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**POST-ACQUISITION PERFORMANCE OF ACTIVE ACQUIRERS OF DIVESTED ASSETS IN
THE SOFTWARE INDUSTRY**

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<p>Corporate mergers and acquisitions (M&As) are a popular means by which companies pursue various strategic objectives. However, studies show that M&As on average do not produce positive returns to the acquirer. Furthermore, the existing research on factors contributing to acquisition performance is inconclusive at best.</p> <p>This study complements the existing research on M&A performance by focusing on acquisitions of divestments as a distinct subset of all acquisitions. Besides individual acquisitions, the study considers multiple acquisition programs, continuing the research stream initiated at Helsinki University of Technology. The aim is to find out if acquisitions of divestitures perform on average better than acquisitions of stand-alone firms both in the short and long run. The objective is also to determine what factors affect the performance of acquirers of divested assets.</p> <p>The sample used in this study consists of a total of 1,143 acquisitions undertaken by the 60 most active acquirers during the time period 1988-2005, where the acquirer operated in the US software industry. The data was analyzed by multivariate regression, using the event study methodology for individual acquisitions, and panel regression for acquisition programs. Performance was measured by the acquirer's market value change.</p> <p>The results show that both the short and long term average performance of acquirers buying divested assets was above average. The returns are significantly higher when the divested target enjoys a better fit with the acquirer than with the divesting parent. Also the long term performance of acquirers classified as "strategic" based on their systematic acquisition behavior was found significantly positive. On the other hand, divestiture acquisitions bought from a financially distressed parent contributed negatively to long-term market value. The deal price of divestiture acquisitions did not have a significant effect according to this study.</p> <p>This study makes a valuable contribution to existing research by showing a positive relationship between divestiture acquisitions and buyer performance. The result has implications to corporate managers who plan to use M&As as a strategic move. Furthermore, the study opens up various questions for further research in terms of divestiture acquisitions and acquisition programs. Through triangulation by multiple methods using different time frames it also raises some methodological concerns regarding the prevalence of short-term measures in existing acquisition research.</p>		
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Informaatio- ja luonnontieteiden tiedekunta
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<p>Yritysostot ja fuusiot ovat yritysten suosima keino saavuttaa erilaisia strategisia tavoitteita. Useat tutkimukset kuitenkin osoittavat, että yritysostoilla ei ole positiivista vaikutusta yrityksen arvoon. Lisäksi aiempi tutkimus ei ole kyennyt yksiselitteisesti erittelemään yritysostojen arvoa kasvattavia tekijöitä.</p> <p>Tämä työ täydentää olemassa olevaa tutkimusta yrityskauppojen menestyksestä keskittymällä divestointeihin erityisenä yritysostojen osa-alueena. Yksittäisten ostojen lisäksi tutkimus tarkastelee useista ostoista koostuvia yritysosto-ohjelmia, jatkaen siten osaltaan Teknillisessä korkeakoulussa käynnistettyä tutkimushaaraa. Tutkimuksen tarkoituksena on selvittää, menestyvätkö divestoituja osia ostavat yritykset paremmin kuin kokonaisia yrityksiä ostavat, sekä lyhyellä että pitkällä aikavälillä. Tavoitteena on myös määrittää mitkä tekijät vaikuttavat divestointiostojen kannattavuuteen.</p> <p>Tutkimuksen otos koostuu yhteensä 1143 yritysostosta vuosina 1988–2005. Ostajina olivat 60 aktiivisinta yritystä jotka toimivat Yhdysvaltojen ohjelmistotoimialalla. Data-analyysi tehtiin monimuuttujaregressiolla. Menetelmänä yksittäisille yritysostoille käytettiin tapahtumatutkimusta (event study), ja yritysosto-ohjelmille paneeliregressiota. Menestystä mitattiin ostajan markkina-arvon muutoksella.</p> <p>Tulokset osoittavat että divestointeja ostavien yritysten menestys on keskimääräistä korkeampi sekä lyhyellä että pitkällä aikavälillä, etenkin kun oston kohde on liiketoiminnallisesti lähempänä ostavaa kuin myyvää yritystä. Myös systemaattisen ostokäyttäytymisensä perusteella ”strategisiksi” ostajiksi määriteltyjen yritysten pitkän aikavälin menestys on huomattavasti normaalia parempi. Ostot, joissa divestoituva yritys on taloudellisessa ahdingossa vaikuttavat negatiivisesti ostajan pitkän aikavälin markkina-arvoon. Divestointiostojen hinnalla ei ole vaikutusta ostajan menestykseen.</p> <p>Tutkimustulosten osoittama divestointiostojen ja ostajan menestyksen positiivinen suhde on merkittävä lisä olemassa olevaan tutkimukseen. Tuloksilla on merkitystä yritysjohtajille jotka aikovat käyttää yritysostoja strategisena liikkeenä. Lisäksi työ nostaa esille jatkotutkimuskysymyksiä divestointien ostoihin ja osto-ohjelmiin liittyen. Triangulaatio useiden menetelmien ja aikavälien avulla myös nostaa esille erityisiä metodologisia ongelmia liittyen aiemmissa tutkimuksissa vallitsevaan käytäntöön mitata yritysostojen kannattavuutta pääosin lyhyen aikavälin mittareilla.</p>		
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1 Introduction

1.1 Background

Corporate mergers and acquisitions (M&As) have become an increasingly popular phenomenon during the past decades. For example, in 2004 alone over 30,000 mergers and acquisitions were undertaken globally, with their total value exceeding US\$1,900 billion (Cartwright and Schoenberg, 2006), compared to 10 years before when the aggregate value was around US\$600 billion (Schoenberg, 2003).

The reason for the global pervasiveness of M&As is that they provide a relatively quick and versatile means to corporate growth and renewal. Firms often use acquisitions in order to achieve such diverse strategic goals as, for example, increasing market power, expanding to new product markets or geographical territories, or gaining access to valuable resources (Schoenberg, 2003). Compared to internal development, acquisitions are a much faster way to build these capabilities.

The popularity of acquisitions is reflected also in the wide interest mergers and acquisitions have received within the research community (for a fairly comprehensive review, see e.g. Parvinen, 2003). The biggest problem regarding M&As, as identified by a large majority of researchers, is that on average their effect on the acquiring firm's post-acquisition performance ranges from slightly negative to zero (King, Dalton, Daily and Covin, 2004; Kaplan and Weisbach, 1992; Haspeslagh and Jemison, 1991: 3; Jensen and Ruback, 1983). Likewise, acquiring firms' directors are dissatisfied with the performance of around 50% of their acquisitions (Schoenberg, 2003). Existing research has been unable to find specific factors that improve acquisition performance, although multiple have been proposed. For example King et al. (2004) conducted a meta-analysis of the four most common factors suggested by earlier research, and found that none of them has a significant effect on post-acquisition performance.

These results do not, however, imply that further attempts to explain M&A performance is a futile or useless attempt. From a research perspective they actually present an interesting dilemma, since the amount of acquisitions continues to increase despite their obvious

challenges and lack of observed benefits. It is insufficient to state only that the average post-acquisition performance gain is zero, since “this mean hides a large variance in acquirer gains” (Capron and Pistre, 2002: 781). Interestingly, for example, if only the worst performing 2% of all acquisitions undertaken between 1998 and 2001 are excluded, the aggregate shareholder returns during this time are positive (Moeller, Schlingemann and Schultz, 2005). This indicates that there are still undiscovered factors that contribute to acquisition performance. This is also one finding of the paper by King et al. (2004: 197), who conclude that “researchers simply may not be looking at the ‘right’ set of variables as predictors of post-acquisition performance”.

Some recent studies have been able to determine some of these variables. Compared to most extant research, these studies have taken a somewhat different perspective to acquisitions. Instead of attempting to find generic predictors of post-acquisition performance that are applicable to all acquisitions, they instead focus on determining if some sub-groups of the whole set of acquisitions exhibit above-average performance. For instance, it has been shown that acquisitions where the target is a private company (Capron and Shen, 2007) and acquisitions involving Internet companies (Uhlenbruck, Hitt and Semadeni, 2006) can create above-normal returns.

This paper takes a similar approach by focusing on acquisitions of divested assets as a subgroup of all acquisitions. The extant acquisition research does not typically make a distinction between acquisitions of full companies compared to acquisitions of divested assets that other firms are selling. Yet, in most cases when a company divests some of its assets, they are actually sold to some other firm, and it is likely that divestitures have somewhat different characteristics as acquisition targets compared to stand-alone firms. The idea behind this study is to find out if these differences are also reflected in the post-acquisition performance of the company buying the assets.

The relatively few existing studies regarding acquisitions of divested assets are mostly from the field of corporate finance. Results from these studies show that these acquisitions range from value neutral (Datta, Iskandar-Datta and Raman, 2003) to positive (Jain, 1985; Rosenfeld, 1984) for the acquirer shareholders. However, there is also evidence of significant positive abnormal returns when the transaction price is revealed at time of the acquisition

announcement (Sicherman and Pettway, 1992) and when the buyer and the seller operate in related businesses (Sicherman and Pettway, 1987). Acquisitions of subsidiaries, a special case of divestments, have also been shown to yield significantly positive returns to bidders (Fuller, Netter and Stegemoller, 2002).

Another recently emerged stream of literature departs from the traditional focus of single acquisitions, and takes a broader perspective of longer term acquisition programs consisting of multiple acquisitions. Studies in this stream indicate for example that firms which undertake acquisitions at a regular pace and incorporate them into a strategic acquisition program perform better in the long-term than companies that make acquisition decisions in an ad hoc fashion (Laamanen and Keil, 2008). Thus, instead of individual acquisitions, researchers should also put more emphasis on the larger perspective of multiple acquisitions.

1.2 Research problem and objectives

The overall research questions of this study can be stated as follows:

In the software industry, do acquisitions of divested assets differ from acquisitions of stand-alone companies in terms of the acquiring firm's post-acquisition performance?

If yes, what is divestiture acquisitions' effect on this performance (above or below average)?

Are there any specific factors that moderate the post-acquisition performance?

The research questions are further operationalized through hypotheses that are presented in chapter 3.

The paper builds on two overall research tracks, namely corporate restructuring (divestments) and factors affecting the performance of mergers and acquisitions. As mentioned above, the extant M&A literature mostly does not make a difference between divestments and stand-alone firms as acquisition targets. Also the corporate restructuring studies have traditionally largely emphasized research from the divesting firm's, not the buyer's perspective.

The objective of this paper is first to construct a theoretical framework integrating the two aforementioned research tracks building on a variety of disciplines, such as strategic management, corporate finance, and organizational literature. Based on this framework a number of hypotheses are created, and these hypotheses are then tested to determine if divestment acquisitions exhibit differential performance, how the performance is affected, and if there are any factors that increase or decrease the performance.

1.3 Research methods

The theoretical framework is constructed by a qualitative literature review. The material consists mostly of studies published in academic journals, as well as some relevant textbooks. Credibility of the review is maintained by primarily selecting articles published in the most prestigious journals in the fields of strategic management and finance, using the ISI journal database to search for articles. Search for relevant literature was also started by conducting a “quick and dirty” bibliometric co-citation analysis using the SITKIS software package (see Schildt, 2002) in order to find the most relevant core articles in the various fields. However, as the co-citation analysis tends to neglect newer articles which haven’t yet been able to accumulate many citations, the analysis was used as a starting point only.

The empirical part of this study is done by quantitative analysis, first collecting a sample from various databases, and then building testable variables from this data according to the hypotheses. Hypotheses were then tested using multivariate regression analysis. Sample data and used methodology are explained in more detail in chapter 4.

1.4 Definitions and scope

Acquisition is defined as “the purchase by one company (the bidder) of a controlling interest in another company (the target)”, whereas a merger of equals “involves two companies... coming together to combine all of their assets” and creating an entirely new legal entity (Schoenberg, 2003: 588). In reality the distinction between these two is fairly ambiguous and pure mergers occur very rarely. Furthermore, both mergers and acquisitions share very similar underlying motives, objectives and criteria for success, and therefore both researchers and practitioners generally use the two terms interchangeably (Schoenberg, 2003; King et al., 2004). This is also the stance adopted in this paper with one distinction: The above definition

of acquisition considers only stand-alone companies as targets, whereas this study takes into account also divested assets as acquisition targets, specifically making a distinction between these two cases.

Also the terms sell-off, divestiture and divestment are used rather interchangeably, and are in this paper defined simply as the sale of some of a firm's assets to an outside buyer, mostly corresponding with the term sell-off. Strictly speaking, divestments include also other types of activities, such as spin-offs and equity carve-outs (Brauer, 2006). However, these transactions do not have a buyer that acquires the assets, and therefore are out of the scope of this study.

This study makes a distinction between two types of acquisitions, depending on the acquisition target in question. The primary group of interest consists of acquisitions of divested assets (divestments), which are often also referred to as "divestiture acquisitions". The second group includes acquisitions where the target is a stand-alone company. The term "regular acquisitions" is used to refer to this group¹.

The acquirer's post-acquisition performance mainly refers to financial performance of the acquirer after acquisition activity. The literature review does not make a strict restriction regarding the measure of performance, and therefore contains articles with both accounting and market based measures. On the other hand, the empirical part defines performance strictly as the change of the acquirer's market value both in the long and short term. The measures used in the empirical part are more thoroughly explained in chapter 4.

The focal industry of this study is the software industry. The reason for focusing on a single industry is to eliminate possible differences between industries that may affect acquisition performance. For example, the study by Salo (2006) indicates that depending on the studied industry different acquisition performance factors are emphasized. Furthermore, acquisitions of divestments are especially common in the software industry, and thus the industry

¹ Use of the term "regular" does not imply that acquisitions of divestments are somehow irregular or uncommon. The term is used simply because the usual view of acquisitions considers the targets to be full companies (evident e.g. in the above definition as well as the majority of extant research).

provides a sufficiently large amount of data. The potential limitations caused by this restriction are discussed in the final conclusions (chapter 6).

1.5 Structure of the report

This paper is structured as follows: Chapter 2 will present the literature review and the constructed theoretical framework. The hypotheses built on this framework are presented in chapter 3. Chapter 4 will describe the data and methodologies used.

Chapter 5 will present the results from the various regression analyses as well as descriptive statistics and other complementary statistical tests. Finally, chapter 6 will present the conclusions of this study as well as discussion on the limitations and implications of the findings.

2 Theoretical framework

The purpose of this chapter is to construct an underlying theoretical framework based on existing research on the topics of divestitures and M&A performance factors. This framework is then used in the next chapter as a basis for creating testable hypotheses. The overall logical structure of how the theoretical framework is constructed is illustrated below (Figure 1: Structure of the literature review). The underlying premise is to identify possible factors affecting M&A performance, and consider the effect of these factors in the special case where the acquisition target is a divestment.

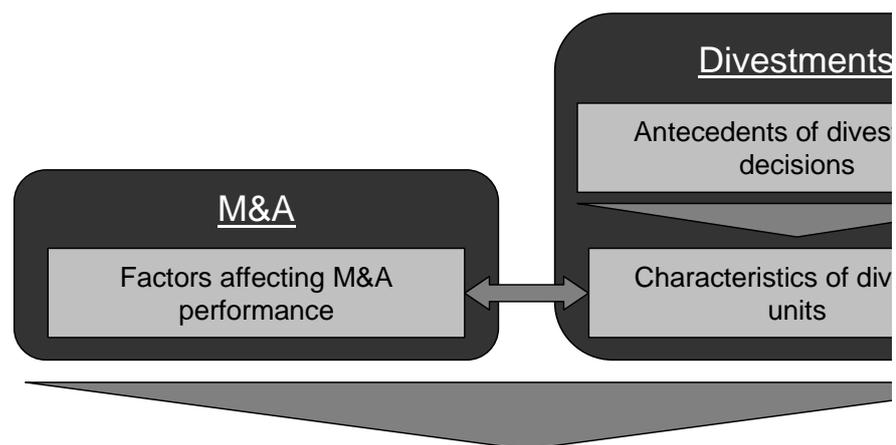


Figure 1: Structure of the literature review

2.1 Acquisition motives and objectives

Mergers and acquisitions are undertaken by companies for various reasons. Trautwein (1990) summarizes the seven most prominent theories that are generally used to explain acquisition decision-making. He concludes that the most credible theories are the valuation, empire-building and process theories. Valuation theory states that firms carry out acquisitions when they have private information about the true value of the target company, and this true value is higher than the price of the firm (i.e. the firm is undervalued by the markets). The empire-building theory is based on agency costs (Jensen, 1986) and proposes that managers make

acquisitions in order to increase their personal value (e.g. salary or importance for the firm). The fairly new process theory views acquisitions as a result of a complex process instead of a distinct decision made by the firm. (Trautwein, 1990)

Other, moderately supported theories state that companies undertake acquisitions to e.g. gain synergies between the target and the acquirer (efficiency theory), or increase their market and bargaining power (monopoly theory). Furthermore, less supported theories view mergers as a result of changes in the macroeconomic environment (disturbance theory), or as takeovers where the often hostile buyer's motive is to gain from reselling the company for a profit, either in parts or as a whole (raider theory). (Trautwein, 1990)

Another classification divides acquisition motives in three broad groups. First of all, motives can be strategic, meaning that acquisitions are undertaken to achieve some distinct strategic goal. Strategic acquisitions can aim to e.g. increase a firm's geographical or product market share, gain access to some valuable resources such as a distribution channel, or benefit from increased economies of scale. Second, acquisition can also be motivated by purely financial benefits, such as tax deductions or financial synergies. Thirdly, the motivation behind acquisitions can be managerial, which corresponds to Trautwein's (1990) empire-building theory. (Schoenberg, 2003)

It is noteworthy that the motivation behind an acquisition decision has an effect on the subsequent performance of the acquirer. In general, acquisitions that are motivated by managerial self-interest are often detrimental to shareholder value (Schoenberg, 2003). For example, a strong CEO and a weak board of directors can often lead to the CEO making acquisitions that are overpaid and do not increase the firm's value, but instead strengthen the CEO's personal position or increase his compensation (Hayward and Hambrick, 1997).

2.2 Acquisition performance factors

The majority of studies on acquisition performance conclude that the average performance of the acquirer is zero or slightly negative, whereas the effect on target's market value is usually positive (Datta, Pinches and Narayanan, 1992; King et al., 2004). Acquisition performance basically consists of two related aspects, which are the acquisition's potential for value creation, and the realization of this potential. Value creation potential is often described

by the rather ambiguous term of “synergy”: In order for the acquisition to increase the buyer’s value, the value of the acquired firm combined with the buyer has to be higher than the total price paid for the target (target’s market value plus any paid acquisition premium). Acquisition value creation is further illustrated below (Figure 2: Value creation in acquisitions). (Schoenberg, 2003)

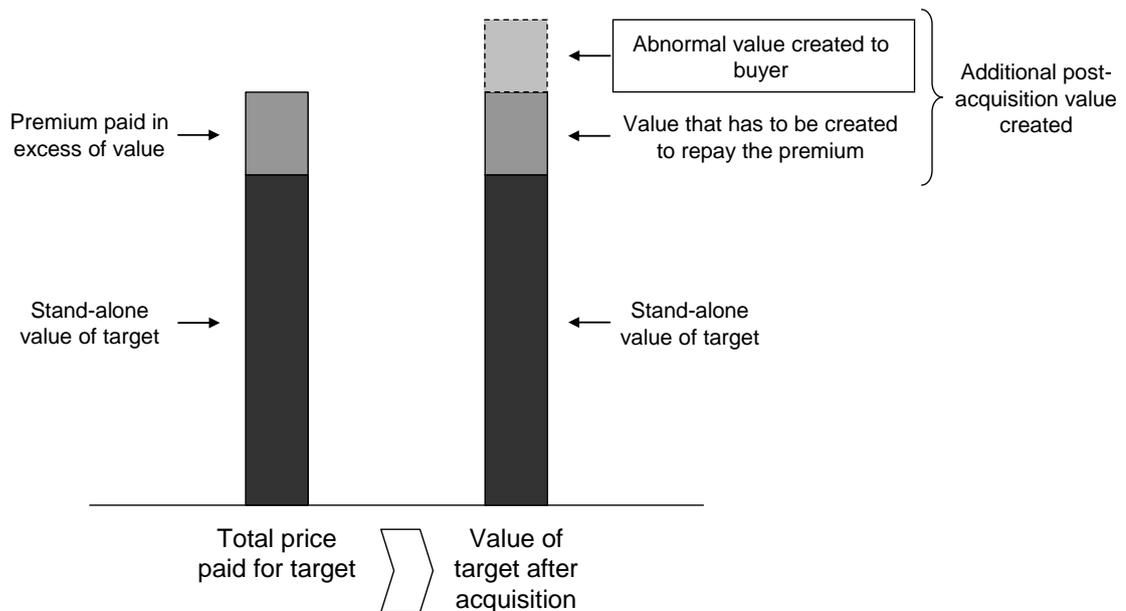


Figure 2: Value creation in acquisitions

However, merely having the ex ante potential of gaining synergistic value from an acquisition is not enough, since this potential value also needs to be realized. Thus, the value can be seen as actually created during and after the actual acquisition process (Haspeslagh and Jemison, 1991: 129), through tasks related to the integration of the merging firms and e.g. coping with employee resistance and cultural differences (Schoenberg, 2003). Many also argue that one of the main reasons why acquisitions fail to create value is because these integration costs are often much higher than anticipated (e.g. Haspeslagh and Jemison, 1991: 129).

2.2.1 Price, bid process and mode of payment

An acquisition’s price has a straightforward effect on its subsequent performance, as the price paid for a target has to be offset by the additional value created from the merger in order for the acquisition to create any abnormal returns to the acquirer (Schoenberg, 2003;

Haspeslagh and Jemison, 1991). In other words, the acquisition creates value simply when its net present value (NPV) is positive. This is also illustrated in the image above (Figure 2: Value creation in acquisitions): All other things held constant, a lower price of the acquisition results in higher abnormal returns to the buyer.

One common argument regarding bid price is that often an acquirer overestimates the synergies it can obtain from an acquisition, and therefore ends up paying too high an acquisition premium, which in turn results in the observed bad performance of acquisitions (Sirover, 1997: 46). However, a high bid premium does not by itself result in negative acquisition performance. It is also possible that the target is already undervalued by the market due to e.g. an information asymmetry discount of assets that are difficult to value (such as R&D investments), and in these cases a higher bid premium could also be justified (Laamanen, 2007). Furthermore, the concept of bid premium is by definition only applicable to public targets. Therefore, when regarding the effects of bid price, total price paid for the acquisition should be considered.

Factors affecting the bid price are the amount of bidders and the overall “mood” (friendly vs. hostile) of the bidding process. Competitive bidding between multiple potential buyers may result in the so-called winner’s curse, a situation where competing bids drive the total price up until the acquisition’s NPV is close to zero (Barney, 1988). Thus, friendly and less competitive acquisitions can result in lower acquisition price and consequently higher returns (Datta et al., 1992). This effect is somewhat moderated by information asymmetries between the target and acquirer: If the two firms operate in related businesses, the target is better aware of its true value to the buyer and can therefore demand a higher price (Flanagan and O’Shaughnessy, 2003).

Another factor that has been shown to have a positive impact on acquisition price is CEO hubris (exaggerated self-confidence) (Hayward and Hambrick, 1997). Overconfident directors often overestimate the value they can create from an acquisition, and end up paying too much for the target. Rau and Vermaelen (1998) argue that a relatively high portion of poor acquisitions have been undertaken by so-called “glamour” firms, which are already overvalued by the market and are characterized by a high level managerial over-confidence. The short-term returns from these acquisitions are often positive, which increases CEO

hubris even further (Rau and Vermaelen, 1998). However, as more information on the actual value of the acquisition becomes available and the buyer's market value is consequently corrected, the long-term returns are significantly negative. This is most evident during the dot-com boom of 1999-2000: In the bullish market nearly all acquisitions were valued highly positive by the market, but as the true value of the acquisitions became evident the market reacted by a huge drop in values (Moeller et al., 2005).

Some studies also show that the method of payment used in an acquisition has an effect on acquisition performance. The crux of the argument is that rational firms finance acquisitions using the most profitable means available; In particular, an acquiring manager tends to finance acquisitions primarily by stock if he feels his firm's shares are overvalued, and by cash if he thinks the shares are undervalued (Travlos, 1987). Thus, the mode of payment should be a strong indicator of the acquirer's confidence regarding returns from the acquisition (Rau and Vermaelen, 1998). On average, the long-term returns to acquirer have shown to be higher for cash transactions (Datta et al., 1992). For example, Loughran and Vijh (1997) studied the five-year period following an acquisition and found that the average returns for stock financed mergers created negative abnormal returns of -25.0%, whereas acquisitions paid by cash created positive returns of 61.7% to acquirer shareholders. In a more recent meta-analysis King and colleagues (2004) found no significant effect between different methods of payment, albeit with a much shorter observation window (1 to 16 days after the announcement).

2.2.2 Acquisition relatedness and resource transfer

One of the most actively studied, and also somewhat controversial, determinant of post-acquisition performance is the relatedness between the buyer and the target (King et al., 2004), where relatedness refers to the similarity of businesses between the two firms (Rumelt, 1982). In general, it has been shown that unrelated diversification destroys value (Rumelt, 1982; Loughran and Vijh, 1997). Since unrelated acquisitions by definition increase a firm's level of diversification more than related acquisitions, target relatedness can be argued to have a significant effect on acquirer's performance. Furthermore, it has been argued that related acquisitions should create more value because the acquirer has better knowledge of the target business and can therefore leverage its resources and gain synergies more

efficiently (Capron, Dussauge and Mitchell, 1998). However, many studies argue and demonstrate that it is not relatedness in itself that creates abnormal returns to the buyer (Barney, 1988; King et al., 2004). Singh and Montgomery (1987) show that the additional economic value from related acquisitions shows as a positive effect only in returns to the target shareholders, not the bidder. Similarly, Kaplan and Weisbach (1992: 107) “do not find strong evidence that diversifying acquisitions are less successful than related ones”. Bruton, Oviatt and White (1994) find that relatedness in itself seems to have a significant positive effect only when the target firm is financially distressed, reasoning that in-depth knowledge of the poorly performing target’s business is essential to be able to turn it around.

One approach to the relatedness issue is found by applying the resource-based view of the firm (RBV). RBV considers firms as bundles of unique, valuable resources, and argues that companies create value by applying these resources in ways that competitors cannot readily imitate (Wernerfelt, 1984; Barney, 1991). Resources are defined as “those (tangible and intangible) assets which are tied semipermanently to the firm”, for example “brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc.” (Wernerfelt, 1984: 172).

Similarly, acquisitions create abnormal value when they result in resource combinations that would not be available to other potential acquirers, but instead create some uniquely valuable, inimitable or unexpected cash flows (Barney, 1988). Thus, it is not relatedness or similarity by themselves that can create synergistic value, but the complementarities between the buyers’s and target’s resource bases (Harrison, Hitt, Hoskisson and Ireland, 1991; 2001). Generally, these synergies can be obtained by two means: By leveraging and combining valuable resources (revenue-based synergies), or rationalizing and improving asset efficiency and gaining economies of scale (cost-based synergies) (Capron, 1999).

Chatterjee (1992) studied tender offers of public companies, and found that most of these transactions were motivated by restructuring of the target, rather than synergistic value creation and that most of the potential value resided within the target firm. The returns to bidding firms in his study were also significantly negative, showing that mere restructuring of the target is not a value-creating acquisition strategy. If the value potential is only attributable to the target, there is no reason why they, or any other acquirer, couldn’t appropriate this

value individually. Therefore, target shareholders also will not sell the firm for less than this value, driving the price up until the restructuring no longer creates value for the bidder.

Recent studies employing the resource-based view have been able to find empirical evidence of factors contributing to acquisition success. Capron and Pistre (2002) study the transfer of resources between the target and acquirer after an acquisition. They find that when the acquirer transfers its resources to the target organization, it is often able to create above-normal returns, but when only target resources are transferred to the buyer, the acquirer's abnormal returns are zero. This supports the above argument of Barney (1988), since synergies obtained only from leveraging the target's resource base are less likely to be unique to this specific acquirer.

Capron and Pistre (2002) additionally show that the most valuable resource combinations occur when the acquirer transfers its innovation and managerial capabilities to the target, while using the target's own marketing resources, whereas transfer of marketing resources from acquirer to target actually results in negative returns. They argue that this is because marketing resources are usually very context-dependent. For example, in cross-border acquisitions the target most likely has superior knowledge of their home market compared to the acquirer.

Uhlenbruck and colleagues (2006) show that acquisitions of Internet companies have historically created positive abnormal returns to the acquirer, also after the dot-com boom. They argue that this is due to combinations of highly complementary resources from both the target and acquirer; e.g. the "offline" buyer gets access to technology and improvement of operational efficiency, while the "online" target benefits from the buyer's legitimacy, physical assets and relational capital such as contacts to suppliers. In technological acquisitions, the target's knowledge base has been shown to increase the acquirer's innovation performance (Ahuja and Katila, 2001). Although the latter study does not strictly measure the acquirer's market performance, it nevertheless shows that asset efficiency can be improved through acquisitions of complementary resources.

2.2.3 Information asymmetries and valuation

Information asymmetries can also have an effect on the price of an acquisition. Often different sides of a transaction have differing knowledge regarding the value of the assets in question. Usually the buyer has less information of the target than the seller, and therefore it bears the risk of a possibility that the target has some hidden (negative) aspects that the buyer is not aware of *ex ante* (Akerlof, 1970).

In acquisitions information asymmetries may result in higher search costs for the acquirer in form of e.g. due diligence, and this together with the risk of adverse selection can result in a discount in the acquisition's price (Capron and Shen, 2007). One example of this is the "private firm discount" (Kooli, Kortas and L'Her, 2003): Information regarding publicly traded firms is relatively transparent, since the stock market and its requirements of information disclosure work as an "information processing and asset valuation mechanism", which is available to all (Capron and Shen, 2007: 891). However, similar information on private firms is much less readily available, and therefore when acquiring a private firm much more effort has to be put into locating potential targets and assessing the value of these firms. This is argued to be the main cause of the observed private firm discount (Ragozzino and Reuer, 2007).

From the perspective of this study, the above discussion has one main implication. Similarly to private firms, there often exists little publicly available information about a single business unit of a larger firm, and even less about some individual assets within a firm. This uncertainty in assessing the value of single assets or business segments has been argued as a reason for the "diversification discount" (King et al., 2004), i.e. the observed phenomenon that diversified firms' market value is on average less than would be the sum of its parts individually (Berger and Ofek, 1995). Thus, it can be argued that when these assets are sold to some other firm (i.e. divested), this information asymmetry can lead to a price discount compared to a similar stand-alone target.

Relatedness has a moderating effect on the information asymmetries, but the effect is often rather context dependent. When considering private targets, a related buyer should be on average better aware of potential targets, and also better able to determine the actual value of

these targets due to lower information asymmetries (Capron and Shen, 2007). In contrast, Flanagan and O'Shaughnessy (2003) show that in public mergers a related acquirer often tends to pay a higher price. This is because in these cases the target managers and shareholders can better determine their firm's actual value to the acquirer, and can consequently demand a price closer to this value.

When the acquisition target is a divestment, there is one key distinction; since the target and its original parent do not necessarily operate in related businesses, there is a possibility of information asymmetries also between these two and the acquirer. In particular, building on the argument of Flanagan and O'Shaughnessy (2003) the unrelated seller (i.e. divesting parent) might not be able to effectively determine the divested assets' synergistic value to the related acquirer, and are therefore less likely to demand a price close to the acquirer's walk-away price. On the other hand, this benefit might also be nonexistent for two reasons. Firstly, the managers of the business unit itself, or the assets in question, can determine its true value to the acquirer and communicate it to the parent company. Secondly, the seller could also determine the value through other means, e.g. an evaluation by experts such as investment bankers.

2.2.4 Post-acquisition integration

Post-acquisition integration is the phase when all the potential additional value between the buyer and target is actually realized, and as such an extremely critical part of the whole acquisition process (Haspeslagh and Jemison, 1991: 129). This paper does not take all the issues of post-acquisition integration into account, since most of them affect acquisition performance more on a case-by-case basis (for example, change management and leadership are very situation dependent). For a more extensive coverage of the topic, see for example Haspeslagh and Jemison (1991), or Teerikangas (2006).

One issue relevant in this paper's scope concerns whether or not the target's top managers stay in the company after an acquisition. Cannella and Hambrick (1993: 137) show that retaining the top executives of the acquired company results in higher post-acquisition performance, as these executives "are an intrinsic component of the acquired firm's resource base". Bergh (2001) builds on this finding, and concludes that keeping those top managers

who have been in the acquired organization for the longest period of time has the biggest positive effect on post-acquisition performance. This is consistent with the resource-based view, as the accumulated experience and knowledge of those directors can be seen as a valuable resource that can be leveraged in the acquisition process. Key target firm leaders may also be able to create additional value for the acquirer which is entirely new and unexpected prior to the acquisition (Graebner, 2004).

On the whole, high turnover of the target firm's managers has a negative effect on post-acquisition performance. Walsh (1989) found that the "mood" of the acquisition negotiation significantly affects the management turnover later, with hostile acquisitions resulting in much higher turnover rate than friendly acquisitions. Another crucial factor is the relative standing of the target's top executives prior to and after the acquisition (Hambrick and Cannella, 1993; Lubatkin, Schweiger and Weber, 1999). Specifically, "acquired executives may feel, or be made to feel, a loss of status at their job", and the magnitude of this negative feeling increases the rate of managerial turnover (Lubatkin et al., 1999: 56).

Regarding this, one difference between acquisitions of divestments and full companies could be that in the latter case the relative standing of the target's directors would probably decrease more than when the target is a divestiture. In most acquisitions the target becomes a division of the buyer, so after the acquisition the top managers of a previously independent firm become "only" top managers of a business division (e.g. CEO of the target firm becomes only the CEO of one business division). In contrast, when the target is a division to begin with, the relative standing should remain on average the same. Naturally this argument is only applicable to divestment acquisitions where the target includes managerial or human resources, such as subsidiaries. Studies regarding relative standing in acquisitions of divestitures do not exist and therefore the argument should be treated as a hypothesis only.

Speed of integration can also affect the acquisition's success, as speed reduces uncertainty of both firms' employees and customers. When the bidder and target have a strong strategic fit and similar management styles, and little overlap between product or target markets, the speed of post-acquisition integration has a positive effect on the returns to acquirer (Homburg and Bucerius, 2006). However, speed of integration may also have a detrimental effect on performance when it depends on indentifying the truly valuable resource

combinations, as suggested by e.g. Barney (1988) and Capron and Pistre (2002), since this usually requires time and effort. Therefore this argument should also be treated with caution.

2.2.5 Acquisition experience and multiple acquisitions

Already Kusewitt (1985) showed that acquisition programs consisting of multiple individual acquisitions can have a positive effect on the acquirer's performance. However, only recently has research been shifting from looking at single acquisitions as individual and independent observations towards studying multiple acquisitions and how they relate to a longer-term acquisition program.

Acquisition experience research, rooted in the organizational learning literature, studies a firm's accumulated experience from prior acquisitions as a factor affecting post-acquisition performance. As companies make more acquisitions, they gain experience and can use this experience to benefit later acquisitions. Haleblian and Finkelstein's (1999) study shows that the effect of previous acquisitions is not linear, but takes the shape of a U. They posit that after the first few acquisitions, firms inappropriately generalize factors that are actually dissimilar in later acquisitions.

Similarity of succeeding acquisitions has a positive effect on acquisition performance, since similarity decreases the possibility of inappropriate generalization (Finkelstein and Haleblian, 2002). A firm can also increase its acquisition learning from partners with a diverse pool of accumulated acquisition experiences (Beckman and Haunschild, 2002). Bruton and colleagues (1994) studied acquisitions of distressed firms, and showed that for firms that had prior experience of acquiring distressed targets the post-acquisition performance was higher.

Hayward's (2002) study shows that merely acquiring more does not necessarily increase acquisition experience. Instead, in order to accumulate experience that increases the performance of later acquisitions, the prior acquisitions need to be moderately but not too similar to each other, associated with small losses, and undertaken at a steady pace. If the acquisitions are too similar to each other, it limits the potential for learning. Firms also tend to learn more when they incur small losses in order to minimize the risk of repeating the mistake. A steady pace of acquisitions ensures that the acquirer is able to digest and process all the information in time for the next acquisition. Cohen and Levinthal (1990) suggest the

term “absorptive capacity” as the capacity of a firm to assimilate new knowledge over time, and show that this capacity increases as accumulated knowledge increases. The steady pace of multiple acquisitions can also build significant acquisition momentum in the acquirer, resulting in a self-strengthening feedback loop (Amburgey and Miner, 1992).

Acquisition pace affects a firm’s performance also through other means than accumulation of knowledge, since accumulation of new assets are subject to time-compression diseconomies (Dietrickx and Cool, 1989). In other words, firms are often not able to “digest” a large amount of new assets in a relatively short time frame.

Recent findings suggest that perhaps more important than the accumulation of acquisition experience is that the acquisitions are linked to an overall corporate strategy, and are undertaken in a systematic manner. Vermeulen and Barkema (2002) demonstrate that speed and irregularity of a firm’s internationalization is negatively related to performance. Laamanen and Keil (2008) extend this finding to acquisitions, showing that firms that make acquisitions at a steady pace exhibit above-normal performance. A steady acquisition rhythm indicates that the individual acquisitions are linked in a longer-term strategic acquisition program. In contrast, an irregular pace is a sign that the acquisitions are made in an “ad hoc” opportunistic manner whenever a seemingly good acquisition possibility presents itself.

2.3 Corporate diversification

Corporate diversification is quite strongly linked to both acquisitions and divestments, and the purpose of this part is to briefly discuss diversification, its motives and outcomes. Diversification can essentially be defined as a firm’s entry into new lines of business (Ramanujam and Varadarajan, 1989), although the actual definition varies to some extent between studies. A “new line of business” can refer to, for example, a new product, a new industry, or a new geographical market, depending on the definition used.

A firm’s degree of diversification is also considered to vary between related and unrelated. Relatedness basically considers the degree of commonality between the various business lines of the company, ranging from single dominant business firms to conglomerates with multiple, very weakly related business lines (Palepu, 1985; Rumelt, 1982). In reality most companies fall somewhere between these two extremes.

2.3.1 Motives of diversification

There are multiple reasons why a firm might pursue diversification. Penrose's (1959) seminal work argues that firms grow when they have excess resources which are directed to new operations. Depending on the flexibility of these resources, they may be used to diversify into either related or unrelated businesses. For example, some tangible resources such as manufacturing plants are less flexible and usually can only be used to produce similar goods, whereas financial resources can be used to diversify to practically any new business (Hoskisson and Hitt, 1990). In any case, if a firm observes an opportunity to leverage its existing resources in a new business or market, it may choose to diversify.

Another motive for diversification, widely endorsed in the 1970s, is striving to create a balanced portfolio of businesses. A balanced portfolio is defined as a combination of various businesses in a corporation, of which some create cash especially in the short term, and some offer high future growth prospects. The parent firm then controls what businesses are included in the portfolio and makes capital allocation decisions to ensure profitability and growth (Goold and Luchs, 2003).

A balanced portfolio is also considered a means to reduce corporate risk through diversification. Operating in only one business increases the firm's cash flow risk if this business declines, and diversifying to unrelated businesses decreases this risk. However, unrelated diversification as risk reduction mechanism has been widely criticized, since it doesn't actually reduce the firm's total risk. Risk reduction through diversification also rarely benefit shareholders, since they could also accomplish often more efficiently it by merely investing in different individual companies (Lubatkin and O'Neill, 1987).

A third reason for diversification is managerial self-interest (Hoskisson and Hitt, 1990). Firm managers might increase diversification in order to maximize their personal utility, e.g. through a reduction in the manager's employment risk or increase in compensation (Jensen, 1986). Also a firm's macroeconomic environment may affect diversification decisions. For example, Shleifer and Vishny (1991) show that in the 1960s US antitrust laws created strong incentives for high levels of diversification.

2.3.2 Effects of diversification

In the 1960s and 1970s high levels of diversification were generally supported, with portfolio planning used extensively. During the recent decades, however, the view on diversification has been shifting towards a somewhat more critical direction. Rumelt (1982) studied large US corporations and showed that the most profitable firms exhibited related diversification instead of unrelated. Using a different methodology, Palepu (1985: 239) arrived at similar results, stating that “firms with predominantly related diversification show significantly better profit growth than firms with predominantly unrelated diversification.”

A high level of unrelated diversification also has a negative effect on the firm’s market value (Lang and Stulz, 1994). Berger and Ofek’s (1995) study shows that the market value of a diversified company is on average 13-15 percent lower than the aggregate value of all its segments individually. Similarly, Comment and Jarrell (1995) show that the market values of companies with greater corporate focus (i.e. lower levels of diversification) are higher than the values of diversified corporations. This phenomenon is generally known as the “diversification discount”.

In some cases, this difference in value also enables arbitrage through takeovers: Since the value of the diversified corporation is less than the sum of its parts, it can be possible for an outsider to buy the company, and then sell it in parts for more than the acquisition price. The hostile takeover wave in US in the 1980s is a prominent example of this “corporate raider” activity (Shleifer and Vishny, 1991).

Diversification also has other effects on a firm’s operations. Baysinger and Hoskisson (1989) studied diversification level’s effect on corporate R&D spending, and found that unrelated diversification decreases the amount of R&D spending. They hypothesize that, as unrelated diversification strongly encourages financial control of the business units, managers of these units tend to be more risk averse and focus on short-term financial benefits rather than invest cash in R&D. Thus, high unrelated diversification can also have a detrimental effect on the company’s long-term performance.

However, most studies show that the relationship between diversification and performance is in reality inverted U shaped (Palich, Cardinal and Miller, 2000). In other words,

diversification is beneficial up to a point, and after that its profitability starts to decline. Also Markides (1995) argues that firms have an optimal level of diversification, and diversification over this point leads to value destruction. Thus, diversification does create value but only up to a point. Besides product or business-level diversification, the same relationship between diversification and performance is seen in international diversification (Hitt, Hoskisson and Kim, 1997).

The current view on the value creation of diversification is quite well summed by Goold and Luchs (2003: 530): “Businesses should not be retained in the portfolio or added to the portfolio unless the parent company can create more value from the businesses than they could create on their own or with any other parent”. In other words, there need to be distinct synergies between the business units in order for diversification to be worthwhile. Otherwise there is no reason why the business division wouldn’t be better off on its own.

The resource-based view, as described earlier, suggests that these synergies between a firm’s various businesses should leverage the firm’s valuable key resources (Barney, 1991). Another, related term often used in practitioner context is “core competencies”, as introduced by Hamel and Prahalad (1989). Essentially, firms should diversify to businesses where they can make use of their unique resources and competencies, or build new ones based on their existing competencies. Sharing resources and assets between the diverse businesses thus creates value e.g. through economies of scale and scope (Markides and Williamson, 1994).

2.4 Corporate restructuring and divestments

The term corporate restructuring consists of a plethora of activities, such as changing an organization’s internal structure, divesting assets through sell-offs or spin-offs, or reducing the amount of employees through lay-offs (Brauer, 2006). The general purpose of corporate restructuring is to increase the firm’s competitiveness through strategic realignment by either cutting costs, or exiting or entering various businesses (Johnson, 1996). In this paper the focus is on divestments, and their subsequent acquisitions by another firms. Therefore, the other aspects of restructuring are left for little discussion.

The purpose of this chapter is to first review the relevant factors that affect divestment decision-making on a corporate level, and then to study how these relate to the structure and

characteristics of the divested unit or assets, and the overall divestment situation. The objective is to find factors that make the divestment situation and the assets that are divested different from stand-alone companies in terms of their acquisition.

Johnson (1996) categorizes the motives and factors affecting divestment decisions in five categories: Factors related to external environment, corporate governance, diversification strategy, firm performance, and financial restructuring. In reality these factors or categories are not independent from each other, but are actually causally linked (Hoskisson, Johnson and Moesel, 1994). For example, weak corporate governance can lead to inefficient over-diversification (Hoskisson and Hitt, 1990), which further results in poor firm performance (Hoskisson and Turk, 1990). However, due to clarity of presentation the factors are in general discussed separately below.

2.4.1 Governance factors affecting divestment decisions

In this paper corporate governance mainly refers to the various means that owners (shareholders) of a corporation use to control the firm's managers, e.g. through the board of directors. One main concern of agency theory is differences between motives and interests of the principal (in this case the firm's owners) and the agent they have entrusted with a responsibility of a certain task (the CEO who runs the company) (Eisenhardt, 1989). The purpose of governance is essentially to mitigate the problems caused by this principal-agent problem.

Jensen's (1986) seminal paper studies the problems of agency costs, meaning the costs incurred to shareholders because of managerial self-interest. As payouts of free cash flow to shareholders decrease the amount of resources in the manager's disposal (and thus his relative power), when corporate governance is weak, managers have an incentive to invest in low return projects such as over-diversification, rather than return the cash to shareholders (Jensen, 1986). Markides (1992) points out that one of the reasons why companies might continuously pursue inefficient over-diversification is due to weak governance mechanisms, which in turn increases the associated agency costs.

In this sense, divestments can often be a controlling action to corporate over-diversification due to previously inefficient governance mechanisms (Johnson, 1996). Ownership

concentration is one measure of governance strength, and high concentration (i.e. strong governance) has been shown to significantly decrease a firm's level of product diversification (Hoskisson et al., 1994). Similarly, Bethel and Liebeskind (1993) found that a major determinant of corporate restructuring and reductions in diversification in the 1980s was the existence of blockholders (i.e. concentrated ownership). These findings suggest that, in general, managers can be reluctant to restructure, and that efficient governance through large blockholders can act as a disciplinary force.

Governance also plays a role in moderating which kinds of businesses a corporation will most likely divest. Building on the resource-based view (Wernerfelt, 1984), studies have shown that there are two ways that diversified companies can leverage their resources: By achieving strategic benefits through cooperative control mechanisms, or financial gains through competitive control (Hill, Hitt and Hoskisson, 1992). Strategic benefits arise from sharing resources between the business units, and therefore require cooperation between the units. On the other hand, financial benefits can be gained through more efficient capital allocation within the firm than could be possible through acquiring funds from the external capital market independently (Bergh, 1995). Due to their differences these also require different diversification strategies: Competitive control where business units compete against each other for capital allocations is best suited to unrelated diversification, and cooperative control for related (Hill et al., 1992).

Related diversification has been shown to increase shareholder wealth more than unrelated, and therefore shareholders would naturally prefer this. In contrast, managers have an incentive to pursue unrelated diversification since it increases the company's revenue streams and the manager's personal power. Thus, the target for divestment depends on the divesting firm's governance: Efficient governance leads to divestments of unrelated and smaller business units, whereas weak governance leads to larger, more related sell-offs. (Bergh, 1995)

2.4.2 Strategic factors affecting divestment decisions

As argued above, a firm's chosen diversification strategy is one important factor influencing divestment decision making. Besides the amount of diversification, a company can have varying degrees (related-unrelated) of diversification, and these in turn are linked to the firm's

control mechanisms (cooperative versus competitive). When a firm changes its diversification strategy for some reason, an effective way to change the level of diversification is to divest some parts. Often an inefficient level of diversification leads to decreased performance (e.g. Palepu, 1985). This in turn necessitates a new diversification strategy and a subsequent need for corporate refocusing through divestments (Johnson, 1996).

Markides (1992) has argued that every firm has an optimal degree of diversification, which is the point where the marginal costs and marginal benefits of diversification are equal. Thus, rational firms should diversify up to this limit, and those over-diversified firms above this limit should take actions to refocus. However, there exists evidence of systematic over-diversification (e.g. Shleifer and Vishny, 1991), which indicates that firms do not always behave in fully rational ways (Markides, 1992). This over-diversification could result from inadequate corporate governance and managerial self-interest as described above (Jensen, 1986), or simply poor formulation of the firm's diversification strategy (Hoskisson et al., 1994).

Besides irrational behavior, systematic over-diversification can also be caused by a decrease in the overall level of optimal diversification for companies (Markides, 1992). These are usually attributable to changes in the macroeconomic and regulative environment (Johnson, 1996), and are discussed in the part regarding environmental factors below.

Regardless of the reason behind a firm's suboptimal level of diversification, when considering strategic refocusing, divestments are a means to change the degree of diversification towards better efficiency (Markides, 1992). Thus, refocusing includes issues such as improving strategic fit and relatedness between business units and emphasizing core operations (Johnson, 1996). This is supported by Duhaime and Grant (1984) who show that divested units are often quite loosely coupled with other business units in the company, as measured by shared technologies, customers and facilities. Other reasons are also perceived lack of strength of the business unit, and low managerial attachment to the unit.

2.4.3 Performance-related factors affecting divestment decisions

One strong predictor of a business unit's divestment is related to performance of both the unit itself as well as the parent company relative to the average industry performance (Ravenscraft and Scherer, 1991). Duhaime and Grant (1984) conducted a field study of 40 large diversified firms and found that both the parent firm's weak financial position relative to the industry, as well as poor performance of the divested business unit were major reasons for decisions to divest. However, these two factors should be considered separately, since poor parent performance doesn't necessarily imply poor performance of the business unit, and vice versa.

If the parent company's performance is poor relative to the industry, it is reflected among other things in its market value and competitiveness. If the poor performance can be attributed to an inefficient level of diversification, the firm may rationalize its operations through restructuring to improve its efficiency, as described above (Johnson, 1996).

However, it is also possible that a firm has to engage in restructuring even though its poor performance is not because of its level of diversification but some entirely other factor, such as poor product development or marketing, or simply wrong strategy. If a firm has a high amount of debt and a lack of cash, it is very unlikely to be able to meet the requirements of its creditors in longer term and thus faces a risk of bankruptcy (Brown, James and Mooradian, 1994). In this case, the firm may simply have to sell some of its assets in order to raise needed liquidity and avoid bankruptcy (Pulvino, 1998).

The reason for divestment should also in this case affect the assets that are divested. In the former case, as argued above, the divested unit depends on the firm's chosen diversification strategy and the related control mechanism (Bergh, 1995). If the parent is leveraging financial and competitive control mechanisms, it would most likely try to improve its efficiency by divesting the worst-performing business unit and therefore freeing financial resources to be invested in the more profitable units. However, if the firm is leveraging its resources through strategic and cooperative control, the divested unit should be the one most unrelated to the other units, regardless of its individual performance. In this case the divested unit can even

be individually the most valuable one, but one that doesn't fit into the overall strategic focus of the firm. (Hill et al., 1992)

If the firm is financially distressed and divests to avoid bankruptcy, it would most likely choose the divested assets by weighing their contribution to the firm's overall cash flow against the price obtained by selling them to an outsider (Pulvino, 1998). Thus, the divestment is most likely unrelated to the divesting firm's core business, and also more valuable to the buyer than the divesting firm.

Fluck and Lynch (1999) also present a framework for divestments where the decision to divest is not attributed to the divested unit's poor performance. In their argument, companies with excess cash first acquire other marginally profitable firms that cannot obtain financing independently from external capital markets, e.g. a start-up that can't obtain venture capital funding; this indicates that there is a financial synergy between the two. When the acquired firm is able to obtain funding elsewhere, the financial synergy ends and the firm is divested, with possible returns to the divesting firm (in this sense the model is similar to private equity investing). Their framework thus suggests that there should exist some synergies between the target and the new acquirer, which are better than the existing financial synergies between the parent and the unit.

2.4.4 Environmental factors affecting divestment decisions

When considering factors affecting divestment decisions, environmental factors are those exogenous to the focal firm. They are most often related to regulatory changes (e.g. tax rationale or antitrust policy changes), or competitive factors (e.g. macro-level industry changes, threat of takeover, etc.) (Johnson, 1996).

Environmental factors can also affect divestment decisions directly or indirectly. A regulatory change might directly force a firm to exit some business and thus divest some of its assets. However, in most cases the effect is indirect. One of the main reasons for systematic corporate over-diversification, and subsequent refocusing, has historically been due to changes in the economic or regulatory environment, which in turn decrease the optimal point of diversification for the companies. This has been attributed to "changes in product

and capital markets have reduced the inherent benefits of diversification while increasing its costs” (Markides, 1992: 41).

Besides changes in markets, also one possible reason for over-diversification has historically been due to regulatory changes such as antitrust policies (i.e. competition law). High levels of diversification could have been feasible at a certain point due to the regulatory environment at that time. However, as regulations change, high diversification can become less efficient leading to refocusing of diversified firms. Shleifer and Vishny (1991) show how this is especially notable in the US “conglomeratization” wave of the 1960s, and the subsequent 1980s wave of (often hostile) corporate raiders taking these conglomerates apart after this became feasible due to regulatory changes.

An overall decline in a company’s operating industry may also often trigger a need for pursuing a more efficient level of corporate focus (Anand and Singh, 1997). Furthermore, Bergh and Lawless (1998) show that increased environmental uncertainty increases the divestment intensity in highly diversified firms, as these firms are most affected by the increased information processing and management costs due to uncertainty.

2.4.5 Factors related to financial restructuring

Financial restructuring involves actions that significantly change the corporate capital structure (e.g. amounts of debt and equity). Divestitures due to financial restructuring occurs mostly in association with leveraged buyouts (LBOs), and other similar arrangements (Johnson, 1996) – either during or right after the LBO transaction. The idea of a leveraged buyout is that a company or some parts of it are acquired using a large amount of debt as payment. The acquired firm also has the liability of paying back the loan. The high amount of leverage also increases the financial distress costs, i.e. costs of managing debt through principal and interest payments. These increased costs need to be covered by the firm’s cash flow, or else it faces the risk of bankruptcy (Opler and Titman, 1993).

The divestments due to financial restructuring are thus related to the “control function” of debt creation, as illustrated by Jensen (1986): As a poor performing firm takes a substantial amount of new debt, it often has to simultaneously improve its efficiency or face bankruptcy, and corporate restructuring is one way of accomplishing this. Thus, the cash generated from

the sell-off can be directly used to pay back a part of the debt, or alternatively invested in some projects in the firm and use returns from these projects to pay the debt.

The factors related to financial restructuring do not directly affect the divestment decision or characteristics of the divested unit, but through other factors (e.g. performance related factors). These direct factors are covered above, and therefore financial restructuring is not discussed in more detail in this paper.

2.4.6 Effects on the divesting firm

Johnson (1996) categorizes the outcomes of a divestment in three different groups, namely the divestment's effect on firm strategy, on firm performance, and related employee effects. Besides these, Hoskisson and Turk (1990) point out that restructuring should also improve the efficiency of the corporation's governance mechanisms since restructuring decreases complexity of the company.

Divestitures necessarily involve a reduction in the firm's business scope, and therefore change its degree of diversification (Hoskisson and Turk, 1990). Depending on what is divested, the company moves towards a more related or more unrelated diversification strategy (Johnson, 1996). This in turn has an effect on the firm's control mechanisms (strategic versus financial) and depends on the balance of power between managers and shareholders (Bergh, 1995).

The performance effects of divestitures exhibit some variation depending on the situation, but on average the long-term effects to the refocusing company are positive (Johnson, 1996). Montgomery, Thomas and Kamath (1984) studied a sample of 78 divestiture announcements made in the Wall Street Journal during the years 1976-1979, and found that divestitures linked to overall corporate strategy were valued positively by the stock market, whereas more ad hoc type divestments resulted in a decrease in stock prices. There is also a similar distinction between the relatedness of the divested business and the post-divestment profitability of the divesting company. In general, selling related business units has a negative effect on post-sell-off performance (Bergh, 1995), which implies that this decreases the strategic competitiveness of the company.

Also John and Ofek (1995) show that focus-increasing divestitures result in increased value for the divestor, since the seller is able to more efficiently manage its remaining assets after the divestment. Markides (1992), shows that on average all refocusing by over-diversified companies create positive abnormal shareholder value. Furthermore, for those companies that were both over-diversified and also poorly performing, refocusing created clearly the highest returns.

Some researchers have even proposed that a divestiture of previously acquired company is simply a correction to a previously made mistake of acquiring the firm (Allen, Lummer, McConnell and Reed, 1995). Thus, if an acquisition resulted in over-diversification, divesting the same acquisition later can be seen as a correction towards a more efficient level of diversification.

2.4.7 Characteristics of divestitures and the divested unit

When considering the above antecedents of divestiture decisions in light of the divested unit or asset itself, a few key elements can be derived. Firstly, many of the divesting firms have historically been conglomerates, or corporations operating multiple businesses that are usually not strongly related (Johnson, 1996; Hoskisson et al., 1994). These are also the firms that are most positively affected by divestment announcements (Markides, 1992; 1995), especially when they regard the divestment of an unrelated business unit (Montgomery et al., 1984). Therefore, it follows that the divested unit is in most cases unrelated to the core business of the divesting firm (e.g. Hoskisson and Turk, 1990; Bergh, 1997; Bergh, Johnson and DeWitt, 2008). Besides low relatedness, divested business units are also characterized by low managerial attachment (Ravenscraft and Scherer, 1991).

Another finding central to the extant research is that perhaps the most significant factor affecting divestment decisions is poor financial performance of either the parent firm or the business unit itself (e.g. Ravenscraft and Scherer, 1991; Duhaime and Grant, 1984). This is also supported by various studies in the field of finance showing that in many cases the firms resorting to asset sales exhibit high leverage and/or poor performance (Lang, Poulsen and Stulz, 1995; Allen and McConnell, 1998), which often results in a financial distress (Brown et

al., 1994), i.e. high risk of bankruptcy. Desai and Jain (1999) show that firms often undertake divestments to get rid of poorly performing business units.

Pulvino's (1998) study suggests that these financially distressed firms receive lower prices for their divestments than their financially unconstrained rivals, especially during an industry downturn. The seller's control over the bidding process is also weaker if it's financially distressed (Brau, Francis and Kohers, 2003). Therefore, it can be argued that as the parent's poor financial performance is a major antecedent of divestiture, the price of a divestment should also on average be lower than would be the price of a similar stand-alone company.

A third aspect of divestitures is related to the bid process and deal structure itself. It has been argued that the nature of an acquisition of divested assets is friendlier than that of a normal takeover, and is also usually initiated by the selling firm (Datta et al., 2003) who deals with only one buyer (Sicherman and Pettway, 1992). This in turn results in a lower likelihood of an emerging bid competition, as the managerial resistance of the seller is likely to be low (Jennings and Mazzeo, 1993).

Furthermore, by far the more used mode of payment for acquisitions of divestitures is cash instead of shares (Herz and Abahoonie, 1988; Faccio and Masulis, 2005). In divestments cash is desirable from both parties' perspective, as the sellers frequently are capital constrained and need the liquidity (as argued above), and the bidders want to avoid ownership dilution or creating a new blockholder of the selling company (Faccio and Masulis, 2005).

Therefore, from the acquirer's perspective, there are a couple of factors related to divestments that make them different from acquisitions of stand-alone firms. The discussion above suggests the following common characteristics for divestitures²:

1. Divested units are unrelated to the seller's business
2. The parent company and/or the divested units have often experienced poor financial performance prior to the divestment

² That is, in most cases the divestiture is characterized by one or more of the given aspects, and not necessarily all of them hold in every case

-
3. Acquisitions of divestitures are in general friendlier than other acquisitions
 4. The method of payment is primarily cash

However, one thing that should be kept in mind is that the aspects of the divested assets depend on the characteristics of the divesting parent, and therefore the buyer should always be aware of the actual reasons behind the divestment. For example, if the seller has an unrelated diversification strategy, it should rationally divest the most poorly performing business unit. On the other hand, if it follows a focused diversification strategy, the divested part should most likely be the one that is most unrelated to the seller's core business. These differences play a major role also when considered from the acquirer's point of view.

3 Hypotheses

The hypotheses of this study, built on the findings from existing literature, are illustrated in the figure below (Figure 3: Hypotheses), and discussed in more detail below.

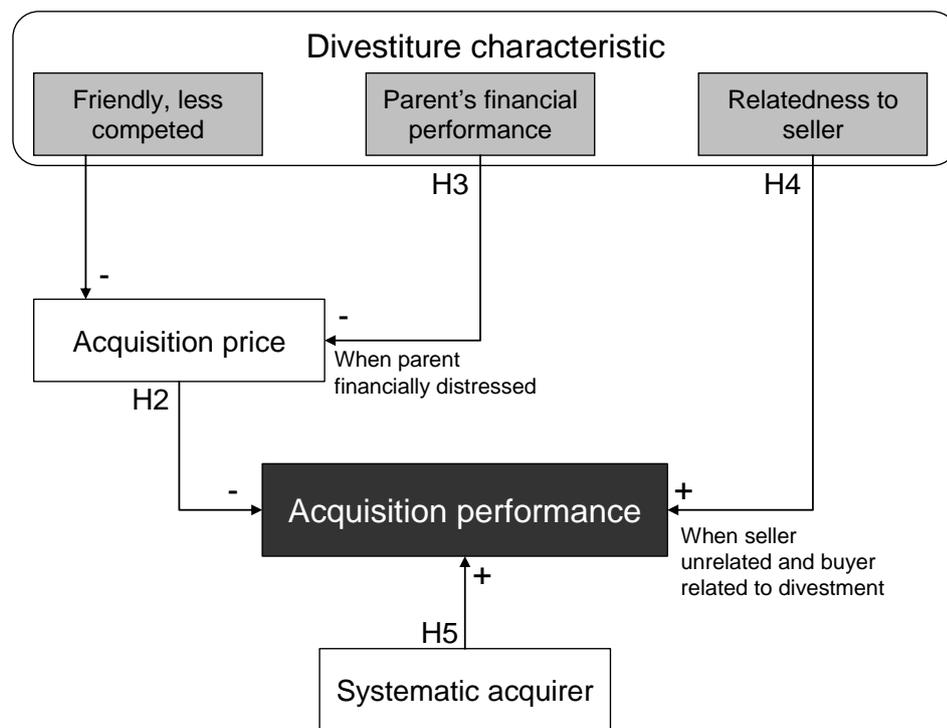


Figure 3: Hypotheses

3.1 Overall performance of divestiture acquisitions

The overall suggestion of the literature review is that divestiture acquisitions should on average perform better than all M&As, due to several contributing factors. The first hypothesis essentially aggregates the various factors and predicts that the post-acquisition performance is higher when the acquired target is a divestment, as opposed to a full company. The following hypotheses 2 to 5 then refine hypothesis 1 by determining the individual effects of different factors.

The hypothesized factors that improve post-acquisition performance of divestiture acquisitions can basically be divided in two broad groups. Firstly, the relative price of divested assets should be lower than price of full companies (hypotheses 2 and 3). Second,

acquiring divestments from parents operating in a different industry than the divested assets creates value potential due to improvement of asset efficiency as well as sharing complementary resources (hypothesis 4). In addition to these factors, also the effect of systematic acquisition behavior of the buyer is studied (hypothesis 5).

Also one possible reason for above-normal performance of acquisitions of divested assets is that in these cases the acquirer can better target the exact assets that fit its specific needs. In contrast, when acquiring a stand-alone firm, the target most likely includes a lot more assets that are useless to the acquirer. (MacFayden, 2008)

Friendliness of the negotiation process of divestiture acquisitions can also have a positive effect on the retention of the target's top executives (Walsh, 1989; Lubatkin et al., 1999; Krug and Hegarty, 2001), which in turn has been shown to increase the post-acquisition performance (Cannella and Hambrick, 1993; Bergh, 2001).

The seller and buyer both prefer cash as the mode of payment for divestiture acquisitions (Faccio and Masulis, 2005), and cash paid acquisitions have been shown to perform better than stock deals in the long run (Loughran and Vijh, 1999). Therefore, as cash is the primary mode of payment for acquisitions of divested assets, this could also have a positive effect on the long-term performance compared to all acquisitions.

Hypothesis 1 is the "base case" of the study, and is defined as follows:

Hypothesis 1: On average, the post-acquisition performance of divestiture acquisitions is better than "regular" acquisitions.

3.2 Deal value

The effect of deal value on acquisition performance is rather straightforward. The basic premise is that acquisitions of similar assets are more profitable for the acquirer when the price of those assets is lower, *ceteris paribus* (Schoenberg, 2003). This means that the lower the relative deal price of an acquisition is, the better its performance should be. Relative deal price can be measured by transaction multiples such as price/sales or price/book value.

There are various factors that can contribute to the price of divestitures compared to other acquisitions. Divestiture acquisitions are usually considered friendlier deals than M&As in general (Datta et al., 2003), and often have only one potential buyer (Sicherman and Pettway, 1992). Essentially, the buyer can be thought of “doing a favor” for the seller, since the buyer helps the seller get rid of possibly unwanted assets and improve its performance. Therefore, also the emergence of a bid competition should be less likely in divestiture acquisitions and the overall price lower. Also when the seller is financially distressed, its control over the bid process and bargaining power are weaker (Brau et al., 2003; Sicherman and Pettway, 1992), which can further decrease the transaction price. There is also some evidence that often the seller is not even very interested in managing the asset sale properly, and this carelessness may also decrease the price significantly (MacFayden, 2008).

Acquisition price can also be moderated by information asymmetries between the buyer, the seller, and the target. It can be asserted that there exists a price discount on a business unit of a highly diversified company. This is because of lack of business unit level financial data and subsequent uncertainties in predicting the value of a single segment (King et al., 2004), which risk is then compensated by a discount in the target value. This discount should most benefit a related acquirer, who has better knowledge of the target’s business and can therefore better determine the actual value (Capron and Shen, 2007).

Thus, hypothesis 2 predicts the following:

Hypothesis 2: The relative deal price of divestiture acquisitions is low, and consequently their acquisition performance is higher.

3.3 Financial distress of divesting parent

Another case of improved acquisition performance, partly related to acquisition price, is when the divesting parent company itself has exhibited poor financial performance and a high level of debt prior to the divestiture. These issues are also major reasons for corporate restructuring (Ravenscraft and Scherer, 1991; Johnson, 1996; Allen and McConnell, 1998). A financially constrained parent may have to resort to a “fire sale”: In order to quickly gain needed liquidity to cover its upcoming debt payments and avoid bankruptcy, the divesting firm has to sell the assets at a discount to their actual value (Pulvino, 1998). Therefore,

acquiring a divestiture from a financially distressed firm results in a lower acquisition price, which, as argued above, has a significant effect on the post-acquisition value potential. This should be even more noteworthy when the selling company has its major operations in one or more declining industries (Bergh and Lawless, 1998; Pangarkar and Lie, 2004).

It is also possible that a financially distressed parent has been unable to finance even NPV positive projects of the target unit due to liquidity constraints. This results in poor asset efficiency of the target, which a financially solid acquirer can improve. Therefore, there is a possibility of a distinct financial synergy between the target and buyer (Fluck and Lynch, 1999).

This rationale leads to hypothesis 3, which is stated as follows:

Hypothesis 3: Post-acquisition performance of divestiture acquisitions is improved when the target's parent is financially distressed prior to the divestment.

3.4 Change in relatedness

One strong hypothesis relates to the difference in relatedness between the acquirer, the divesting firm, and the divested assets. Research shows that divested business units are usually not related to the core business of the divesting company (e.g. Hoskisson and Turk, 1990; Bergh, 1997) and are characterized by low managerial attachment (Duhaimé and Grant, 1984; Ravenscraft and Scherer, 1991). The acquirer, however, is usually a less diversified company operating in an industry or business related to the target business unit's (Ravenscraft and Scherer, 1991), i.e. the acquisitions are usually horizontal. Also John and Ofek (1995) show that a major motivation for divestitures is that they increase the seller's focus and that the divested assets have higher value potential to a related buyer than to the seller.

The situation above should have an effect on performance since it creates significant possibilities for transfer of complementary resources, which has been shown to have a positive effect on post-acquisition performance (Capron and Pistre, 2002; Harrison et al., 1991; 2001). For example, in the focal software industry the acquirer can transfer its software development and managerial resources to the target, and the target can transfer its industry-

specific expertise and distribution channel resources to the acquirer. It is also possible that the target assets are previously inefficiently managed, since the seller probably doesn't have the necessary software competencies. In this case the related acquirer can also use its better knowledge of the target's business in improving the efficiency of its specialized assets (Capron, Mitchell and Swaminathan 2001; Karim, 2006). This is especially true in cases where the unit is divested due to its poor performance compared to its industry average, which is also one of the main reasons for divestitures (Ravenscraft and Scherer, 1991).

Hypothesis 4 predicts the effect of the above relationship as follows:

Hypothesis 4: Post-acquisition performance of divestiture acquisitions is improved when the target is less related to the original parent than to the acquirer.

The above hypothesis can also be illustrated as a figure (Figure 4: Illustration of difference in relatedness). It basically states that the acquisition performance should be greater when $B > A$.

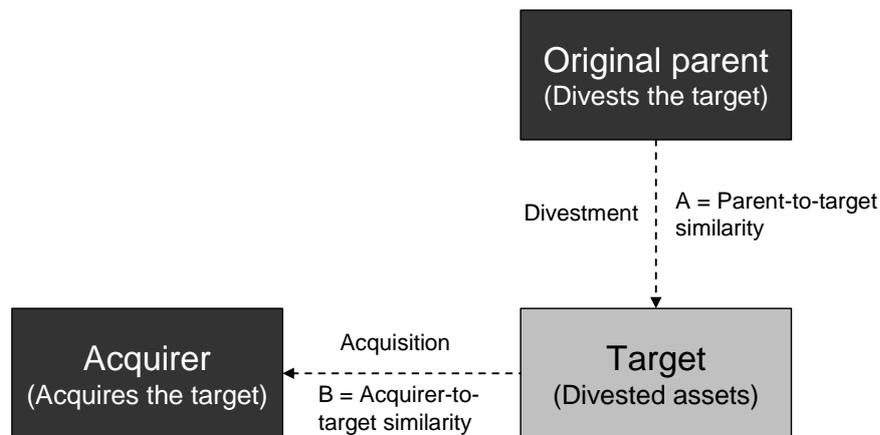


Figure 4: Illustration of difference in relatedness

3.5 Strategic acquirer

The final hypothesis considers the acquisitions from a longer term acquisition program perspective, and builds on recent findings on the pacing of acquisitions. When acquisitions are evenly paced and tied to a longer term strategic acquisition program, the acquirer's long-term performance is significantly better (Laamanen and Keil, 2008).

The performance differences can mostly be attributed to organizational learning effects from previous effects, as well as time compression diseconomies. Although more acquisitions would in general result in more learning, if these acquisitions are compressed into a relatively small time frame, the organization cannot digest all the acquired new companies. Also when the acquisitions are made in a systematic manner, it is more likely an indicator that the acquisitions are more thoroughly planned.

After the first few acquisitions, also prior acquisition experience increases post-acquisition performance (Haleblian and Finkelstein, 1999), especially when the targets are somewhat similar to each other and are acquired at a steady pace (Finkelstein and Haleblian, 2002; Hayward, 2002).

Therefore, a clear indicator of strategic acquirer is a firm that has a low variability of acquisition activity between years. Similarly, a high variability indicates that the acquirer behaves less systematically and more “at a whim” when new opportunities present themselves. This is also the definition of strategic and ad hoc acquirers used in this study, and results in the following hypothesis:

Hypothesis 5: The post-acquisition performance of “strategic” acquirers is better than “ad hoc” acquirers.

Note that the fifth hypothesis diverts from the rest of the hypotheses to some extent. Essentially, it doesn’t specifically consider divestiture acquisitions. This is a necessary distinction, since the studied acquisition programs are very likely to contain both divestiture and regular acquisitions. Moreover, one possible strength of successful programs can even be heterogeneity of the targets (including both stand-alone firms and divestments), since this can e.g. facilitate a higher amount of gained acquisition experience from the more diverse set of transactions. However, in the scope of this study the difference regarding the distribution of targets is not studied in more detail.

4 Methodology

This chapter describes in detail the methodology used in the study, including construction of the sample, as well as dependent, independent and control variables.

4.1 *Sample*

The sample used in this study was constructed first by including all acquisitions that matched the following criteria:

1. Acquisition was announced between January 1st, 1988 and December 31st, 2005 and completed (i.e. offer was not withdrawn after announcement)
2. The acquisition resulted in the acquirer owning a majority (over 50% stake) of the target firm
3. Acquirer was a public, US based company at time of acquisition
4. Acquirer's primary SIC number was between 7371 and 7379 at time of acquisition

Time frame of the first criterion was included in order to obtain a large enough sample for the study. A large majority of the acquisitions in the sample date to the years 1999-2000 due to the dot-com boom and the relatively young age of the software industry. In order to offset this, a relatively early starting date of 1988³ was chosen. The dot-com era was not left out of the sample, since it most likely includes many "ad hoc" acquirers that are one major group of interest in this study, and dropping this period would have significantly decreased the sample size. However, the possible bias resulting from this period is taken into account when constructing the variables and interpreting results. The date of acquisition announcement was chosen as the actual observation under study. This decision ensured that there was minimal public information about the acquisition prior to the observation day so the market had not yet reacted to the event.

³ Many software companies didn't go public until mid-1980s; e.g. Microsoft Corporation's IPO was in 1986,

As the purpose is to study post-acquisition performance using market based measures, the second criterion was needed to ensure availability of all the required data, since stock market data naturally exists only for public firms. Furthermore, some required variables are also based on accounting data, which is usually much more scarcely available for non-US companies, especially during the earlier years of the used time frame.

The third restriction was imposed in order to limit the sample to software industry only. The Standard Industry Classification (SIC) code is a four digit measure of a firm's primary and secondary industries, and can be used to classify firms according to their business activities. There exists a fair amount of ambiguity regarding the actual definition of a software company (Messerschmitt and Szyperski, 2003: 26). Therefore, the stand taken in this paper is fairly neutral. The sample was constructed from all firms for which the first three digits of the primary SIC code is 737 (SIC group "Services – Computer programming, data processing, etc."). The included SIC codes and their descriptions are listed in a table below (Table 1: Acquirer SIC codes included in the sample). The SIC codes marked with grey background were only included after further inspection, as described below.

Narrowing the sample using the four criteria described above resulted in a sample of 7370 acquisitions. After this, the sample was narrowed further and split in two research groups. The first group consisted of especially active acquirers of divestitures, and included 30 firms for which the percentage of divestiture acquisitions from all acquisitions was the highest, and which had acquired at least 10 firms during the study period. The second group was the opposite with 30 firms that had acquired relatively least divestitures compared to all acquisitions, but which also had acquired at least 10 firms, thus including active acquirers of mostly stand-alone firms.

The above limitation was added in order to include only active acquirers and thus enable studying larger scale acquisition programs. Many of the constructs in the study consider multiple acquisitions made during a longer time period, and are thus only feasible for active acquirers. After these limitations, the sample was reduced to a size of 1223 acquisitions by the 60 focal firms.

Table 1: Acquirer SIC codes included in the sample

SIC Code	Description
7371	Computer programming services
7372	Prepackaged software
7373	Computer integrated systems design
7374	Computer processing and data preparation
7375	Information retrieval services
7376	Computer facilities management services
7377	Computer rental and leasing
7378	Computer maintenance and repair
7379	Computer related services, not elsewhere classified

SIC codes 7376-7378 (marked with grey background) are not strictly software related businesses. Before including any firm that had one of these as their primary SIC code, it was made sure that the firm had at least two other SIC codes between 7371-7375, or 7379 as secondary SIC codes. This was done in order to ensure that all the firms have software development as a large part of their operations. No firms were eliminated due to this restriction.

4.2 Data collection

The data used in this study was primarily collected from two sources. First of all, data regarding single acquisitions was obtained from the Thomson SDC Platinum database. SDC has fairly comprehensive details on historical acquisitions and as such was regarded as a suitable source for the data. Furthermore, SDC is a well-known product and has been utilized in a number of existing studies on M&As (e.g. Hayward, 2002; Finkelstein and Halebian, 2002).

In addition, financial information such as accounting and share price data on individual firms was obtained from the Thomson Datastream Advance database. Also other financial data such as market indices and dividend payment history were acquired from this database. Some financial data missing from Datastream was also added from company 10-K (annual report) filings obtained from the US Securities and Exchange Commission (SEC) EDGAR database.

After the acquisition data was collected, the amount of acquisitions for each firm was calculated. At this point also data for firms that had changed names during the study period was combined. This was done mostly manually by comparing the firms' CUSIP codes, names, and in some unclear cases also historical news found on the Internet. The consolidated list was then used to select the two aforementioned sample groups, namely active acquirers of divestitures and active acquirers of stand-alone firms. Although it is likely that some name changes in the sample might have been overlooked, this should not significantly affect the sample composition.

4.3 Data structuring and analysis

After all the data was gathered, two different models were built based on the data. First, all the collected data was collected into a database of single acquisition observations. This structure was used to study the short-term performance effects of individual acquisitions.

Second, a panel structure – also called a cross-sectional time-series structure – was constructed by first aggregating all yearly data for each company into yearly panels. In other words, acquisition activity by a single company was studied on a yearly basis, rather than as individual acquisition observations. The model was also constructed to use a moving three year observation window, which included the focal year and previous two years (Figure 5: Structure of the panel model). The post-acquisition performance was measured as market value change three years after the observation window. Idea behind the panel model is that it gives a long-term view of the company's activities, and measures the long-term effects of these activities on the firm's performance.

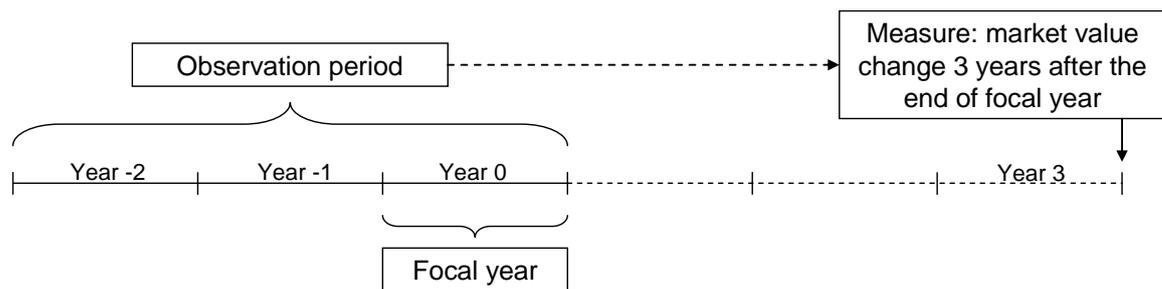


Figure 5: Structure of the panel model

First analysis of the data was done by splitting the sample into various subgroups of interest. The difference in mean returns between the subgroups was then analyzed statistically using single-sample and two-sample t-tests.

Finally, the models were analyzed separately using multivariate regression. For the short-term model, ordinary least squares (OLS) estimated regression was used. The panel model was analyzed using a random effects regression model with generalized least squares (GLS) estimation. An advantage of the random effects model is that in the panel model it automatically moderates for effects that are not controlled both between panels (firms) and between years. In other words, it to some extent automatically controls for the effect of variables that are not included in the model.

4.4 Dependent variables

In the study, two dependent variables were constructed, one for each model. Both dependent variables measure the change in a firm's market value, since market-based measures are usually considered fairly good indicators of a firm's performance. Another possible dependent variable for the long-term model would have been the acquirer's accounting profitability, e.g. net income margin or ROIC. However, accounting based measures are not necessarily a very good indicator of post-acquisition performance. The measures can be calculated in many ways, and firm managers can also to some extent manipulate the accounting figures. Therefore, accounting measures might not reflect the firm's true performance, and may also be incomparable between different firms or even the same firm at different years.

The dependent variables used in this study are described in detail below.

4.4.1 Acquirer cumulative abnormal returns

The first dependent variable was constructed using the event study methodology, and it was used in the short-term models. An event study measures the short term changes in a firm's stock price surrounding a specific event. The methodology determines if the event has resulted in any returns in excess of the normal market return, i.e. "abnormal" returns. The impact of the event on the firm's value can then be assessed by aggregating the daily abnormal returns to the cumulative abnormal return (CAR) over the defined event period. (MacKinlay, 1997).

The main assumption behind the event study method is that stock markets are efficient. That is, all new information regarding a company should be almost immediately incorporated in its share price, and this change should accurately reflect the actual change in the firm's value due to the event (McWilliams and Siegel, 1997).

The cumulative abnormal returns in this study were calculated following the procedure described by MacKinlay (1997). The actual event under study was the day when the acquisition was first announced, since this is the moment when information regarding an acquisition becomes publicly available. The event window used in the study was chosen as 5 days before and after the announcement day, meaning that the abnormal returns were calculated from the time period beginning 5 days prior to and ending 5 days after the announcement, with the announcement day as day 0. Length of the event window was chosen to answer the concerns raised by McWilliams and Siegel (1997). The main reasoning for a short event window is that choosing a longer window increases the probability of confounding effects⁴ during the event window, and these effects would bias the abnormal returns. Choosing a longer event window would also be contradictory to the methodology's main assumption of market efficiency, since the efficient market hypothesis assumes that the new information is reflected in the stock price almost instantaneously. This assumption is also supported by various studies (McWilliams and Siegel, 1997; Ryngaert and Netter, 1990).

⁴ Confounding effects can be for example declaration of dividends payment, earnings announcements, regulative changes, changes in key executives, etc.

Abnormal returns are returns in excess of normal returns that would have occurred if the event had never taken place. In this study the normal returns were measured using the market model, which relates a stock's return to the return of a market index or portfolio during the same period. The index used in this study is the NASDAQ Composite Index. This index was chosen since all the firms under study are high-tech software companies, and as such their share price correlates most strongly with the NASDAQ index and thus this index best explains changes in the market value.

The return of a security i can be calculated using the market model as follows (calculation based on methodology description by MacKinlay, 1997):

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}, \quad (1)$$

where R_{it} and R_{mt} are the returns of security i and the market index m at time t ; α_i and β_i are the parameters of the market model for the security i , and ε_{it} is the disturbance term. The returns are calculated from daily stock prices and market index by using the formulas:

$$R_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{i(t-1)}} \text{ and } R_{im} = \frac{I_t - I_{(t-1)}}{I_{t-1}}, \quad (2), (3)$$

where p_{it} and $p_{i(t-1)}$ are the closing prices of security i on day t and day $t-1$, respectively. Similarly I_t and $I_{(t-1)}$ are the closing values of the market index.

Next, the parameters α_i and β_i from equation (1) are estimated by the ordinary least squares (OLS) method over an estimation window. Estimation window is the time period prior to the event window that is used to measure the parameters, and in this study it was set to cover the time span of 220 to 6 days prior to the event. It is customary that the estimation and event windows do not overlap, in order to eliminate the effect of the event under study in the calculation of α_i and β_i .

Similarly to MacKinlay (1997), returns are indexed in event time by τ , using $\tau = 0$ as the event day, $\tau = T_1$ to $\tau = T_2 - 1$ as the event window, and $\tau = T_0$ to $\tau = T_1 - 1$ as the

estimation window. L_1 and L_2 denote the lengths of the estimation window and event window, respectively. The timeline of an event is illustrated in the figure below (Figure 6: Timeline of CAR calculation).

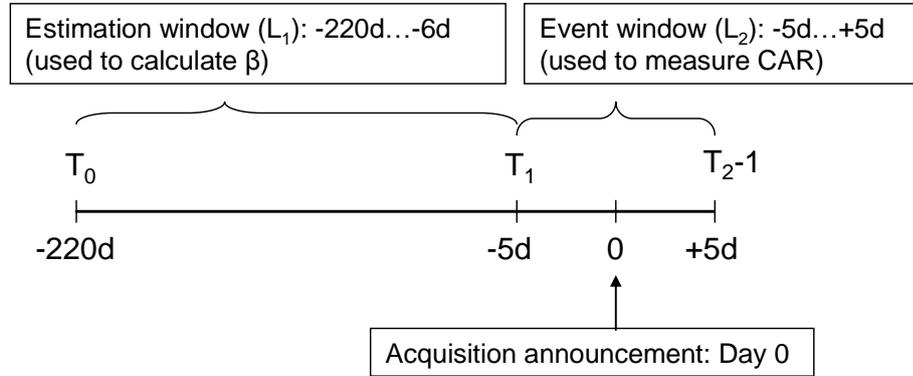


Figure 6: Timeline of CAR calculation

Now the parameters can be calculated as

$$\hat{\beta}_i = \frac{\sum_{\tau=T_0}^{\tau=T_1-1} (R_{i\tau} - \hat{\mu}_i)(R_{m\tau} - \hat{\mu}_m)}{\sum_{\tau=T_0}^{\tau=T_1-1} (R_{m\tau} - \hat{\mu}_m)^2} \quad \text{and} \quad \hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m \quad (4), (5)$$

where

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{\tau=T_0}^{\tau=T_1-1} R_{i\tau} \quad \text{and} \quad \hat{\mu}_m = \frac{1}{L_1} \sum_{\tau=T_0}^{\tau=T_1-1} R_{m\tau} . \quad (6), (7)$$

After this, the obtained parameters can be used to calculate the abnormal returns at event time τ as

$$AR_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau} . \quad (8)$$

Thus, the cumulative abnormal return of a single event during the event window $\tau = T_1$ to $\tau = T_2 - 1$ is

$$CAR_i = \sum_{\tau=T_1}^{\tau=T_2-1} AR_{i\tau} . \quad (9)$$

Although the event study method is a widely used, fairly robust and proven research method, it still has some drawbacks. The main downside of an event study in measuring the performance of M&As is that it doesn't actually measure the true value of an acquisition, but rather the outside investors' reassessment of the acquiring firm's business. Also the perspective of event studies is on the short-term shareholder wealth gains, instead of the company's true long-term market performance.

It is likely that there are cases when the short-term change in stock price due to an acquisition does not reflect the actual change in the acquiring firm's true long-term value, but some other factor. For example, Sicherman and Pettway (1992) studied acquisitions of divested assets and found that in these cases the impact on share price was most positive when the transaction price was revealed at the time of acquisition announcement. It can be argued that whether or not a firm announces the transaction price does not actually change the true value of an acquisition, so in perfectly efficient markets also the stock price response should be equal in both cases. In this case the stock price change really reflects two issues. Firstly, there is a lack of information regarding the real transaction price, and this information asymmetry risk is discounted in the stock price. Secondly, it is also possible that managers do not wish to disclose price information when they feel that the price is too high, and therefore markets react to price disclosures as an indication of higher managerial confidence. This illustrates the difficulty of assessing acquisition performance by merely looking at short-term abnormal returns.

The above argument is brought out by Hietala, Kaplan and Robinson (2003) who state that at the time of acquisition announcement, three different pieces of information affect the stock market valuation: Stand-alone values of the target and the bidder, potential synergies in their combination, and bidder overpayment. It is often impossible to separate the effects of each, and thus inferring the true meaning of the stock market's reaction is extremely difficult, if not impossible.

Consider the following example: The stock market has for a longer period of time prior to the announcement anticipated that firm A will acquire firm B; that the price of the acquisition will be approximately \$10 million; and that the synergistic net value potential from combining the two firms is around \$20 million. Thus, the market value of firm A should already reflect this assumption, and be up by around \$10 million (\$20m - \$10m). However, at the time of acquisition announcement the disclosed acquisition price is \$15 million instead of \$10 million. The market reacts to its previous undervaluation of the transaction cost, and the returns at announcement are negative, although the net value potential of the acquisition is still positive \$5 million (synergistic value of \$20m – acquisition price of \$15m). The above example is very simplified and only one possible case of many, but still illustrates the difficulty in assessing the true value of the acquisition purely from short-term stock reactions.

4.4.2 Long-term market performance

For the above reasons, in this study the longer term value implication of acquisition activity was measured by the panel models. In the panel model, the event study method was not applicable because the panel model did not consider individual acquisitions separately, but instead the observations were grouped on a yearly basis for each firm. The panel model also took a longer time perspective, with a three year moving time window of company behavior.

The long-term perspective was also reflected in the dependent variable, which in the panel model was the acquirer's long-term market performance. It was calculated as the percentage change in the firms' share price three years after the acquisition period. The share prices were also adjusted by changes in the NASDAQ Composite Index during the time period, and all paid dividends during the time were taken into account by adding them to the value. If the firm disappeared from the sample during the observation period due to e.g. bankruptcy or the firm itself getting acquired, the last available stock price was used instead, in order to minimize potential survivor bias.

Using the firm's change in market value three years instead of instantly after the observation period better reflects the acquisition program's actual contribution to the acquirer's performance and cash flows. It takes time to integrate the companies and thus their true

effect on the acquirer's cash flows is not visible until after a significant period of time. Therefore, a longer term dependent variable should better reflect the performance of programs of multiple acquisitions instead of individual acquisitions.

4.5 Independent variables

Since the structures of the short-term and long-term models differ from each other, also the used variables were constructed differently for the different models. In this section, they are described by variable, and in each case the constructions in both models are explained.

4.5.1 Divestment

Whether the target for acquisition is a divestment or a stand-alone company is the primary subject of research in this paper. In the short-term model, in order to distinguish whether an acquisition was a divestment, a binary variable was included. This variable was directly based on SDC database's divestiture flag, and took the value 1 if the case was a divestment and 0 otherwise.

In the long-term model, the variable was constructed as the percentage of divestitures from all acquisitions during the three year observation window. If the amount of all acquisitions was zero during the period, also the variable was set to 0%.

4.5.2 Price-to-sales multiple

In the short-term model, the price-to-sales multiple as reported by SDC was used as a measure of the acquisition's relative value. Statistical regression assumes that the used variables are normally distributed, and this requirement was fulfilled by making a logarithmic transformation of the actual value in the regression model.

The main problem is that for a majority of observations this variable was unavailable for two reasons. First of all, quite often the acquirer does not reveal the transaction price, especially when the acquisition is relatively small as is often the case with divestiture acquisitions. Secondly, also sales figures are often lacking either because they are not reported (e.g. when the target is a private company or a subsidiary), or because sales figures are simply not

applicable to the target, e.g. if the target consists of some physical assets for which sales can't even be measured.

Therefore, including this variable decreases the sample size quite substantially. It also presents a possibility of biased results, since it is likely that the sales figures and transaction prices are most often reported for certain types of acquisitions. In order to keep the sample size in other models sufficiently large, this variable was only used in one regression model.

Also other measures of relative deal value, such as the price-to-book value multiple were considered. However, the same problems regarding data availability are applicable to other ratios as well, and therefore they were left out of the study.

Due to the aforementioned restriction, a measure for multiple acquisitions' relative value could not be unambiguously calculated, and the measure was therefore not used in the panel model. For example, if a firm made 6 acquisitions during the three year observation period, and the transaction price was disclosed for only half of these acquisitions, there is no reliable way of calculating the actual average deal value for this period. Average size of the acquisitions could have been measured to some extent by changes in the acquirer's assets, but this still does not tell how much the acquirer paid for the targets.

4.5.3 Parent's financial distress

In order to measure the divesting parent's financial distress prior to the divestment in the short-term models, a new binary variable was created. This variable took the value 1 if the parent was distressed and 0 otherwise. Financial distress was measured similarly to Bruton et al. (1994): a firm was considered distressed if both its net income and return on invested capital had declined during the two consecutive years before the focal year. In addition, firms whose net income and return on invested capital had been negative during the prior two years were also included.

A significant drawback of this variable is that financial data on the divested asset's ultimate parent was available only for public divestors. Since majority of the divesting firms are actually private companies, this restriction significantly decreases the sample size. In addition,

it may result in a bias in results considering that public and private firms may have differing motivations for divesting and in general divest different kinds of assets.

Due to the abovementioned restriction on data availability, a similar strategy as with the price-to-sales variable was used, namely, that this variable was only included in one regression model. This made testing the hypothesis possible without decreasing the sample size for other hypotheses.

In the panel model, the variable was constructed as the percentage of divested assets bought from distressed divesting parents from total acquisitions during the three year window. Similarly to the divestiture variable, if there were no acquisitions during the observation period, the percentage was set to zero.

4.5.4 Change in relatedness

The variable “change in relatedness” was constructed in order to measure whether there is an effect on acquisition performance when there are differences between the acquirer-to-target and parent-to-target similarities, e.g. when the parent divests non-core assets and acquirer buys core-related assets. Relatedness between the target and the acquirer or parent was calculated from both parties’ SIC codes using the same algorithm as Haleblan and Finkelstein (1999), which was defined as follows:

1. Only the first six SIC codes of the two companies were taken into account
2. First, the primary SIC codes of both companies were compared and points were given in the following manner:
 - a. For an exact match (4 digits): 6 points
 - b. For a 3-digit match: 4 points
 - c. For a 2-digit match: 2 points
3. Next, all other SIC codes were compared to the others, and they were given: 3 points for 4-digit match; 2 points for 3-digit match; and 1 point for 2-digit match
4. The final score for a single acquisition was determined as the largest single similarity score awarded, thus ranging between 0 and 6.

After this, the overall change in relatedness was simply calculated as $R_{at} - R_{pt}$, where R_{at} is the acquirer-to-target and R_{pt} the parent-to-target relatedness. As the single relatedness scores ranges between $[0, 6]$, the total change in relatedness score's range is $[-6, 6]$. Thus, a negative score denotes a decrease in relatedness (i.e. target is more related to the original parent than the new acquirer), whereas a positive score means that the relatedness improved after the acquisition. Note that the change in relatedness is only applicable to divestiture acquisitions, since for "regular" acquisitions the parent and target are the same entity (and thus the relatedness between them would always be 6). For this reason, the score was only used for divestiture acquisitions, and in other cases the difference score was set to zero.

A continuous scale might not measure the studied phenomenon sufficiently well. To better separate the improved relatedness acquisitions from those where relatedness was not improved or even decreased, the hypothesis was also tested using a dichotomous variable. This variable received a value of 1 if the overall change in relatedness was 3 or more, and 0 otherwise.

In the panel model, the variable was constructed by first calculating the average change in relatedness for all divestiture acquisitions during the three year period. Then a binary variable for average improved relatedness was created. This variable received a value of 1 if the average relatedness change was 3 or more. If there were no divestiture acquisitions during the period, the variable was set to 0.

4.5.5 Strategic acquirer

The definition of a strategic acquirer corresponds to that first suggested by Vermeulen and Barkema (2002) and later employed by Laamanen and Keil (2008), which considers strategic acquirers as firms that undertake acquisitions at a regular pace. This variable was constructed by first calculating the standard deviation in the yearly acquisition count for each firm n during the whole time period (1988-2005) as

$$\sigma_n = \sqrt{\frac{1}{N} \sum_{j=1}^N (x_{jn} - \bar{x}_n)^2}, \quad (10)$$

where N is the number of years during the time frame, x_{jn} is the amount of acquisitions for firm n on year j , and \bar{x}_n is the average of all acquisitions per year for firm n .

After this, the normalized standard deviation for each firm was calculated from equation (10) as σ_n divided by the total number of acquisitions over the whole study period. The whole population of firms was then split into two equally sized groups, and the firms with below-median normalized standard deviations were designated “strategic” and the rest “ad hoc” acquirers. This division is quantified for each firm by a dichotomous variable which received the value 1 if that firm was a strategic acquirer.

Since this variable looks at the whole study period between 1988 and 2005, it gives a true long term measure of the focal firm’s behavior. The same variable was used for both the short-term CAR models and the long-term panel models, because the variable measures the acquirer’s, not the acquisition’s, characteristic and does not change over time.

4.6 Control variables

4.6.1 Acquirer size

As a proxy for the acquiring company’s size, acquirer’s total assets were used as a control variable. It is assumed that acquisition performance is improved for larger companies, e.g. because they are less affected by the acquisition, better able to assimilate new firms, and have more established processes for conducting acquisitions. Similarly to the price-to-sales multiple, a logarithmic transformation was done prior to using the variable in the regression models, since otherwise it would have violated the normality assumption.

In the short-term abnormal returns regression models, acquirer’s size was obtained from SDC or EDGAR for each acquisition separately, whereas in the panel models the variable was defined as the acquirer’s total assets in the beginning of the three-year observation window. The latter variable was chosen so that the variable is not affected by the acquisitions made during the window.

4.6.2 International acquisitions

Multiple studies have shown that international acquisitions are on average more difficult to undertake due to e.g. cultural differences not only between firms, but also between the operating countries. This makes the integration of the firms even harder than in domestic mergers, which in turn lowers the value created from the acquisition (Olie, 1994).

In order to control for cross-border acquisitions, a variable for international acquisitions was generated. For the short-term CAR models a simple binary variable was used and set to 1 for all acquisitions where the target was not based in the United States. In the panel models, the variable used was the percentage of international acquisitions from all acquisitions during the given time period.

4.6.3 Public target

Capron and Shen (2007) show that when the acquisition target is a public company, also the short-term abnormal returns are on average lower. This can mostly be attributed to the lower price of private targets.

To control for this, a dichotomous variable was included in the short-term model, and this variable was given a value of 1 if the target company was public. In the panel model the variable was constructed as the proportion of public targets during the observation window.

4.6.4 Competed acquisitions

One possible factor decreasing acquisition performance is the emergence of bid competition, as competing bidders may drive the acquisition price up until it becomes only marginally profitable (Sirower, 1997). Thus, acquisitions with multiple potential buyers should on average perform worse than acquisitions with only one buyer.

Due to this, a control variable for competed acquisitions was included. Similarly to the international acquisitions variable, bid competition was included as a binary variable for the short-term CAR models, and as the proportion of competed acquisitions during the observation period for the panel models. Competed acquisitions were defined as those with two or more potential buyers, as reported by SDC.

4.6.5 Method of payment

Choice for the method of payment in acquisitions also has shown to affect long-term acquisition performance, with cash-financed acquisitions performing better than acquisitions paid by shares. This is due to the fact that managers tend to pay for acquisitions by shares mostly when they feel that their shares are overvalued, and by cash when undervalued. Therefore, cash payments should reflect acquiring managers' superior confidence regarding the post-acquisition performance. The study by Loughran and Vjih (1997) for example shows that the long-term performance of acquisitions paid primarily by cash was 62% above average.

Method of payment was therefore included as a binary control variable, which was set to one if the acquisition was paid 100% by cash, and as the percentage of 100% cash of acquisitions during the observation period for the panel models.

4.6.6 Transaction price disclosure

Sicherman and Pettway (1992) show that in acquisitions of divested assets, the short-term returns are higher when price of the acquisition is revealed at time of the announcement. This reflects a discount for the risk resulting from information asymmetries, since the investors cannot discern the value of the acquisition when they are not certain of the price paid. It is also likely that managers on average tend to disclose the price more often for acquisitions that are not overpaid than for acquisitions where the price may have been too high. Also in this case the post-acquisition performance of acquisitions where price is disclosed should be higher.

Disclosure of the transaction price was included in the short-term models as a binary variable which was set to 1 if the transaction price was known and 0 otherwise. Furthermore, a variable measuring the percentage of acquisitions where the price was disclosed was added to the panel models.

4.6.7 Acquirer sub-industry

Inherent differences between some industries may also result in differential post-acquisition performance. In this study the firms all operate in the software industry, but come from various sub-industries. To control for this, a binary variable was created for all the sub-industries under study as classified by the firms' primary SIC code (a total of 9 binary variables denoting SIC codes between 7371-7379).

4.6.8 Pre-boom acquisitions

Besides differences in the profitability of the firms' sub-industries, also the overall industry affects acquisition performance. In particular, Uhlenbruck et al. (2006) show that before the stock market correction in March 2000, acquisitions in the software industry resulted in higher acquirer returns than after that time, measured by the short-term abnormal returns.

A binary variable was included to control for this in the short-term model. The variable was assigned a value of 1 if the acquisition announcement took place prior to March 2000. In the panel model this was included as a binary variable which received a value of one if the focal year was 1999 or earlier.

4.6.9 Amount of acquisitions and variability in acquisition rate

When considering multiple acquisitions, the more acquisitions are undertaken in a shorter period of time, the worse the acquirer's long-term performance. This is due to the fact that a company cannot "digest" a large number of acquisitions in a shorter time frame. Furthermore, also a high variability in the acquisition rate affects the performance negatively, since this indicates a less systematic acquisition program. (Laamanen and Keil, 2008)

Therefore, two additional control variables were included in the panel model: the total amount of acquisitions during the three year period, and the standard deviation in yearly acquisition amounts. The standard deviation was also normalized by a logarithmic transformation in order to fulfill the requirements of linear regression.

5 Results

5.1 Sample description

As described in the data selection chapter, the sample consisted of total 60 firms that had their primary SIC between 7371 and 7379. Furthermore, companies that had a secondary SIC between 7376 and 7378, also had to have two secondary SIC codes between 7371-7375 or 7379. The overall distribution of acquisitions by the acquirer's primary SIC code is presented in the figure below. (Figure 7: Distribution of acquisitions by acquirer SIC code). It can be seen that the most active sub-industries were 7372 (Prepackaged software), 7374 (Computer processing and data preparation and processing services), and 7375 (Information retrieval services).

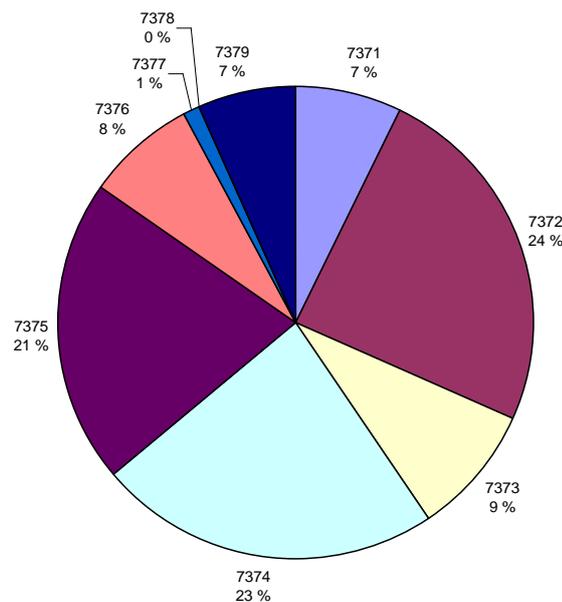


Figure 7: Distribution of acquisitions by acquirer SIC code

When looking at the yearly acquisition activity during the study period (Figure 8: Timeline of acquisition activity by acquirer SIC code), the dot-com boom is clearly visible as a spike especially in 1998-1999. The stock market correction took place in March 2000, which

substantially decreased the availability of financing for the companies, and this can be seen as a very sharp drop in acquisition activity.

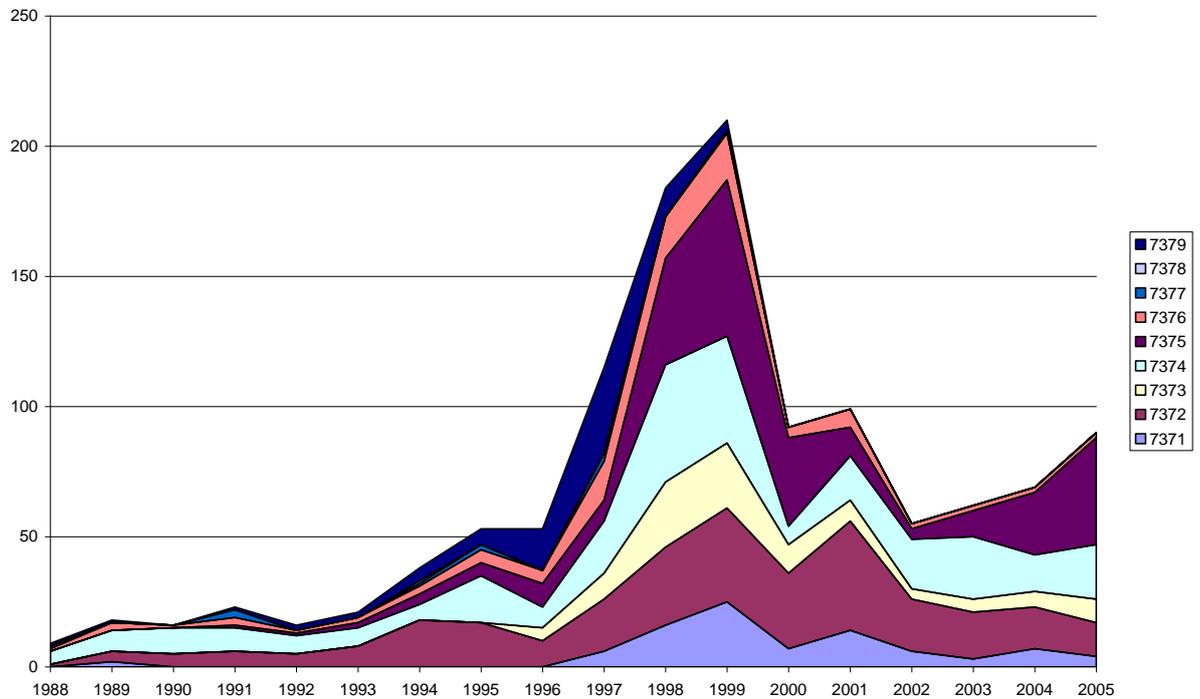


Figure 8: Timeline of acquisition activity by acquirer SIC code

One factor that was used to divide the sample was whether the acquirer was “strategic” or “ad hoc”, based on the variability in their acquisition rates. As is expected, when looking at the yearly acquisition activity of these two groups, it is clear that the “ad hoc” acquirers were also those most contributing to the acquisition boom (Figure 9: Timeline of acquisition activity by acquirer classification). The overall trend of strategic acquirers remains relatively stable and slightly rising.

A large majority of acquisitions that were made during the dot-com boom were value-destroying, suggesting that they were not planned thoroughly. The fact that these acquisitions were mostly undertaken by the firms classified in this paper as ad hoc acquirers indicates that the constructed measure of ad hoc versus strategic acquirer is fairly valid.

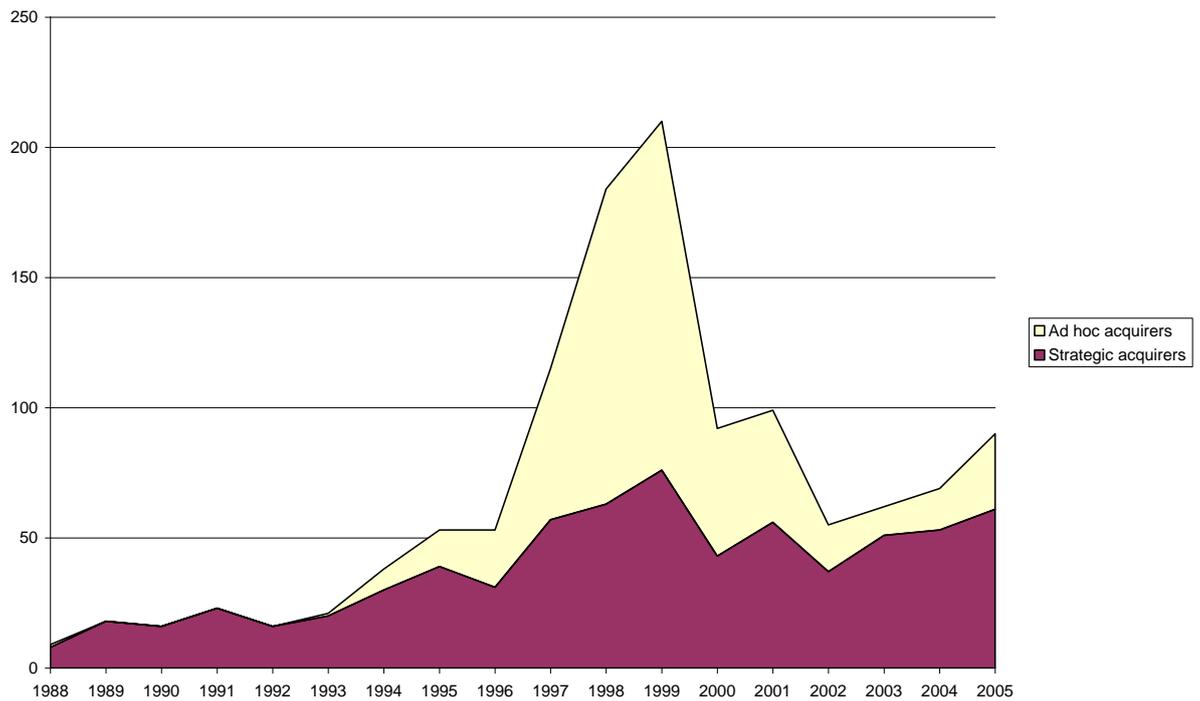


Figure 9: Timeline of acquisition activity by acquirer classification

5.2 Short-term abnormal returns models

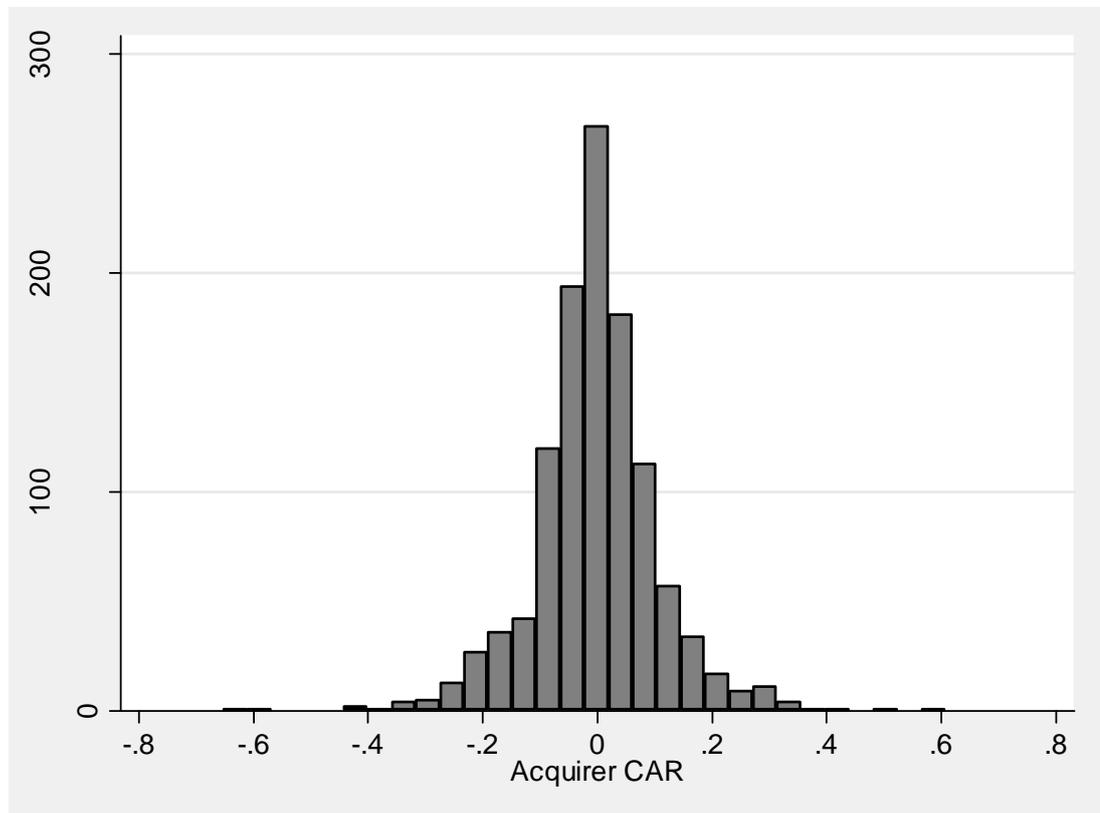
5.2.1 Descriptive statistics

Summary of the included variables of the short-term models is presented in the table below (Table 2: Summary of short-term model variables). The dependent variable could not be calculated for 79 observations. This is because if the acquisition was made relatively soon after the firm went public, no meaningful alpha and beta coefficients could be determined, and hence no abnormal returns could be calculated.

Table 2 shows that the mean CAR of the whole sample is very close to zero (-0.3%). However, it also hides a fairly large amount of variance, as is evident from the minimum and maximum values of -65.2% and 60.9%, respectively. The returns are also very normally distributed, as can be seen from the image below (Figure 10: CAR distribution histogram).

Table 2: Summary of short-term model variables

Variable	Observations	Mean	Std. Dev.	Min	Max
CAR -5 to 5 days surrounding the announcement	1143	-0.003	0.110	-0.652	0.609
Target is a divestiture	1222	0.261	0.439	0	1
Price-to-sales multiple	212	26.227	214.145	0	3068.004
Normalized price-to-sales multiple	204	0.733	1.623	-4.510	8.029
Parent distressed	228	0.241	0.429	0	1
Change in relatedness (continuous)	1222	-1.327	2.685	-6	6
Change in relatedness (binary)	1222	0.126	0.332	0	1
Strategic acquirer	1222	0.570	0.495	0	1
Acquirer total assets	1222	2297.360	4668.579	5	33947.4
Normalized acquirer total assets	1222	6.185	1.884	1.609	10.433
International acquisition	1222	0.197	0.398	0	1
Acquisition financed by cash	1222	0.114	0.318	0	1
Competed acquisition	1222	0.007	0.086	0	1
Price disclosed at announcement	1222	0.458	0.498	0	1
Pre-March 2000	1222	0.639	0.480	0	1
Public target	1222	0.231	0.421	0	1

**Figure 10: CAR distribution histogram**

Price-to-sales ratios were only available for observations where the acquisition price was disclosed, and the target's sales were reported (212 observations). Furthermore, price-to-sales ratios of zero were deleted when normalizing the variables, since they most likely represent

an error in the data. Parent distress could only be calculated for public targets which had sufficient financial data available (228 observations).

Out of the 1,143 acquisitions for which the cumulative abnormal returns could be calculated, 302 were acquisitions of divestitures and 841 were “regular” acquisitions, i.e. in the sample divestiture acquisitions account for approximately 25% of all acquisitions.

One hypothesized reason for above-average performance of divestitures is their below-average relative price. This general assumption is verified in the sample: The average price-to-sales ratio of the whole sample was 11.8 (212 observations) and for divestiture acquisitions 1.14 (46 observations). Even when limiting the data to only those cases where the price-to-sales ratio was less than 10, the means were 2.01 for all (191 observations) and 1.14 when the target was a divestiture (46 observations).

Another assumption underlying the hypotheses concerns the change in relatedness between the acquirer and target, and the original parent and target. When measured on a scale of -6 to 6, the average change in relatedness in divestiture acquisitions was 0.75. This indicates that on average the relatedness improved in the transaction, i.e. divestors sold non-core assets, and acquirers bought core-related assets. However, the average change was fairly small so no major conclusions can be made based on this result.

A simple descriptive analysis of the dependent variable was first done by dividing the acquisitions in two groups, divestiture acquisitions and others. Then the cumulative average abnormal returns were plotted -5 to +10 days surrounding the acquisition announcement date. The abnormal returns are illustrated below in a graph (Figure 11: Cumulative abnormal returns), which shows a difference in returns between the types of acquisitions. Acquisitions of divestments have on average resulted in positive short-term returns, whereas the returns of other acquisitions have been negative.

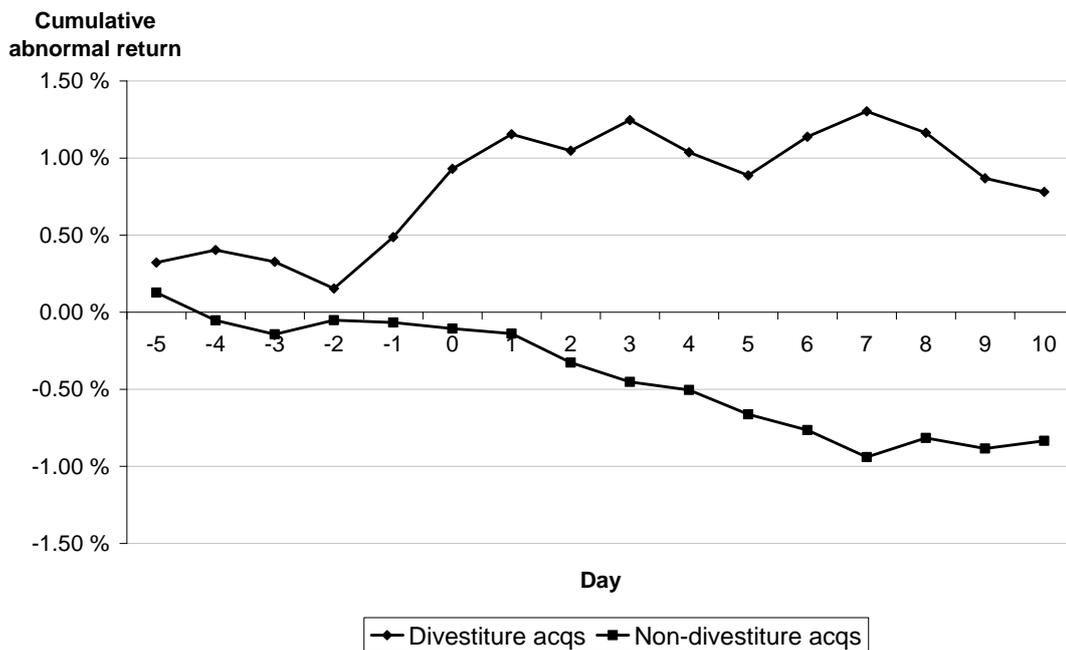


Figure 11: Cumulative abnormal returns

From the figure it should be noted that the trends in abnormal returns level out quite quickly after the acquisition announcement, indicating that the stock market has at this point incorporated the event in the stock price. This finding is also backed by multiple studies, concluding that the majority of a stock price's adjustment to new unanticipated events occurs within a time frame between few hours to a couple of days after the announcement (e.g. McWilliams and Siegel, 1997; Ryngaert and Netter, 1990). The dependent variable for the CAR models was chosen as -5 to +5 days surrounding the announcement, as the above figure illustrates that a longer time frame would not yield any additional insight.

5.2.2 Subsample analysis

First analysis of the short-term model was done by dividing the full sample into various subgroups. Then the subsamples were analyzed using a one-sample t-test, which tested if the average short-term abnormal returns of the subgroups were significantly different from zero. The results are summarized in the table below (Table 3: Single sample t-test analysis for CAR).

Firstly, the abnormal returns of all acquisitions in the sample are not significantly different from zero with a slightly negative mean return, which is in line with basically all of the existing research (e.g. Datta et al., 1992; King et al., 2004). However, the returns from acquisitions of full companies are both negative (mean -0.66%) and significantly lower than zero ($p < 0.05$), whereas acquisitions of divestments have resulted in positive returns (mean 0.89%) which are significantly higher than zero ($p < 0.05$). These results support the first hypothesis.

In order to study other factors of interest, the sample was further divided into smaller subsamples. The first subgroup consisted of those divestiture acquisitions where the original divesting parent was also public, the second of those where the parent was both public and financially distressed (corresponds to hypothesis 3), and the third of acquisitions where relatedness between target and the acquirer was better than originally between the target and its parent (hypothesis 4). The mean acquirer returns in these groups were higher than with all divestiture acquisitions (2.04%, 3.47% and 1.83%), and statistically significant. These results also give support to hypotheses 3 and 4. Table 3 also shows that the mean abnormal return of strategic acquirers is not significantly different from zero, indicating that in the short run the investors do not make a difference between the long-term acquisition activity of the acquirer, or are unable to make this difference.

In order to check if the differences between the subgroups were also significant, the analysis was also complemented by running two-sample t-tests. The findings are summarized below (Table 4: Two sample t-test analysis for CAR).

Table 3: Single sample t-test analysis for CAR

Group	Cases in sample	Mean abnormal return (R_n)	Std. Err.	$p(R_n < 0)$	$p(R_n \neq 0)$	$p(R_n > 0)$
All acquisitions	1143	-0.25 %	0.003	0.217	0.435	0.783
Non-divestiture acquisitions	841	-0.66 %	0.004	0.047**	0.094*	0.953
Divestiture acquisitions						
<i>All</i>	302	0.89 %	0.005	0.951	0.098*	0.049**
<i>Parent public</i>	155	2.04 %	0.008	0.994	0.011**	0.006***
<i>Parent public and distressed</i>	30	3.47 %	0.018	0.966	0.067*	0.034**
<i>Improved fit (≥ 3)</i>	96	1.83 %	0.009	0.976	0.049**	0.025**
Strategic acquirers	677	-0.17 %	0.004	0.317	0.634	0.683

NOTES:

Dependent variable: Cumulative abnormal returns of acquirer [-5, 5] days around announcement

p-values tell the probability that the null hypothesis (in parenthesis) should be *rejected*

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

Table 4: Two sample t-test analysis for CAR

Group 1	Group 2 (control group)	n (Group 1)	n (Group 2)	Diff. in mean returns (R1 - R2)	p(diff < 0)	p(diff = 0)	p(diff > 0)
Divestiture acquisitions	Non-divestiture acquisitions	302	841	1.55 %	0.983	0.035**	0.018**
Divestiture acquisitions with public parent	Other divestiture acquisitions	155	147	2.38 %	0.987	0.026**	0.013**
Divestiture acquisitions with distressed public parent	Other divestiture acquisitions with public parent	30	125	1.77 %	0.808	0.384	0.192
Divestiture acquisitions with improved fit (≥ 3)	Other divestiture acquisitions	96	206	1.38 %	0.884	0.232	0.116
Acquisitions by strategic acquirers	Acquisitions by ad hoc acquirers	677	466	0.20 %	0.621	0.759	0.380

NOTES:

Dependent variable: Cumulative abnormal returns of acquirer [-5, 5] days around announcement
p-values tell the probability that the null hypothesis (in parenthesis) should be *rejected*

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

The results show that returns from divestiture acquisitions were significantly higher than returns from regular acquisition (mean difference of 1.55%), and that divestiture acquisitions where the parent was public were significantly higher than with a non-public divestor (mean difference 2.38%). The other two subgroups also yielded higher average returns than their peer groups, but the difference was not statistically significant. However, also these acquisitions yield higher average returns than either all acquisitions, or all acquisitions of stand-alone companies, and this difference is statistically significant. On the whole, the results further support hypotheses 1, 3 and 4. However, the credibility of the above findings can be lessened to some extent due to the rather small sizes of the subsamples, especially in the case of distressed parents.

5.2.3 Pairwise correlations

Table (Table 5: CAR models pairwise correlations) below shows the pairwise correlations between the variables. Note that the first variable is the dependent variable, followed by independent variables (2 to 6), and finally control variables.

The table shows that divestiture acquisition has the highest statistically significant correlation with the dependent variable. The correlations also give further support to the assumptions that the price of divestiture acquisitions is on average lower, and that the change in relatedness is improved. Interestingly, the figures also indicate that large companies and strategic acquirers bought on average more divestitures. It also shows that divestiture acquisitions were more often paid for by cash, as was expected.

The pairwise correlations table also reveals some collinearity between the independent variables. Although no correlation coefficients are very high (>0.5), multicollinearity may still affect the results. Post-estimation tests were conducted after the regression analysis to check for the possible bias resulting from collinearity, and are presented after the regression results below.

Table 5: CAR models pairwise correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Acquirer cumulative abnormal returns (-5 to 5 days)	1												
2 Target is a divestiture	0.062**	1											
3 Normalized price-to-sales multiple	-0.062	-0.254***	1										
4 Parent distressed	0.013	-0.106	-0.068	1									
5 Change in relatedness	0.012	0.460***	-0.031	-0.134**	1								
6 Strategic acquirer	0.009	0.185***	-0.020	-0.036	0.085***	1							
7 Normalized acquirer size	-0.051*	0.113***	0.080	-0.062	0.084***	0.277***	1						
8 International acquisition	0.035	0.033	-0.065	0.004	0.125***	-0.064**	0.075***	1					
9 Competed acquisition	-0.017	-0.008	0.010	0.078	0.003	0.055*	0.061**	0.005	1				
10 Acquisition financed by cash	-0.013	0.127***	-0.138**	0.135**	0.115***	0.144***	0.071**	0.010	0.150***	1			
11 Price disclosed at announcement	-0.028	-0.034	.	0.114**	0.085***	0.115***	-0.073***	-0.043	0.094***	0.390***	1		
12 Pre-March 2000	0.030	-0.124***	0.082	-0.230***	-0.017	-0.143***	-0.383***	0.004	-0.055*	-0.171***	-0.102***	1	
13 Public target	-0.024	0.395***	-0.040	.	0.346***	0.126***	0.181***	-0.008	0.157***	0.201***	0.249***	-0.029	1

NOTES:

* significant at 10%; ** significant at 5%; *** significant at 1%

5.2.4 Regression analysis

Finally, the hypotheses were tested by constructing regression models with the independent and control variables described in chapter 4. Results from these regressions are summarized in the table below (Table 6: Short-term CAR regression model results).

Table 6: Short-term CAR regression model results

Independent variable	Hypothesized direction	Model 1	Model 2	Model 3	Model 4a	Model 4b	Model 5
Target is a divestiture	+	0.021 (0.012)**	0.073 (0.004)***	0.056 (0.001)***	0.022 (0.013)**	0.019 (0.050)**	0.021 (0.023)**
Normalized price-to-sales multiple	-		0.006 (0.366)				
Parent distressed	+			0.011 (0.535)			
Change in relatedness (continuous)	+				-0.001 (0.641)		-0.001 (0.633)
Change in relatedness (binary)	+					0.004 (0.713)	
Strategic acquirer	+						0.009 (0.204)
Normalized acquirer total assets	+	-0.005 (0.035)**	-0.009 (0.204)	-0.012 (0.052)**	-0.005 (0.036)**	-0.005 (0.035)**	-0.005 (0.021)**
International acquisition	-	0.013 (0.134)	0.001 (0.976)	0.028 (0.145)	0.013 (0.124)	0.012 (0.140)	0.014 (0.105)
Acquisition financed by cash	+	-0.002 (0.854)	-0.015 (0.466)	0.004 (0.839)	-0.002 (0.862)	-0.002 (0.857)	-0.003 (0.812)
Competed acquisition	-	-0.009 (0.825)	0.001 (0.979)	0.003 (0.954)	-0.009 (0.816)	-0.008 (0.833)	-0.010 (0.798)
Price disclosed at announcement	+	0.000 (0.954)	(dropped)	0.005 (0.794)	0.001 (0.932)	0.000 (0.979)	0.000 (0.970)
Pre-March 2000	+	0.001 (0.894)	-0.037 (0.063)*	-0.006 (0.721)	0.001 (0.863)	0.001 (0.919)	0.001 (0.851)
Public target	-	-0.011 (0.220)	-0.025 (0.189)	(dropped)	-0.010 (0.258)	-0.011 (0.208)	-0.010 (0.284)
Acquirer SIC 7371	?	-0.036 (0.043)**	-0.018 (0.709)	-0.125 (0.007)***	-0.036 (0.046)**	-0.036 (0.042)**	-0.039 (0.033)**
Acquirer SIC 7372	?	-0.027 (0.070)*	-0.007 (0.8779)	-0.130 (0.002)***	-0.026 (0.084)*	-0.027 (0.071)*	-0.028 (0.062)*
Acquirer SIC 7373	?	0.010 (0.589)	-0.075 (0.195)	-0.077 (0.107)	0.010 (0.556)	0.009 (0.594)	0.010 (0.576)
Acquirer SIC 7374	?	0.001 (0.931)	0.018 (0.635)	-0.093 (0.024)**	0.002 (0.895)	0.001 (0.951)	-0.001 (0.967)
Acquirer SIC 7375	?	-0.003 (0.845)	0.017 (0.690)	-0.106 (0.014)**	-0.002 (0.905)	-0.003 (0.838)	-0.002 (0.915)
Acquirer SIC 7376	?	-0.023 (0.203)	(dropped)	-0.108 (0.018)**	-0.022 (0.220)	-0.023 (0.197)	-0.025 (0.175)
Acquirer SIC 7377	?	0.019 (0.592)	(dropped)	-0.042 (0.615)	0.020 (0.577)	0.019 (0.600)	0.016 (0.661)
Acquirer SIC 7378	?	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
Acquirer SIC 7379	?	(dropped)	0.057 (0.274)	(dropped)	(dropped)	(dropped)	(dropped)
Constant	?	0.031 (0.130)	0.069 (0.333)	0.141 (0.027)**	0.028 (0.185)	0.032 (0.126)	0.029 (0.181)
Number of observations		1143	197	220	1143	1143	1143

NOTES:

Dependent variable: Cumulative abnormal returns of acquirer [-5, 5] days around announcement

P-values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The first regression model includes only the control variables and a binary variable for divestitures, and the further models add more independent variables. As described earlier, the independent variables for price-to-sales ratio and parent distressed were only included separately in their own models due to lack of data. Also in all models some control variables were dropped due to high levels of collinearity, and are marked as (dropped).

The regression results show that in all models divestiture acquisitions have a positive effect on short-term returns for the acquirer. On average divestiture acquisitions have yielded approximately 2% higher cumulative stock market returns during the 11-day observation window. This effect is statistically significant at 5% level. In the two models with smaller samples, the results are even higher (7.3% and 5.6%) and significant at 1% level. These results strongly support hypothesis 1, stating that the post-acquisition performance of divestiture acquisitions is on average better than performance of acquisitions of stand-alone firms.

In model 2, sign of the effect of relative deal price is contrary to the hypothesis and logic (predicting higher returns when the paid price was higher), but the coefficient is very small and not statistically significant. On the other hand, the correlation between returns and price-to-sales multiple is in the hypothesized direction but statistically insignificant. Therefore, the model does not support hypothesis 2. Although the price-to-sales ratio of divestiture acquisitions is on average lower, it does not seem to have a large impact on the returns by itself. It can also indicate that the acquisition price has on average been “correct” from the investors’ point of view. The results were also tested after omitting one possible outlier, and the results were similar.

The third model tests the acquisition’s effect on returns when the parent is distressed. The sign of the coefficient is in the hypothesized direction, but not statistically significant. The model was also tested with a sample of only divestiture acquisitions, and the results were similar (not reported). Thus, the model does not support hypothesis 3.

Interestingly, however, in models 2 and 3 the effect of divestiture acquisition is significantly higher. This indicates that even though the price-to-sales and parent distress variables themselves do not seem to affect post-acquisition performance, they have a moderating

effect through the limitations they cause in the sample. Specifically, it seems that divestiture acquisitions have a higher return when (i) the price of a divestment is disclosed and it is a business unit with measurable sales (i.e. subsidiary), and (ii) the divestor is a public company.

Results for model 4a show that change in relatedness has a negligibly small and statistically insignificant effect on acquisition returns. Furthermore, besides a continuous variable ranging from -6 to 6, change in relatedness was also measured separately by a dichotomous variable that got value 1 if the change in relatedness was equal to or higher than 3. The results are reported in model 4b and are similar to those of model 4a. Hypothesis 4 receives no support from these models.

The last model tests if the returns are affected when the acquisition is done by a strategic acquirer. The results are not statistically significant, and therefore do not support hypothesis 5. This indicates that when assessing the value of an acquisition in short term, the investors in general don't pay attention to the long term rate of acquisitions done by the acquirer.

5.2.5 Short-term regression post-estimation

After the regression analysis, White's test for heteroskedasticity was used to estimate variance of the residuals (White, 1980). The tests show that the overall regression residuals are homoskedastic ($p < 0.01$).

The regression model was also tested for multicollinearity by calculating variance inflation factors (VIFs) for the independent variables (Hair, Black, Babin, Anderson and Tatham, 2005). The VIF estimation results are summarized in table below (Table 7: Variance inflation factors for the short-term model). The table shows that no major multicollinearity was present in the regression models, since VIF values of >10 are considered statistically significant. The highest VIF values were those of the SIC variables, which could be expected since they measure the same factor (acquirer sub-industry) and are by nature correlated with each other. That is, a firm can only belong into one sub-industry, and thus the binary variables for other SIC codes automatically receive the value zero.

Table 7: Variance inflation factors for the short-term model

Independent variable	VIF		
	Models 1, 4, 5	Model 2	Model 3
Acquirer SIC 7371	2.2	3.2	3.2
Acquirer SIC 7372	4.1	5.4	5.4
Acquirer SIC 7373	2.2	2.1	2.6
Acquirer SIC 7374	4.0	3.7	7.6
Acquirer SIC 7375	3.9	3.6	5.1
Acquirer SIC 7376	2.4	N/A	4.6
Acquirer SIC 7377	1.2	N/A	1.3
Acquirer SIC 7379	N/A	2.4	N/A
Acquisition financed by cash	1.3	1.2	1.3
Change in relatedness (cont.)	1.4	N/A	N/A
Competed acquisition	1.1	1.1	1.1
International acquisition	1.1	1.1	1.2
Normalized price-to-sales multiple	N/A	1.5	N/A
Normalized total assets	1.6	2.0	1.9
Parent distressed	N/A	N/A	1.1
Pre-March 2000	1.4	1.3	1.5
Price disclosed at announcement	1.4	N/A	1.6
Strategic acquirer	1.2	N/A	N/A
Target is a divestiture	1.6	1.5	1.3
Target/parent public	1.5	1.2	N/A
Mean VIF	2.0	2.2	2.7

NOTES:

VIF > 10 is statistically significant at 5%

5.3 Long-term performance models

5.3.1 Descriptive statistics

The table below (Table 8: Summary of variables in the panel model) presents summary statistics for the included variables. The total amount of firm-year pairs was 583. However, since a firm has to have existed for at least 3 years in order to calculate variables describing the moving window, the amount of observations for most of the variables decreased to 472.

Table 8: Summary of variables in the panel model

Variable	Observations	Mean	Std. Dev.	Min	Max
Percentage change in market value 3 years after window	583	0.464	2.366	-7.469	24.383
Percentage of divestiture acquisitions (3 yrs)	472	0.256	0.314	0	1
Percentage of acquisitions with distressed parent (3 yrs)	472	0.028	0.097	0	1
Acquisitions with improved average relatedness (3 yrs)	472	0.159	0.366	0	1
Strategic acquirer	583	0.621	0.486	0	1
Amount of acquisitions (3 yrs)	472	6.044	6.254	0	57
Normalized standard deviation of acquisition rate (3 yrs)	472	-0.023	1.238	-2.303	2.683
Normalized acquirer total assets before window	434	12.441	1.965	7.182	19.156
Percentage of international acquisitions (3 yrs)	472	0.156	0.248	0	1
Percentage of competed acquisitions (3 yrs)	472	0.008	0.046	0	0.5
Percentage of acquisitions with disclosed price (3 yrs)	472	0.444	0.372	0	1
Percentage of public targets (3 yrs)	472	0.214	0.244	0	1
Percentage of acquisitions financed by cash (3 yrs)	472	0.109	0.192	0	1
Pre-2000 window	583	0.612	0.488	0	1

The mean three-year market value change in the sample is 46.4%, which is fairly consistent with the relatively long time frame of 3 years, especially since during the included time span the economy has for the most part been growing. The minimum and maximum values are more extreme, especially the maximum market value increase of 2438%. However, the amount of extreme observations was low, with majority of the observations being normally distributed (Figure 12: Market value change histogram). Nevertheless, due to the high possibility of outliers, the analyses were also conducted after elimination of 7 outliers with a market value change of 1000% or more. The results were not significantly different, and thus are not reported in this paper.

On average the firms made 6 acquisitions during the three year observation periods, with the most active firm making as many as 57 acquisitions – on average 19 acquisitions per year. The average proportion of acquisitions of divestitures during the moving three year observation period was 25.6% – about the same as the overall percentage of divestiture acquisitions in the sample. The summary statistics also confirm that acquisitions from distressed parents were very rare (average 2.8% during the observation period), as are competed acquisitions (0.8% of acquisitions).

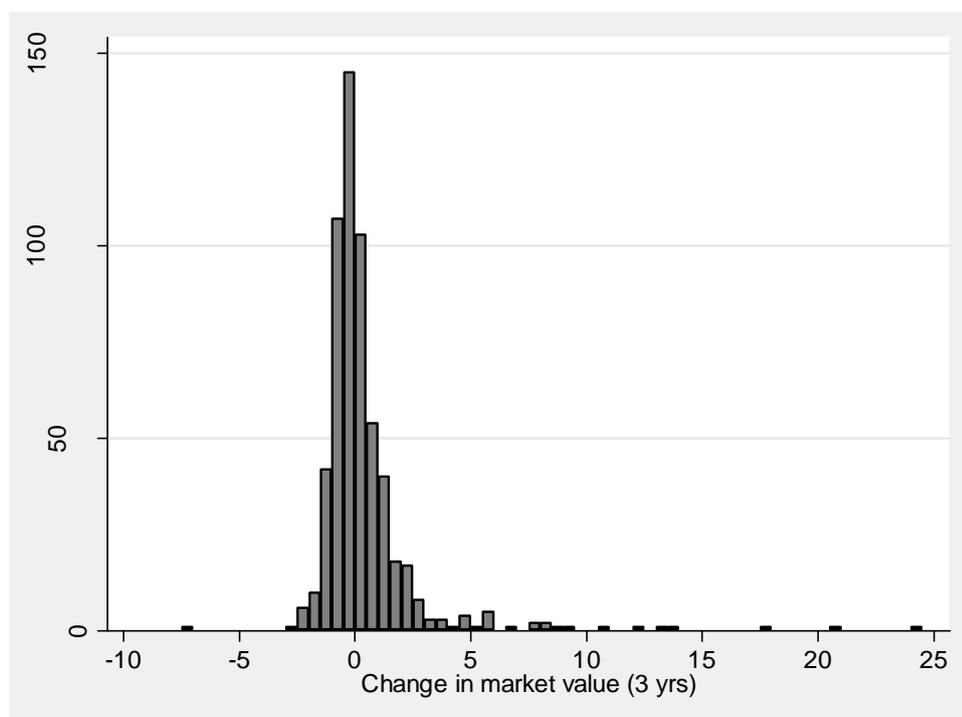


Figure 12: Market value change histogram

5.3.2 Subsample analysis

Similarly to the short-term models, first analysis of the panel model was done by dividing the sample into various subgroups and running two-sample t-tests on the dependent variable. The results of this analysis are summarized in table below (Table 9: Panel model subsample analysis).

In the subsample analysis active divestiture acquirers were defined as firms with above-average percentage of acquisitions divestitures during the observation period. Since acquisitions from public and especially distressed divestors were very rare, subgroups for these were defined as cases where the acquirer had bought at least one divestiture from a public and distressed parent during the observation period.

When a firm's divestiture acquisition targets during the three-year period on average resulted in improved fit, measured as an average change in relatedness of more than 3, the observation was included in the improved fit subsample. Finally, strategic acquirers were tested as a distinct subgroup.

The results in table 9 show that the long-term change in market value was around 32% higher for firms whose acquisitions during the past three years consisted of at least 25% divestiture acquisitions compared to firms with less than 25% divestiture acquisitions. This difference in the average market value change is statistically significant ($p < 0.05$), providing support for hypothesis 1.

The results also strongly support hypotheses 4 and 5, since the change in market value is statistically significant and higher for strategic acquirers (37%; $p < 0.05$) and when the average relatedness of the divested unit improved in the acquisition process (78%; $p < 0.01$).

The results show no significant difference in whether a divestiture was acquired from a public parent or not. Interestingly, however, there seems to be a negative effect if the divestiture acquisitions were acquired from a distressed public parent (-30%), although the result is only moderately significant ($p < 0.1$). Nevertheless, this result is in the opposite direction from hypothesized, contradicting hypothesis 3.

Table 9: Panel model subsample analysis

Group 1	Group 2 (control group)	n (Group 1)	n (Group 2)	Diff. in mean returns (R1 - R2)	p(diff < 0)	p(diff = 0)	p(diff > 0)
Over 25% of acquisitions during past three years were divestiture acquisitions	All other observations	186	286	32.19 %	0.985	0.031**	0.016**
During past 3 years the acquirer had one or more divestiture acquisitions where the divesting parent was public	All other observations	193	279	13.15 %	0.812	0.377	0.188
During past 3 years the acquirer had one or more divestiture acquisitions where the divesting parent was public and distressed	All other observations	62	410	-29.90 %	0.083*	0.167	0.917
During past 3 years the average relatedness of the acquired divestiture targets improved (avg. ≥ 3)	All other observations	186	397	78.40 %	1.000	0.000***	0.000***
Strategic acquirers	Ad hoc acquirers	362	221	37.84 %	0.970	0.061*	0.031**

NOTES:

Dependent variable: Change in market value 3 years after the study period

p-values tell the probability that the null hypothesis (in parenthesis) should be *rejected*

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

5.3.3 Pairwise correlations

Pairwise correlations for the variables in the panel model are reported in the table below (Table 10: Panel models pairwise correlations). First variable is the dependent variable, 2 to 5 are independent, and 6 to 14 are control variables.

The correlations show that, similarly to the short-term model, the percentage of divestiture acquisitions exhibit highest correlation with the dependent variable. Also the average difference in relatedness correlates strongly with the long-term market value. In general, the correlations do not significantly differ from those of the short-term model. Also in the panel model, it seems that large acquirers and strategic acquirers bought on average more divestitures.

The variables again show some multicollinearity, which may affect the results. However, the correlation coefficients are on average fairly low. Generally it is considered that if there are significant correlation coefficients above 0.8, multicollinearity may affect the results.

Table 10: Panel models pairwise correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Percentage change in acquirer market value 3 years after window	1													
2 Percentage of divestiture acquisitions (3y)	0.163***	1												
3 Percentage of acquisitions with distressed parent (3y)	-0.043	0.271***	1											
4 Acquisitions with improved average relatedness	0.155***	0.109**	-0.016	1										
5 Strategic acquirer	0.078*	0.236***	0.129**	-0.247***	1									
6 Amount of acquisitions (3y)	-0.098**	-0.131***	-0.061	-0.417***	-0.133***	1								
7 Standard deviation in acquisition rate (3y)	-0.083*	-0.109**	-0.043	-0.792***	-0.016	0.655***	1							
8 Normalized acquirer total assets before window	-0.165***	0.229***	0.071	-0.019	0.222***	0.031	0.020	1						
9 Percentage of international acquisitions (3y)	-0.059	0.097*	-0.075	-0.036	0.001	0.097*	0.099**	0.137***	1					
10 Percentage of competed acquisitions (3y)	-0.002	-0.059	0.002	-0.010	-0.005	-0.063	-0.111**	0.210**	-0.054	1				
11 Percentage of acquisitions with disclosed price (3y)	0.092*	-0.078	0.176***	-0.004	0.099**	-0.249***	-0.223***	-0.102**	-0.092*	0.043	1			
12 Percentage of public targets (3y)	0.037	0.425***	0.394***	0.050	0.166***	-0.003	-0.082	0.433***	0.033	0.221***	0.243***	1		
13 Percentage of acquisitions financed by cash	0.014	0.200***	0.352***	0.030	0.097*	-0.152***	-0.145***	0.177***	0.003	0.116**	0.430***	0.369***	1	
14 Pre-2000 window	0.066	0.001	-0.148***	0.265***	0.075*	-0.071	-0.127***	-0.199**	0.038	-0.056	-0.154***	-0.061	-0.211***	1

NOTES:

* significant at 10%; ** significant at 5%; *** significant at 1%

5.3.4 Panel regression analysis

Regression analyses of the long-term panel model were done using a random-effects regression with generalized least squares (GLS) estimation. The regression results are shown in table below (Table 11: Panel model regression results). In the table, models 1 to 4 use stepwise addition of new independent variables.

Table 11: Panel model regression results

Independent variable	Hypothesized direction	Model 1	Model 2	Model 3	Model 4
Percentage of divestiture acquisitions (3 yrs)	+	0.968 (0.001)***	1.034 (0.001)***	1.136 (0.000)***	0.871 (0.002)***
Percentage of acquisitions with distressed parent (3 yrs)	+		-1.871 (0.028)**	-1.893 (0.026)**	-2.323 (0.004)***
Acquisitions with improved average relatedness (3 yrs)	+			0.881 (0.033)**	1.375 (0.001)***
Strategic acquirer	+				1.004 (0.000)***
Amount of acquisitions (3 yrs)	-	-0.011 (0.507)	-0.012 (0.476)	-0.013 (0.431)	-0.010 (0.540)
Normalized standard deviation in acquisition rate (3 yrs)	-	-0.120 (0.164)	-0.117 (0.172)	0.053 (0.651)	0.226 (0.054)*
Normalized acquirer total assets before window	+	-0.252 (0.000)***	-0.263 (0.000)***	-0.266 (0.000)***	-0.294 (0.000)***
Percentage of international acquisitions (3 yrs)	-	-0.455 (0.182)	-0.561 (0.101)	-0.478 (0.164)	-0.632 (0.049)**
Percentage of completed acquisitions (3 yrs)	-	1.020 (0.524)	0.790 (0.621)	1.216 (0.448)	1.836 (0.236)
Percentage of acquisitions with disclosed price (3 yrs)	+	0.385 (0.168)	0.354 (0.203)	0.583 (0.051)*	0.455 (0.102)
Percentage of public targets (3 yrs)	-	0.006 (0.990)	0.292 (0.510)	0.346 (0.434)	0.415 (0.326)
Percentage of acquisitions financed by cash	+	-0.434 (0.338)	-0.261 (0.570)	-0.274 (0.549)	-0.158 (0.720)
Pre-2000 window	?	-0.212 (0.211)	-0.239 (0.157)	-0.218 (0.198)	-0.350 (0.028)**
Acquirer SIC 7371	?	-1.288 (0.089)*	-1.234 (0.100)	-1.363 (0.073)*	-1.187 (0.030)**
Acquirer SIC 7372	?	-0.893 (0.200)	-0.903 (0.190)	-0.985 (0.159)	-0.902 (0.065)*
Acquirer SIC 7373	?	-1.026 (0.180)	-1.050 (0.165)	-1.195 (0.120)	-0.859 (0.125)
Acquirer SIC 7374	?	-0.467 (0.509)	-0.506 (0.469)	-0.621 (0.383)	-0.549 (0.266)
Acquirer SIC 7375	?	-0.241 (0.732)	-0.253 (0.717)	-0.433 (0.544)	-0.188 (0.706)
Acquirer SIC 7376	?	-0.354 (0.627)	-0.323 (0.654)	-0.479 (0.515)	-0.268 (0.589)
Acquirer SIC 7379	?	-1.277 (0.084)*	-1.323 (0.070)*	-1.503 (0.044)**	-0.974 (0.072)*
Constant	?	3.948 (0.000)***	4.098 (0.000)***	3.966 (0.000)***	3.594 (0.000)***
Number of observations		434	434	434	434

NOTES:

Dependent variable: Percentage change in acquirer market value 3 years after window

P-values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

(SIC codes 7377 and 7378 dropped due to collinearity)

Hypothesis 1 is strongly supported by all models. The percentage of divestiture acquisitions during past three years has a significantly positive effect on the acquirer's long-term market value, with a 1%-point increase in the amount of divestiture acquisitions corresponding to an approximate 1% increase in long-term market value ($p < 0.01$).

Hypothesis 3 states that the performance of acquirers of divestitures is higher when the divesting parent has been financially distressed prior to the divestment. However, the results show that the effect in these cases is actually strongly negative. Thus, the results do not support hypothesis 3, but show an opposite effect to what was hypothesized. The possible reasons for this are discussed in the conclusions.

When the acquisitions have on average resulted in improved fit between the target and acquirer, the long-term market value is affected positively ($p < 0.05$). This result strongly supports hypothesis 4.

The results also show that the long-term change in market value is higher for strategic acquirers than ad hoc acquirers, supporting hypothesis 5. This indicates that companies which make acquisitions in a steady pace may perform better in the long run. Also noteworthy is that the short-term CAR of strategic acquirers was on average slightly negative (-0.17%), although not significantly different from zero. This discrepancy shows an interesting dilemma of acquisition performance: Multiple events that seemingly destroy value in the short term may actually have a positive effect on firm performance in the long run.

Analysis of the control variables also reveals some interesting results. Firstly, the total amount of acquisitions during the window, and the standard deviation in acquisition rate both have a relatively small effect on long-term market value, and the effect is not statistically significant. These results are contrary to other findings (Laamanen and Keil, 2008). It is possible that in software industry the "indigestion effect" of acquisitions is smaller due to e.g. intangibility of majority of assets making them easier to move between organizations. It is also very likely that a majority of the acquisition targets are smaller than in many other industries, which also decreases the impact on market value change. Unfortunately, size of the targets could not be controlled in the models due to lack of publicly available data.

Also interestingly, acquirer size, measured as its normalized total assets prior to the three year moving window, has a negative effect on long-term market value. The finding indicates that acquisitions by large companies have a negative effect on market value compared to acquisitions by smaller firms. This corresponds to the results of the short-term CAR model in this paper, but is also contrary to the initial assumption. One possibility is that large firms on average acquire larger targets, and pay more for these targets.

Another possibility could be that for very large software firms, new acquisitions become more difficult to integrate due to e.g. the existing development processes. Another, somewhat more likely reason could be that the firms with initially high total assets are overvalued, and acquisitions by these firms results in decreased long-term value as the overvaluation is corrected. The problem is mainly induced by the choice of used variable, since total assets include also intangible assets such as goodwill, and in software industry these assets can comprise a major share of total assets. One possibility to check for this would be to use e.g. the amount of personnel as an alternative proxy for firm size and see if the results differ. Personnel size would omit the possibility of overvaluation, but also has other weaknesses, e.g. amount of personnel can differ depending on the firm's business model or degree of outsourcing.

For acquisitions made prior to the year 2000, the long-term performance effect is negative and statistically significant in model 4. The outcome is most likely affected by the dot-com boom, since the majority of acquisitions undertaken during this era were in reality value-negative, reflecting bad acquisition decisions. During the dot-com boom investors viewed nearly all high-tech acquisitions positively, as confirmed by the short-term CARs during the period (Uhlenbruch et al., 2006; Moeller et al., 2005), although their real effect on firm value was in fact negative. When this difference became evident, the market corrected itself, which shows as a negative long-term return.

The only sub-industries with statistically significant effects on long-term acquisition performance are SICs 7371 and 7379, both showing significant negative long-term returns. However, the amount of companies included in the sample is small, and therefore the sub-industry results might be affected by only one or two firms. Therefore, the only real conclusion that can be made from the sub-industry variables is that no industry seems to

exhibit significantly better performance than the other, since all industry coefficients are negative.

5.3.5 Panel regression post-estimation

Besides random effects estimation, panel models can be estimated using fixed effects. Fixed effects models are essentially stricter in terms of multicollinearity, but random effects models have generally better statistical significance. In general, fixed effects should be used if the results from these two are significantly different. To test for the feasibility of the random effects model versus fixed effects model, the Hausman test was used. The results show that the regression coefficients given by the random and fixed effects models are not different from each other ($p < 0.01$), and thus using the random effects model is justified.

6 Discussion and conclusions

6.1 Summary of the results

In this study the 5 hypotheses presented in chapter 3 were tested using two different regression model constructs. The short-term performance of individual acquisitions was studied using event study methodology (MacKinlay, 1997). In addition, the long-term performance of acquiring firms was studied by a panel model. Both models were tested using t-tests of means, and multivariate regression. In both cases the main focus was to study the contribution and effect of different variables to acquisition performance. The results are summarized in table below (Figure 12: Market value change histogram).

Table 12: Summary of results

Hypothesis	Short-term CAR models		Long-term panel models	
	Subgroup analysis	Regression analysis	Subgroup analysis	Regression analysis
1 Divestiture acquisitions have above-average performance	Supported	Supported	Supported	Supported
2 Low deal price of divestiture acquisitions improves acquirer performance	Not applicable	Unsupported	Not applicable	Not applicable
3 Divesting parent's financial distress improves acquirer performance	Partially supported (very small sample)	Unsupported	Opposite supported	Opposite supported
4 Improvement of target relatedness improves acquirer performance	Supported	Unsupported	Supported	Supported
5 Strategic acquirers have above-average performance	Unsupported	Unsupported	Supported	Supported

The first hypothesis regarding the above-average performance of divestiture acquisitions in general is also the base proposition of the whole study. It is supported by all analyses. Thus, divestiture acquisitions are shown to contribute positively both to the acquirer's short-term returns and long-term market value.

The second hypothesis receives no support from the data. Descriptive analysis shows that on average divestiture acquisitions have lower price-to-sales ratios, but the actual value has no effect on acquirer performance. However, price-to-sales data was only available for a small segment of the total sample, which is a major shortfall regarding this analysis. For this reason the hypothesis also couldn't be tested by the panel models.

Also analyses of the third hypothesis had a problem regarding data availability, since financial distress could only be determined for public divestors. The subgroup analysis of short-term

returns supports the hypothesis, albeit with a sample size of only 30 observations which is too small to make any real inferences.

What is interesting, though, is that the long-term models show an effect that is opposite to what was hypothesized. This indicates that buying divestitures from financially distressed firms affects the acquirer's long-term performance negatively. It is possible that this finding is also attributable to the small amount of observations.

On the other hand, the result may also be entirely correct. The underlying proposition has two main issues: Price of the divestiture which should be lower when buying from a distressed parent, and performance of the divested unit or asset since improving asset efficiency should yield positive returns. Thus, it is possible that the price is in reality not lower, and/or the acquirer is unable to turn around a poorly performing unit. The effect can also be industry specific. In software industry most of a firm's assets are intangible (e.g. human resources), and turning around poor performance of these assets could be more difficult than with tangible resources.

It would be interesting to study the performance of the divested target before and after the acquisition, and what was the actual cause of the parent's distress, i.e. was the distress caused by the divested unit or something entirely else. Also determining the transaction prices when the divesting parent is financially distressed would be important. However, data regarding the actual target is for the most part not publicly available, which prevents further study in this paper. Altogether more research on this subject would be required in order to make any solid conclusions.

The fourth hypothesis is supported by most of the analyses. In the short-term model its effect is only partially supported, whereas in longer term it seems to have the strongest effect on the acquirer's market performance. Thus, the results strongly indicate that acquiring core-related assets that are not strongly related to the divesting firm's business is highly profitable in the long run.

Since the focal industry is the software industry, the above case essentially refers to a software company acquiring a non-software firm's software development unit or parts of it. In the software industry one key competence is software development capability. Since

software development and software engineering are also highly complex tasks, it is likely that these software capabilities are not as highly developed in the original non-software parent, and therefore the software development unit may have been inefficiently managed.

On the other hand, the target may have various resources that are valuable to the acquirer, e.g. access to various resources, personnel, or strong knowledge of the parent's industry. The last is actually becoming more and more important as software firms increasingly customize their products to the needs of specific industries (vertical software) instead of offering a generalized product (horizontal software). Thus, the acquirer and target offer each other highly complementary resources. This kind of transfer of resources in both directions between the acquirer and target has been shown to improve post-acquisition performance (Capron and Pistre, 2002).

Finally, hypothesis 5 is supported by the long-term models, but not by the short-term models. This indicates that strategic acquirers are able to outperform ad hoc acquirers in the long term. However, lack of support from the short-term model is can be expected, since a strategic acquirer makes acquisitions as part of a bigger plan and therefore it is very difficult to determine the value implication of a single acquisition in the program. As a metaphor, the acquisition program can be considered as a puzzle consisting of multiple pieces (i.e. acquisitions). By merely looking at a single piece of the puzzle one cannot really tell what the puzzle actually looks like. Furthermore, the results most likely also indicate that when considering individual acquisitions, investors can be unable to distinguish between acquisitions made by strategic and ad hoc acquirers.

6.2 Limitations of the study

6.2.1 Generalizability

The largest limitations to generalizability stem from the scope of this study. First, the decision to include only a total of 60 acquirers that have made 10 or more acquisition during the observation period was rather arbitrary. Therefore, the results are directly applicable only to very active acquirers, although this is justifiable since the overall focus in the first place was to concentrate on this group of firms. Especially the methodology used in the long-term

acquisition program perspective became meaningful only after a suitable amount of acquisitions were made by the focal firms.

The decision to limit the amount of acquirers in the sample may also affect the results through selection bias. That is, because the included sample is non-randomly selected from the whole population, also the generalizability of the results is limited.

Another limitation is the inclusion of acquisitions made only by public US based companies in the sample. This was necessary in order to ensure data availability, but does create a limitation in applying the results also to private firms, and companies outside the US. For example, the economic and regulatory environments of different nations might affect the studied issues.

Thirdly, the focal industry under study was software industry, and thus the findings are directly applicable only to acquirers in that industry. This mitigates the potential confounding effect of uncontrolled cross-industry differences, but also limits the study's external validity. It is also possible that especially in software industry the periods 1999-2000 may bias the results, even though this period was controlled to some degree.

6.2.2 Methodology

The triangulation by using two different and complementary methodologies – short-term cumulative abnormal returns (event study) and long-term market value change – increases the general credibility of the findings. However, both methodologies also have certain potential limitations.

First of all, the event study methodology assumes that investors are able to correctly assess the value implications of an event (in this case an acquisition) in a relatively short amount of time. However, as argued in chapter 4.4, this proposition might not always hold true. This is also indicated by the findings in this paper, which show that short-term returns to strategic acquirers are not significantly different from zero, although the long-term effect is significantly positive.

On the other hand, similarly to the study by Laamanen and Keil (2008), the long-term models cannot unambiguously show causality between the studied phenomena. That is, the

superior performance of certain companies might be due to some entirely unobserved factors instead of the suggested, e.g. simply a better overall strategy. This problem is exacerbated by the relatively small amount of 60 firms included in the study.

6.2.3 Variables

The included variables may cause some bias in the results. Relatedness is an issue that is shown to be exceptionally hard to operationalize. The measure used in this study calculates similarity based on the industries where the firms operate. However, the fact that two companies operate in the software industry does not necessitate similarity between the firms, since they might possess very different resource bases, management styles, corporate cultures or corporate strategies. However, industry-based classification has been used extensively in the past, and has also been shown to be a relatively good measure on a high level of abstraction. SIC codes also provide an unambiguous, standardized, and easily available measure.

On the other hand, SIC codes are also a fairly old classification scheme. Therefore, it is possible that the classification of relatively new industries – such as the software industry – is not entirely accurate, although the classification is used also in many previous studies.

Acquirer's total assets were used as a proxy for acquirer size. In hindsight, the construct validity of this variable can be somewhat lacking, inflicting a bias in the results. The problem, as discussed earlier, is that total assets include also intangible assets. In software companies intangible assets commonly constitute a major part of total assets, and especially during the dot-com boom these assets were extremely overvalued. Therefore, total assets may not be the best possible proxy for firm size in software industry, and in further studies also alternative variables to measure firm size should be examined.

Another variable that could be examined in more detail is the one for parent distress, and this along with small sample size might be one cause for the lack of support for the third hypothesis. This study measured distress as the change in a company's net income and return on invested capital, and defined distressed companies as those who had a two-year consecutive decline in both, or when both were negative for two previous years. However, although it measures operational distress, this might not be a valid indicator for financially

constrained firms. Therefore, in further studies other measures should be tested as well. For example, a simultaneously low level of current ratio and high level of leverage ratio (e.g. debt-to-equity) would probably better measure the firm's financial situation.

Lack of data also presented a major problem, which affected testing two of the hypotheses. The main dilemma is that in a large-scale empirical study one has to make a trade-off between the marginal benefit of adding more accurate data, and the marginal cost of data extraction. In this case, adding more data would have required a tremendous effort since most of the data is private to the companies making the acquisitions, which were also usually undertaken many years ago. Dropping the missing data out of the study is a big limitation and creates a bias. However, in order to study the phenomena in question more thoroughly, another type of research setting is needed (e.g. survey method).

Finally, it is also possible that some relevant variables were left out of the research model. This may have an effect on the results, since these uncontrolled factors may be important explanatory variables, and their effect might be transferred to other included variables. In most cases the omission of variables was due to unavailability of data. For private firms and divestitures most of the required data is simply not available (e.g. transaction price is often kept confidential), and obtaining this data is usually nigh impossible.

6.3 Implications and further research

6.3.1 Implications for practitioners

For managers in software firms this study gives some perspective on what kinds of acquisitions are more profitable. In general it shows that, when possible, acquisitions of divestitures should be considered as a viable alternative. This is especially true when the target is a software unit of a non-software company. Firms in other industries will most likely benefit from divestiture acquisitions similarly, but in these cases the managers should also include their own judgment regarding factors specific to their industry.

At the same time this study asserts the oft-cited advice to analyze any acquisition and the motives behind it thoroughly before making one. If not well planned and executed, divestiture acquisitions are just as prone to destroy value as are other acquisitions.

Similarly to recent research on acquisition programs, this paper departs to some extent from the prevailing view of considering acquisitions as individual phenomena. Instead, it suggests that acquisitions should be viewed in a more long-term scope, and they should be more closely linked to the firm's overall strategic plan and behavior.

6.3.2 Implications for research

This study contributes significantly to the scientific body of knowledge. One of the most elusive topics in M&A research has traditionally concerned the factors that drive acquisition success. In a way, it seems that researchers have generally been looking at the wrong set of descriptors.

First of all, the majority of extant research attempts to find factors that are generalizable across industries and firms. However, it seems that by far stronger predictors are related to the choice of acquisition target. This was in part shown by Capron and Shen (2007) for private firms as acquisition targets, and now similarly for divestiture targets. Therefore, researchers should pay much closer attention to various subsets within the whole bulk of acquisitions, instead of over-generalizing. Also aggregation over industries should be considered more closely. It seems that in reality acquisitions, and consequently their success factors, are a much more heterogenic set than previously thought.

However, much more research is needed, both in identifying these various subsets, and in acquisitions of divestitures alone. Firstly, the effect of parent distress was left fairly ambiguous in this study. Furthermore, other underlying factors should be studied in order to better understand the dynamics of divestiture acquisitions. For example, how does the motivation to divest actually affect the deal process, acquisition price, etc.? Are there major differences in post-acquisition integration of divestitures compared to "regular" acquisitions? For example, divestments first have to be dis-integrated from the parent both organizationally as well as legally, and this may have significant effects on long-term performance. Also an interesting area of study would be the transfer of resources between the acquirer and the divestiture target, how these resources complement each other, and how this translates to acquirer performance.

Another shortcoming of a lot of existing studies is that they almost invariantly focus on single acquisitions, and disregard any interdependency between these individual acquisitions. The emerging view of strategic acquisition programs, however, shows that although individual acquisitions may create negative returns, their long term contribution might be significantly positive and therefore a very valid strategy.

Also the propensity of existing studies to use the event study methodology alone to assess acquisition performance can be criticized. An event study measures the short-term opinion of investors, nothing more and nothing less. However, as this study shows, the value contribution of some factors is only visible in the long term. Therefore, more variability in acquisition research methodology is called for.

The acquisition program perspective is fairly new, and as suggested by Laamanen and Keil (2008), a lot more is to be researched. Regarding the topic of this study, the most interesting and also extensive research area would be to integrate research in the three interrelated topics – diversification, acquisitions, and divestments – and extend the acquisition program perspective into a comprehensive ‘portfolio reconfiguring program’ framework.

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