of payment can not be statistically separated from zero could imply that the method of payment is irrelevant. This would be the case in a world with symmetric information and without transaction costs and taxes (Kargin, 2001). This is not the case on the Swedish market though. However, it might be that other factors are more important and thus overshadow the choice of payment method.

Hypothesis 7: High cash holdings and low investment opportunities are negatively related to CAR

To test this hypothesis we introduced two variables, the ratio of cash holdings to total assets, CHTA, and a dummy for Tobin's q smaller than one QDUM (an approximation of low investment opportunities). We also multiplied the two variables to form a third interaction variable. This method is the same as that used in Lang *et al* (1991).

The theoretical argument, initially introduced by Jensen (1986), is that firms that have high cash holdings will waste that money on bad investments when then they do not have any good investment opportunities.

Our results are very hard to interpret though as the signs are not fully in line with what we initially expected. The variables CHTA and QDUM get negative signs, which is in line with

theory. High cash holdings and low investment opportunities seems to be negatively related to CAR. Letting the two variables interact however, results in a positive sign. The interpretation is that the combination of high cash holdings and low investment opportunities is positively related to CAR. This strikes us as a strange result.

Because we do not find any significance too much attention to these results should not be paid. The signs are still strange though and also contrary to the findings of Lang *et al* (1991). They find negative signs for CHTA and the interaction variable and a positive sign for QDUM itself. Significance is found for the first two variables and not for the QDUM itself. They explain that by stating that the correlation between cash flow and the dummy variable is high and negative and thus significance falls when including both in a regression, a multicollinearity problem. When testing the variables two and two significance is found for all variables. Hence, support for the free cash flow hypothesis is found. Testing the variables two at a time similar to Lang *et al* (1991) did not improve our results. Our results can not be explained by correlation between CHTA and QDUM since this is approximately zero in our sample.

One possible explanation for the positive sign could be that gearing up by using their cash reserves could be good for firms with low investment opportunities. It could be argued that firms with low investment opportunities are overrepresented in sectors with low growth and low business risk. Making acquisitions could thus be a way of gearing up and increase the financial risk. It is hard to come up with reasonable explanations for our results both as a result of the lack of significance and the fact that measuring investment opportunities is troublesome. It can also be so that firms active in different industries have different needs for operating cash. Thus it is hard to objectively measure excess cash and we use total cash holdings as an approximation.

Hypothesis 8: Market-to-book ratios are negatively related to CAR

In line with what we expected market-to-book ratios as a proxy for pre-acquisition performance of the acquirer seems to be negatively related to CAR. The results are in line with Rau and Vermalen (1998). Their results are significant while ours are not. Both results are in favor of the theory that high MTB companies experience high expectations from the market as a result of previous superior performance. This could make it harder for them to

meet the markets expectations when they are making acquisitions. Another reason for high MTB-companies to make bad acquisitions could be that their managers get over-confident from their previous success.

I could also be so that weaker performers are forced to be more careful when considering a deal since they might be under more pressure from stakeholders and thus more monitored. More monitoring could also imply reduced agency problems in taking the decision to make an acquisition. The conclusion is that our results show the same tendency as previous research. We can not draw any strong conclusions though since we do not find significance.

Hypothesis 9: The size of the deal is negatively related to CAR

Contrary to what we expected the relative size of the deal seems to be positively related to CAR. This is however a hypothesis where previous research is weak and show no clear consensus. We based our hypothesis upon the results of Sudarsanam (1996) that found a negative relationship between the size of the deal and CAR. The interpretation was that a smaller target probably is easier to integrate and thus less friction from the deal arises. Bieshaar *et al* (2001) on the other hand argued that a bigger deal should have more potential synergies and thus be more value creating. They found no statistical support for their hypothesis. However, in their study they found that the average deal destroys value. Therefore the risk of greater value destruction is larger for a bigger deal. In our study we find statistically significant support for the hypothesis that deals create value on average. Therefore the arguments of Beishaar *et al* (2001) might be more applicable on our results and explain the positive sign that our results yield. As the average deal in Sweden creates value a bigger deal should have potential of greater value creation. These arguments explain the sign of the coefficient but can not dismiss the significant results from Sudarsanam (1996) since we do not get any significance. However, similar to Bieshaar *et al* (2001) Sudarsanam (1996) got negative abnormal returns from M&A on average. Therefore it is possible that the results for this variable are highly dependent on the sign of the average CAR.

7 Concluding remarks

In this last chapter we will present the conclusions that can be made from the empirical findings. We also present some suggestions for further research.

7.1 Conclusions

The purpose of this study was divided into two parts. The first aim was to study to what extent mergers and acquisitions have created value for the acquiring companies' shareholders on the Swedish stock exchange. The second aim was to find determinants that affect the success or failure of a deal.

In the first part we found that with a sample of M&A deals in Sweden 1997-2009 value has been created on average. Employing different models and event windows we found that those deals realized approximately 3.5 percent abnormal returns over the days around the announcement. All results are statistically significant at the one percent level. The sample consisted mainly of horizontal deals and thus a further implication is that horizontal deals seem to be associated with value creation from M&A in Sweden. We think that our results can add more consensus to previous research. More recent studies with short event-windows show statistically significant positive abnormal returns from mergers and acquisitions.

When trying to explain the abnormal returns with determinants we did not find any significance. It seems hard to separate between which deals that are likely to succeed and which are likely to fail on the Swedish market. From a review of previous literature we found consensus regarding some variables effect on a deal. E.g. cash only deals and cross-border transactions seemed to be positively related to CAR. For all hypotheses except two we found the expected sign. However, from the lack of significance we can not draw any sharp conclusions from this.

7.2 Suggestions for further research

There exist a substantial amount of research on value creation with mergers and acquisitions and the determinants to explain it. However, there are still many interesting research questions left to be answered.

First of all, it would be interesting to expand the study to include a longer time period since our database of choice, Zephyr, did not contain information before 1997. Further an extension of the study to include the whole Nordic market, and thus a larger sample, would be interesting. Conducting a similar study on a specific industry with more detailed explanatory variables might give stronger results for the regression. This would be hard to do on the Swedish market though because of the limited data that would be available.

Another appealing approach is to use different and more variables to explain the cumulative abnormal returns if any exist. As discussed in chapter two, one of the primary motives to engage in M&A is to increase the firm's market share. Thus it would be interesting to study the relationship between market share and performance. There are of course a lot of other variables that we did not include in our study that could be examined to see if there are any relationships between the specific variable and the announcement return.

There seems to be a large number of M&A that reduce shareholders value. As an explanation for this has been the hubris hypothesis, thus it would be interesting to study the relationship between the boards monitoring potential of the acquiring firm and the announcement return.

These are only some of many possible suggestions for future researcher to examine.

References

Articles

Akerlof, George A. (1970), "The Market for "Lemons": Quality Uncertainty and the Market Mechanism", *The Quarterly Journal of Economics*, Vol. 84, No. 3, pp. 488-500.

Andrade, Gregor, Mitchell, Mark and Stafford, Erik (2001), "New Evidence and Perspectives on Mergers", *The Journal of Economic Perspectives*, Vol. 15, No. 2, pp. 103-120.

Ahern, Kenneth Robinson (2008), "Sample Selection and Event Study Estimation", Working Paper, University of Michigan.

Anslinger, Patricia L. and Copeland, Thomas E. (1996), "Growth through acquisitions: A fresh look", *Harvard Business Review*, Vol. 74, No. 1, pp. 126-134.

Asquith, Paul, Bruner, Robert F. and Mullins, David W. (1983), "The gains to bidding firms from merger", *Journal of Financial Economics*, Vol. 11, No. 1-4, pp. 121-139.

Ben-Amar, Walid and André, Paul (2006), "Separation of Ownership from Control and Acquiring Firm Performance: The Case of Family Ownership in Canada", *Journal of Business Finance & Accounting*, Vol. 33, No. 3-4, pp. 517-543.

Bieshaar, Hans, Knight, Jeremy and van Wassenaer, Alexander (2001), "Deals that create value" *McKinsey Quaterly*, No 1, pp. 64-73.

Blume, Marshall E. and Stambaugh, Robert F. (1983), "Biases in Computed Returns – An Application to the Size Effect", *Journal of Financial Economics*, Vol. 12, No. 3, pp. 387-404.

Brown, Stephen J. and Warner, Jerold B. (1985), "Using daily stock returns: The case of event studies", *Journal of Financial Economics*, Vol. 14, No. 1, pp. 3-31.

Bruner, Robert (2004), "Where M&A Pays and Where it Strays: A Survey of the Research", *Journal of Applied Corporate Finance*, Vol. 16, No. 4, pp. 63-76.

Campa, José Manuel and Hernando, Ignacio (2004), "Shareholder Value Creation in European M&As", *European Financial Management*, Vol. 10, No. 1, pp. 47-81.

Conn, Robert L., Cosh, Andy, Guest, Paul M. and Hughes, Alan (2005), "The Impact on UK Acquirers of Domestic, Cross-border, Public and Private Acquisitions", *Journal of Business Finance & Accounting*, Vol. 32, No. 5-6, pp. 815-870.

Dodd, P. (1980), "Merger proposal, management discretion and stockholder wealth", *Journal of Financial Economics*, Vol. 8, No. 2, pp. 105-138.

Dong, Ming, Hirshleifer, David, Richardson, Scott and Teoh, Siew Hong (2006), "Does Investor Misvaluation Drive the Takeover Market?", *The Journal of Finance*, Vol. 61, No. 2, pp. 725-762.

Doukas, John and Travlos, Nickolaos G. (1988), "The Effect of Corporate Multinationalism on Shareholders' Wealth: Evidence from International Acquistions", *The Journal of Finance*, Vol. 43, No. 5, pp. 1161-1175.

Doukas, John A., Holmén, Martin and Travlos, Nickolaos G. (2002), "Diversification, Ownership and Control of Swedish Corporations", *European Financial Management*, Vol. 8, No. 3, pp. 281-314.

Eckebo, B. Espen, Giammarino, Ronald M. and Heinkel, Robert L. (1990), "Asymmetric Information and the Medium of Exchange in Takeovers: Theory and Tests", *The Review of Financial Studies*, Vol. 3, No. 4, pp. 651-675.

Fama, Eugene F. (1965), "The Behavior of Stock-Market Prices", *The Journal of Business*, Vol. 38, No. 1, pp. 34-105.

Fama, Eugene F. (1970), "Efficient Capital Markets: A Review of Theory and Empirical Work", *The Journal of Finance*, Vol. 25, No. 2, pp. 383-417.

Fee, C. Edward and Thomas, Shawn (2004), "Sources of gains in horizontal mergers: evidence from customer, supplier, and rival firms", *Journal of Financial Economics*, Vol. 74, No. 3, pp. 423-460.

Fender, Ingo and Gyntelberg, Jacob (2008), "Overview: global financial crisis spurs unprecedented policy actions", *BIS Quarterly Review*, December 2008, pp. 1-24.

Firth, Michael (1980), "Takeovers, shareholders returns, and the theory of the firm", *The Quarterly Journal of Economics*, Vol. 94, No. 2, pp. 236-260.

Franks, Julian R. and Harris, Robert S. (1989), "Shareholder wealth effects of corporate takeovers: The U.K. experience 1955-1985", *Journal of Financial Economics*, Vol. 23, No. 2, pp. 225-249.

Franks, Julian R, Harris, Robert S. and Titman, Sheridan (1991), "The postmerger share-price performance of acquiring firms", *Journal of Financial Economics*, Vol. 29, No.1, pp. 81-96.

Goldfeld, Stephen M. and Quandt, Richard E. (1965), "Some Tests for Homoscedasticity", *Journal of the American Statistical Association*, Vol. 60, No. 310, pp. 539-547.

Gupta, Atul and Misra, Lalatendu (2007), "Deal Size, Bid Premium, and Gains in Bank Mergers: The Impact of Managerial Motivations", *The Financial Review*, Vol. 42, No. 3, pp. 373-400.

Halpern, P. (1982), "Corporate Acquisitions: A Theory of Special Cases? A Review of Event Studies Applied to Acquisitions", *The Journal of Finance*, Vol. 38, No. 2, pp. 297-317.

Hansen, Robert G. (1987), "A Theory for the Choice of Exchange Medium in Mergers and Acquisitions", *The Journal of Business*, Vol. 60, No. 1, pp. 75-95.

Harford, Jarrad (1999), "Cash Reserves and Acquisitions", *The Journal of Finance*, Vol. 54, No. 6, pp. 1969-1997.

Healy, Paul M., Palepu, Krishna G. and Ruback, Richard S. (1992), "Does corporate performance improve after mergers?", *Journal of Financial Economics*, Vol. 31, No. 2, pp. 135-175.

Higson, Chris and Elliott, Jamie (1998), "Post-takeover returns: The UK evidence", *Journal of Empirical Finance*, Vol. 5, No. 1, pp. 27-46.

Hillman, Amy J. and Keim, Gerald D. (2001), "Shareholder Value, Stakeholder Management, and Social Issues: What's the Bottom Line?", *Strategic Management Journal*, Vol. 22, No. 2, pp. 125-139

Holl, P. and Kyriazis, D. (1997), "Wealth Creation and Bid Resistance in U.K. Takeover Bids", *Strategic Management Journal*, Vol. 18, No. 6, pp. 483-498.

Jensen, Michael C. and Meckling William H. (1976), "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure", *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305-360.

Jensen, Michael C. (1986), "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers", *The American Economic Review*, Vol. 76, No. 2, pp.323-329.

Kargin, Aras. Gör. Sibel (2001), "Mergers and tender offers: a review of the literature", *Yönetim Ve Ekonomi*, Vol. 7, No. 1, pp. 243-255.

Lang, Larry H.P., Stulz, René M. and Walkling, Ralph A. (1991), "A test of the free cash flow hypothesis: the case of bidder returns", *Journal of Financial Economics*, Vol. 29, No. 2, 315-335.

Le Nadant, Anne-Laure and Perdreau, Frédéric (2006), "Financial profile of leveraged buy-out targets: some French evidence", *Review of Accounting and Finance*, Vol. 5, No. 4, pp. 370-392.

Loughran, Tim and Vijh, Anand M. (1997), "Do Long-Term Shareholders Benefit From Corporate Acquisitions?", *The Journal of Finance*, Vol. 52, No. 5, pp. 1765-1790.

MacKinlay, A. Craig (1997), "Event Studies in Economics and Finance", *Journal of Economic Literature*, Vol. 35, No. 1, pp. 13-39.

Markides, Constantinos and Oyon, Daniel (1998), "International Acquisitions: Do They Create Value for Shareholders?", *European Management Journal*, Vol. 16, No. 2, pp. 125-135.

Maquieira, Carlos P., Megginson, William L. and Nail, Lance (1998), "Wealth creation versus wealth redistributions in pure stock-for-stock mergers", *Journal of Financial Economics*, Vol. 48, No. 1, pp. 3-33.

Martin, Kenneth J. (1996), "The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership", *The Journal of Finance*, Vol. 51, No. 4, pp. 1227-1246.

Merton, Robert C. (1980), "On estimating the expected return on the market: An exploratory investigation", *Journal of Financial Economics*, Vol. 8, No. 4, pp. 323-361.

Mitchell, Mark L. and Lehn, Kenneth (1990), "Do Bad Bidders Become Good Targets?", *The Journal of Political Economy*, Vol. 98, No. 2, pp. 372-398.

Moeller, Sara B., Schlingemann, Frederik P. and Stulz, René M. (2004), "Firm size and the gains from acquisitions", *Journal of Financial Economics*, Vol. 73, No. 2, pp. 201-228.

Morck, Randall, Shleifer, Andrei and Vishny, Robert W. (1990), "Do Managerial Objectives Drive Bad Acquisitions?", *The Journal of Finance*, Vol. 45, No. 1, pp. 31-48.

Myers, Stewart C. (1984), "The Capital Structure Puzzle", *The Journal of Finance*, Vol. 39, No. 3, pp. 575-592.

Myers, Stewart C. and Majluf, Nicholas S. (1984), "Corporate financing and investment decisions when firms have information that investors do not have", *Journal of Financial Economics*, Vol. 13, No. 2, pp. 187-221.

Ramsey, J.B. (1969), "Tests for Specification Errors in Classical Linear Least-Squares Regression Analysis", *Journal of the Royal Statistical Society B*, Vol. 31, No. 2, pp.350-371.

Rau, P. Raghavendra and Vermaelen, Theo (1998), "Glamour, value and the post-acquisition performance of acquiring firms", *Journal of Financial Economics*, Vol. 49, No. 2, pp. 223-53.

Roll, R. (1986), "The Hubris Hypothesis of Corporate Takeovers", *The Journal of Business*, Vol. 59, No. 2, pp. 197-216.

Scholes, Myron and Williams, Joseph (1977), "Estimating betas from nonsynchronous data", *Journal of Financial Economics*, Vol. 5, No. 3 pp. 309-327.

Sharur, H, (2005), "Industry Structure and Horizontal Takeovers: Analysis of Wealth Effects on Rivals, Suppliers and Corporate Customers" *Journal of Financial Economics*, Vol. 76, No. 1, pp. 61-98.

Smith, Richard L. and Kim, Joo-Hyun (1994), "The Combined Effects of Free Cash Flow and Financial Slack on Bidder and Target Stock Returns", *The Journal of Business*, Vol. 67, No. 2, pp. 281-310.

Song, Moon H. and Walking, Ralph A. (2004), "Anticipation, Acquisitions and the Bidder Return Puzzle", Working Paper, Ohio State University.

Sudarsanam, Sudi and Mahate, Ashraf A. (2003), "Glamour Acquirers, Method of Payment and Post-acquisition Performance: The UK Evidence", *Journal of Business Finance & Accounting*, Vol. 30, No. 1 -2, pp. 299-341.

Sudarsanam, Sudi, Holl, Peter and Salami, Ayo (1996), "Shareholder wealth gains in mergers: effect of synergy and ownership structure", *Journal of Business Finance & Accounting*, Vol. 23, No. 5-6, pp. 673-698.

Travlos, Nickolaos G. (1987), "Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns", *The Journal of Finance*, Vol. 42, No. 4, pp. 943-963.

Tuch, Christian and O'Sullivan, Noel (2007), "The impact of acquisitions on firm performance: A review of the evidence", *International Journal of Management Reviews*, Vol. 9, No. 2, pp. 141-170.

Varayia, N. (1985), "A test of Roll's hubris hypothesis of corporate takeovers", Working Paper, Southern Methodist University.

Walker, Mark M. (2000), "Corporate Takeovers, Strategic Objectives, and Acquiring-Firm Shareholder Wealth", *Financial Management*, Vol. 29, No. 1, pp. 53-66.

White, Halbert (1980), "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity", *Econometrica*, Vol. 48, No. 4, pp. 817-38.

Books

Brooks, Chris (2002), "Introductory econometrics for finance", Cambridge University Press, Cambridge.

Bryman, Alan and Bell, Emma (2003), "Business Research Methods", Oxford University Press, Oxford.

Campbell, John Y., Lo, Andrew W. and MacKinlay, A. Craig (1997), "The Econometrics of Financial Markets", Second edition, Princeton University Press, Princeton, New Jersey.

Gaughan, Patrick A. (2007), "Mergers, Acquisitions, and Corporate Restructurings", Fourth edition, John Wiley & Sons, Inc., Hoboken, New Jersey.

Gujarati, Damodar N (2003), "Basic econometrics", Fourth edition, McGrawHill, Boston.

Koller, Tim, Goedhart, Marc and Wessels, David (2005), "Valuation: Measuring and managing the value of companies", Fourth edition, John Wiley & Sons, Inc., Hoboken, New Jersey.

Other references

Grant Thornton (2009), "Mergers and acquisitions: looking beyond the global downturn", http://www.grantthornton.se/Filbibliotek/Publikationer/2008/M&A%20Report_Final.pdf, 2009-05-26.

KPMG (2009), "Global deal activity set to hit bottom in Q2/Q3", http://www.kpmg.com/Global/IssuesAndInsights/ArticlesAndPublications/Pages/Global-deal-activity-hit-bottom-Q2-Q3.aspx, 2009-05-26.

FAR (2008) "Internationell redovisningsstandard i Sverige: IFRS/IAS 2008**",** Fifth edition, FAR SRS Förlag, Stockholm.

Getinge AB, Annual report 2007

Databases

Datastream Advance 4.0, Thomson Financial Ltd

Reuters 3000Xtra, Reuters

Zephyr, Bureu van Dijk Electronic Publishing

Appendix

A.1 Sample

Date announced	Acquiror name	Target name
1998-09-01	Sigma AB	Benima Ferator Engineering
1999-01-08	Graninge AB	A Ahlstrom Corporation Energia Hydroelectric
1999-04-21	Gunnebo AB	Fichet-Bauche SA
1999-10-26	Skandinaviska Enskilda Banken AB	BfG Bank AG
1999-11-16	Saab AB	Celsius AB
1999-12-24	Trelleborg AB	Automotive Anti-Vibration System
2000-01-11	All Cards Service Center AB	Norsik AS
2000-02-07	Nolato AB	Shieldmate Robotics
2000-02-29	Technology Nexus AB	Devenator
2000-03-07	Assa Abloy AB	Yale locks
2000-04-08	Salenstjarnan AB	Hemsedal Skisenter
2000-04-25	Volvo AB	Mack
2000-05-04	Hexagon AB	PMC Nordic
2000-06-27	Softronic AB	Iberconsult
2000-08-10	Gunnebo AB	Chubb Safes Group
2000-08-29	Skanska AB	Kvaerner Construction Group Limited
2000-09-18	Bong Ljungdahl AB	Rexam Envelopes
2000-11-15	Trelleborg AB	Laird Group plc's auto component unit
2000-11-17	Getinge AB	Maquet AG
2000-11-17	Hexagon AB	Brown & Sharpe Metrology
2000-12-05	Daydream Software AB	E-game
2000-12-12	Beijer Alma AB	Elimag Industri AB
2001-01-22	Svenska Cellulosa AB	Away From Home tissue
2001-01-24	Getinge AB	ALM
2001-02-05	Scribona AB	PC Lan ASA
2001-04-10	NH Nordiska Holding AB	Matteus AB
2001-05-16	Wilh Sonesson AB	Max Medica
2001-05-31	Fjallraven AB	Naturkompaniet AB
2001-11-14	Observer AB	Bacon's Information Inc.
2001-12-10	Aspiro AB	Mgage Systems AB
2002-07-05	ProAct IT Group AB	Christiania Consulting AS
2002-08-09	Aspiro AB	Picofun AB
2003-01-21	LGP Telecom Holding AB	Allgon AB
2003-04-01	Höganäs AB	SCM Metal Products Inc.
2003-04-15	MTV Produktion AB	Mastiff Media AB
2003-06-19	NeoNet AB	Lexit Financial Group Inc.
2003-07-21	Trelleborg AB	Polymer Sealing Solutions Ltd
2003-08-07	Pyrosequencing AB	Personal Chemistry AB
2003-08-15	Getinge AB	Siemens Medical Solutions Life Support Systems
2003-09-01	Daydream Software AB	Unique Development Studios AB
2003-09-08	Boliden AB	Outokumpu Mining and Smelting
2003-10-14	Meda AB	Medic Team A/S
2003-10-14	Pyrosequencing AB	Biotage LLC
2003-10-22	Framfab AB	SBI Group Inc London
2003-10-24	Opcon AB	Svenska Rotor Maskiner AB
2003-11-13	Lundin Petroleum AB	Island Petroleum Developments Ltd

2003-11-24	ProAct IT Group AB	Dimension AB
2003-12-01	Nobia AB	Gower Group Ltd
2003-12-03	Sweco AB	PI-Management Oy
2003-12-12	Geveko AB	NCC AB Road Marking
2003-12-17	Poolia AB	Parker Bridge Recruitment Ltd
2004-03-03	Trelleborg AB	Manuli Dynaflex
2004-03-12	Daydream Software AB	Fun Planet
2004-05-06	Sigma AB	RKS AB
2004-05-14	Aspiro AB	Cellus Norway AS
2004-06-15	Nordnet AB	Stocknet-Aston Securities ASA
2004-11-19	Scania AB	Ainax AB
2005-01-04	Tricorona AB	Skrot Johan AB
2005-01-12	Onetwocom AB	You Services AS
2005-01-18	Elekta AB	IMPAC Medical Systems Inc.
2005-01-20	Meda AB	Novartis AG's Cibacen Cibadrex
2005-01-27	CF Berg & Co AB	Orrefors Sågverks AB
2005-02-04	Fagerhult AB	LampGustaf AB
2005-02-04	Addtech AB	Bergman & Beving Meditech AB
2005-02-09	Rnb Retail and Brands AB	C/O Department & Stores Nordic AB
2005-02-14	Jeeves Information Systems AB	Microcraft AB
2005-02-14	Digital Vision AB	Nucoda Ltd
2005-02-17	Aspiro AB	Schibsted Mobile AS
2005-02-22	Biotage AB	Argonaut Technologies Inc
2005-04-21	Cybercom Group Europe AB	Netcom Consultants AB
2005-05-10	Framfab AB	Oyster Partners Ltd
2005-05-30	Ortivus AB	Medos AG
2005-08-08	Meda AB	Viatris GmbH & Co. KG
2005-08-15	Hexagon AB	Leica Geosystems Holding AG
2005-08-24	Prevas AB	Glaze Holding AB
2005-09-23	VBG Group AB	Edscha AG Sliding Roofs for Trucks and Trailers
2005-09-26	Eniro AB	Findexa Ltd
2005-11-04	Fagerhult AB	Whitecroft Lighting Holdings Ltd
2005-12-28	Orc Software AB	Cameron Systems
2006-01-02	Technology Nexus AB	Armoursoft Ltd
2006-01-26	Vitrolife AB	Swemed Holding AB
2006-01-27	Daydream Software AB	Dreamland Poker
2006-02-14	Nobia AB	Hygena Cuisines SA
2006-03-28	A-Com AB	Bizkit AB
2006-05-08	Ångpanneföreningen AB	Benima AB
2006-05-09	Rnb Retail and Brands AB	JC AB
2006-05-29	Lundin Petroleum AB	Valkyries Petroleum Corporation
2006-06-12	Saab AB	Ericsson Microwave Systems AB
2006-08-04	BTS Group AB	Advantage Performance Group LLC, The
2006-10-23	Biolin AB	Integration Diagnostics AB
2006-11-09	Meda AB	3M Pharma
2006-11-15	Ticket Travel Group AB	MZ Travel AB
2006-12-19	Telefonaktiebolaget LM Ericsson	Redback Networks Inc.
2007-01-31	Elanders AB	Sommer Corporate Media GmbH & Co. KG
2007-02-08	Audiodev AB	STEAG ETA-Optik GmbH
2007-03-05	Nolato AB	Cerbo Group AB
2007-03-12	Semcon AB	IVM Automotive Beteiligungs GmbH
2007-03-21	A-Com AB	Spits ASA
2007-04-12	New Wave Group AB	Cutter & Buck Inc.
2007-07-25	TradeDoubler AB	Search Works International Ltd

2007-08-16	MSC Konsult AB	Toolkit Software AB
2007-08-20	AcadeMedia AB	Ljud & Bildskolan LBS AB
2007-08-30	Ångpanneföreningen AB	Colenco Power Engineering AG
2007-10-15	Orexo AB	Biolipox AB
2007-10-25	Meda AB	Recip AB
2007-10-29	Phonera AB	Rix Telecom AB
2007-10-29	Mobyson AB	Totaltelefoni Svenska AB
2007-11-05	Getinge AB	Boston Scientific Corporation Cardiac Surgery
2007-12-18	Cybercom Group Europe AB	Plenware Oy
2008-02-22	Haldex AB	Concentric plc
2008-05-07	Lindab International AB	Sipog AS
2008-07-31	Modern Times Group MTG AB	Nova Television Ead
2008-08-04	Meda AB	Valeant Pharmaceuticals Int. East and West Europe
2008-08-21	Feelgood Svenska AB	Haluxa AB
2008-09-16	Getinge AB	Datascope Corporation
2008-09-18	AcadeMedia AB	Anew Learning AB
2008-12-02	Duroc AB	Madsen & Hansen
2009-01-13	G&L Beijer AB	PB Holdings Luxembourg Sarl

A.2 Regression outputs

A.2.1 Correlation matrix

	CASHDUM	CBDUM	CFTA	DEALSIZE	MIXDUM	MTB	QDUM
CASHDUM	1.00						
CBDUM	0.38	1.00					
CFTA	-0.12	-0.05	1.00				
DEALSIZE	-0.20	-0.06	0.06	1.00			
MIXDUM	-0.65	-0.24	-0.01	0.09	1.00		
MTB	-0.06	-0.13	0.17	-0.04	-0.07	1.00	
QDUM	0.06	0.01	0.00	-0.17	0.07	-0.33	1.00

A.2.2 Regression Results

Dependent Variable: CAR
Method: Least Squares
Date: 05/25/09   Time: 10:57
Sample: 1 113
Included observations: 113

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.024238	0.026244	0.923542	0.3579
CASHDUM	0.008443	0.022271	0.379093	0.7054
MIXDUM	0.006827	0.022707	0.300665	0.7643
CBDUM	0.013076	0.017490	0.747639	0.4564
QDUM	-0.015948	0.024578	-0.648874	0.5178
CFTA	-0.084357	0.060348	-1.397840	0.1651
QDUM*CFTA	0.154772	0.131614	1.175950	0.2423
DEALSIZE	0.027976	0.024073	1.162159	0.2478
MTB	-0.001327	0.003236	-0.410246	0.6825

R-squared	0.048931	Mean dependent var	0.036830
Adjusted R-squared	-0.024229	S.D. dependent var	0.081291
S.E. of regression	0.082270	Akaike info criterion	-2.081334
Sum squared resid	0.703903	Schwarz criterion	-1.864108
Log likelihood	126.5954	Hannan-Quinn criter.	-1.993186
F-statistic	0.668824	Durbin-Watson stat	1.910861
Prob(F-statistic)	0.717814		

A.2.3 Heteroscedasticity tests

Heteroskedasticity Test: White

F-statistic	1.288041	Prob. F(36,76)	0.1770
Obs*R-squared	42.81909	Prob. Chi-Square(36)	0.2018
Scaled explained SS	62.64005	Prob. Chi-Square(36)	0.0039

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/25/09   Time: 11:05
Sample: 1 113
Included observations: 113
Collinear test regressors dropped from specification

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011219	0.015158	0.740121	0.4615
CASHDUM	-0.012021	0.010812	-1.111814	0.2697
CASHDUM*CBDUM	0.011435	0.007759	1.473667	0.1447
CASHDUM*QDUM	0.033454	0.032286	1.036173	0.3034
CASHDUM*CFTA	0.046028	0.031296	1.470737	0.1455
CASHDUM*(QDUM*CFTA)	-0.321907	0.263734	-1.220572	0.2260
CASHDUM*DEALSIZE	0.004303	0.009204	0.467557	0.6414
CASHDUM*MTB	0.000243	0.001997	0.121477	0.9036
MIXDUM	-0.020217	0.012255	-1.649691	0.1031
MIXDUM*CBDUM	0.013419	0.008324	1.612066	0.1111
MIXDUM*QDUM	0.037366	0.031086	1.202024	0.2331
MIXDUM*CFTA	0.075533	0.034436	2.193386	0.0313
MIXDUM*(QDUM*CFTA)	-0.330609	0.265485	-1.245305	0.2168
MIXDUM*DEALSIZE	-0.005393	0.011442	-0.471324	0.6388
MIXDUM*MTB	0.002790	0.003562	0.783278	0.4359
CBDUM	-0.012318	0.009988	-1.233223	0.2213
CBDUM*QDUM	-0.017362	0.016543	-1.049486	0.2973
CBDUM*CFTA	-0.006858	0.021017	-0.326299	0.7451
CBDUM*(QDUM*CFTA)	0.238774	0.202086	1.181546	0.2411
CBDUM*DEALSIZE	0.001146	0.010115	0.113259	0.9101
CBDUM*MTB	-0.000740	0.001794	-0.412376	0.6812
QDUM	-0.012360	0.023454	-0.526984	0.5997
QDUM*CFTA	0.135800	0.098091	1.384438	0.1703
QDUM*DEALSIZE	-0.021925	0.019942	-1.099430	0.2751
QDUM*MTB	-0.010450	0.016351	-0.639108	0.5247
CFTA	-0.140386	0.044228	-3.174187	0.0022
CFTA^2	0.140412	0.057517	2.441235	0.0170
CFTA*(QDUM*CFTA)	-0.368780	0.234912	-1.569864	0.1206
CFTA*DEALSIZE	-0.023445	0.030251	-0.774999	0.4407
CFTA*MTB	0.009022	0.008558	1.054249	0.2951
(QDUM*CFTA)*DEALSIZE	0.309669	0.260699	1.187842	0.2386
(QDUM*CFTA)*MTB	0.068748	0.192355	0.357401	0.7218
DEALSIZE	0.033614	0.027498	1.222448	0.2253
DEALSIZE^2	0.007484	0.011025	0.678769	0.4993

DEALSIZE*MTB	-0.015102	0.006983	-2.162745	0.0337
MTB	0.005278	0.005375	0.982002	0.3292
MTB^2	-0.000207	0.000161	-1.283764	0.2031

R-squared	0.378930	Mean dependent var	0.006229
Adjusted R-squared	0.084739	S.D. dependent var	0.011629
S.E. of regression	0.011125	Akaike info criterion	-5.901011
Sum squared resid	0.009406	Schwarz criterion	-5.007973
Log likelihood	370.4071	Hannan-Quinn criter.	-5.538626
F-statistic	1.288041	Durbin-Watson stat	2.004243
Prob(F-statistic)	0.176971		

Heteroskedasticity Test: White

F-statistic	1.981008	Prob. F(8,104)	0.0560
Obs*R-squared	14.94251	Prob. Chi-Square(8)	0.0603
Scaled explained SS	21.85940	Prob. Chi-Square(8)	0.0052

Test Equation:
Dependent Variable: RESID^2
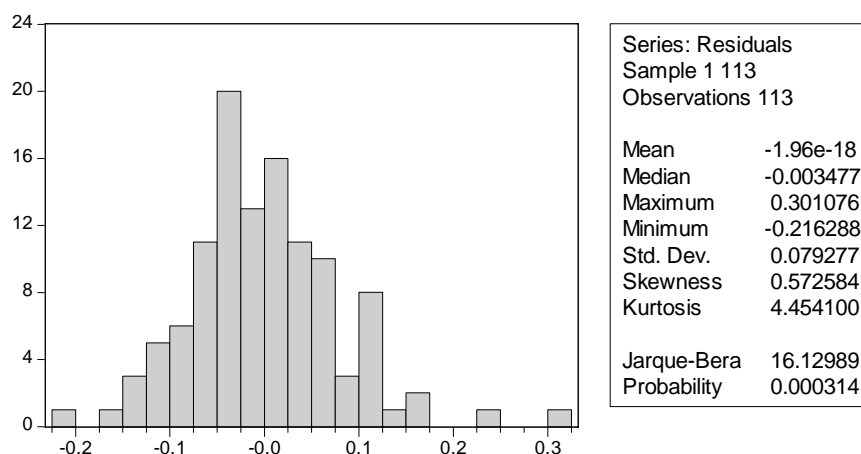Method: Least Squares
Date: 05/25/09   Time: 11:06
Sample: 1 113
Included observations: 113

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007657	0.002890	2.649920	0.0093
CASHDUM^2	-0.000734	0.003006	-0.244304	0.8075
MIXDUM^2	-0.003332	0.003084	-1.080342	0.2825
CBDUM^2	-0.002237	0.002388	-0.936972	0.3509
QDUM^2	-0.001046	0.002691	-0.388855	0.6982
CFTA^2	-0.010089	0.013524	-0.746062	0.4573
(QDUM*CFTA)^2	0.007850	0.032534	0.241286	0.8098
DEALSIZE^2	0.007832	0.002249	3.482070	0.0007
MTB^2	-4.62E-06	2.30E-05	-0.201182	0.8409

R-squared	0.132235	Mean dependent var	0.006229
Adjusted R-squared	0.065483	S.D. dependent var	0.011629
S.E. of regression	0.011242	Akaike info criterion	-6.062109
Sum squared resid	0.013143	Schwarz criterion	-5.844883
Log likelihood	351.5092	Hannan-Quinn criter.	-5.973961
F-statistic	1.981008	Durbin-Watson stat	1.951413
Prob(F-statistic)	0.055962		

A.2.4 Normality test

Series: Residuals
Sample 1 113
Observations 113

Mean	-1.96e-18
Median	-0.003477
Maximum	0.301076
Minimum	-0.216288
Std. Dev.	0.079277
Skewness	0.572584
Kurtosis	4.454100
Jarque-Bera	16.12989
Probability	0.000314

A.2.5 Ramsey RESET Test

Ramsey RESET Test:

F-statistic	2.992515	Prob. F(1,103)	0.0866
Log likelihood ratio	3.236262	Prob. Chi-Square(1)	0.0720

Test Equation:
Dependent Variable: CAR
Method: Least Squares
Date: 05/25/09   Time: 11:08
Sample: 1 113
Included observations: 113

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.010981	0.027102	0.405157	0.6862
CASHDUM	-0.006132	0.023615	-0.259652	0.7957
MIXDUM	0.000984	0.022745	0.043242	0.9656
CBDUM	-0.014743	0.023638	-0.623695	0.5342
QDUM	0.016278	0.030656	0.530988	0.5966
CFTA	0.009713	0.080811	0.120197	0.9046
QDUM*CFTA	-0.149617	0.218993	-0.683202	0.4960
DEALSIZE	-0.036132	0.044068	-0.819919	0.4142
MTB	0.000180	0.003321	0.054133	0.9569
FITTED^2	30.04734	17.36952	1.729889	0.0866

R-squared	0.075782	Mean dependent var	0.036830
Adjusted R-squared	-0.004974	S.D. dependent var	0.081291
S.E. of regression	0.081493	Akaike info criterion	-2.092274
Sum squared resid	0.684029	Schwarz criterion	-1.850912
Log likelihood	128.2135	Hannan-Quinn criter.	-1.994332
F-statistic	0.938402	Durbin-Watson stat	1.833739
Prob(F-statistic)	0.495484		