

Differences in Operating Performance

A Study of Primary and Secondary Buyouts

Gustaf Nyrén¹ Arvid Åsbrink²

Bs. c. Business and Economics Bs. c. Business and Economics
Stockholm School of Economics Stockholm School of Economics

ABSTRACT

We analyze differences in operating performance between primary and secondary buyout companies and investigate what drives performance for buyout companies in general. Previous studies have mainly focused on the latter. Our sample includes 50 primary buyout companies and 22 secondary that have been exited during the period 1998-2008 in Sweden. The results of our study indicate that primary buyout companies on average perform better than secondary. However, these results are not significantly conclusive. Furthermore, we have managed to establish a significant difference in the level of debt financing between the two types of buyouts. This was found to have a significant impact on explaining operating performance in terms of EBITDA margin. Other variables of significance in our estimated operating impact model are wage levels and labor input.

¹ 20863@student.hhs.se

² 20590@student.hhs.se

Bachelor's thesis in Accounting and Financial Management

Tutor: Håkan Thorsell

Dissertation: May 29th 2009, 00:00

Acknowledgements: Firstly, we would like to thank our tutor, Håkan Thorsell, for his valuable support during our study. We would also like to thank Claes Bergström for helpful discussions and input.

Index

1. Introduction	3
1.1 Purpose and Contribution.....	4
1.2 Definitions and Delimitations	5
1.3 Outline.....	6
2. Theoretical and Empirical Framework	6
2.1 Financial Engineering and Market Timing.....	6
2.2 Reduction of Agency Costs.....	7
2.2.1 Benefits of Debt	7
2.2.2 Improved Incentives	7
2.2.3 Monitoring and Control	8
2.3 Improvements in Operational Efficiency	8
2.3.1 Restructuring.....	8
2.3.2 Performance at the Expense of Stakeholders.....	9
2.3.3 Growth	10
2.4 Secondary Buyouts.....	10
3. Hypotheses.....	10
3.1 Operating Performance	10
3.2 Leverage.....	11
3.3 Capital Expenditures	11
3.4 Working Capital.....	12
3.5 Stakeholders	13
4 Method and Data Description.....	13
4.1 Operating Performance Measures.....	13
4.2 The Event	15
4.3 Working Capital Management and Capital Expenditures.....	16
4.4 Leverage.....	17
4.5 Wage and Labor	18
4.6 Explanatory Model for Operating Impact	18
4.6.1 Dependent Variables.....	18
4.6.2 Independent Variables.....	19
4.7 Description of our Sample and Selection Criteria.....	19

4.8 Selection of Peer Groups	20
4.9 Outliers.....	21
4.10 Descriptive Statistics	22
5. Results and Analysis	24
5.1 Operating Performance	24
5.2 Working Capital Management, Capital Expenditures, Labor and Wage.....	27
5.2.1 Working Capital Management	28
5.2.2 Capital Expenditures	29
5.2.3 Wage & Labor	30
5.3 Leverage	30
5.4 Operating Impact Regression Model	31
5.4.1 Capex.....	31
5.4.2 Wage	31
5.4.3 Labor	32
5.4.4 Working Capital Turnover	32
5.4.5 Leverage	32
5.4.6 Vendor.....	33
6. Summary & Conclusion	33
7. References	36
Appendix A - Primary Buyouts in Sample	39
Appendix B - Secondary Buyouts in Sample	40
Appendix C - Test of Data Sets Properties	40
Multicollinearity.....	40
Heteroscedasticity	40
Appendix D - Supplementary regressions.....	41
Estimation of Operating Impact Regression Model, ROIC.....	41
Estimation of Operating Impact Regression Model, Sales Growth	41

1. Introduction

The private equity industry and the leveraged buyouts in which they invest first emerged in USA in the 1980's and reached a peak with Kohlberg Kravis & Roberts buyout of RJR Nabisco for USD 25 billion in 1989. However, as the junk bond market collapsed, a significant amount of leveraged buyout companies defaulted and went into bankruptcy. As a consequence, the private equity market nearly vanished during the 1990's (Kaplan and Strömberg, 2008).

In the 2000's, private equity firms and their leveraged buyouts have once again been an important phenomenon within the field of corporate finance. This second buyout wave reached a global scale with Western Europe accounting for 48.9 percent and USA for 43.7 percent of total leveraged buyout transaction value in the period of 2000-2004 (Kaplan and Strömberg, 2008). Financial Times estimated that private equity deals accounted for 20 percent of worldwide mergers and acquisitions in 2006 (Axelson et al., 2007). Furthermore, global leveraged buyout debt issuance increased heavily from USD 71 billion in 2003 to USD 669 billion in 2007 (Boston Consulting Group et al., 2008).

However, the ongoing financial crisis has led to a tremendous decrease in private equity fund raising as well as the amount and value of private equity deals. An evidence of that is the fact that only USD 6 billion were raised for the debt financing of leveraged buyout deals in October and November 2008 in Europe and USA together (Boston Consulting Group et al., 2008). As much as 20-40 percent of the world's 100 largest private equity firms could go out of business within two to three years according to Boston Consulting Group et al. (2008). However, there is strong evidence suggesting that the private equity industry experiences boom and bust cycles (Kaplan and Strömberg, 2008). As the market for leveraged buyouts has almost vanished and then reappeared before, it is reasonable to believe that the private equity industry is here to stay and will remain an important asset class.

The Swedish market for leveraged buyouts emerged in the late 1980's with the founding of Procuritas in 1986 and Industri Kapital and Nordic Capital in 1989. In 2007, Sweden had the third largest private equity market in the world, measured as investments as a percentage of GDP (Bergström et al., 2007). Swedish private equity funds raised approximately SEK 130 billion and private equity investments amounted to SEK 100 billion in 2006-2007 (Carlbom, 2009). Thus, the private equity market plays a major role in the Swedish corporate landscape, even though the Swedish market at the moment is experiencing the same downturn as in the rest of the world.

As the private equity industry has grown in importance in Sweden, it has also received an increasing amount of media attention. At the moment there is an ongoing debate on whether the private equity companies actually manage to increase the performance of their portfolio companies or if they earn high returns and create personal wealth through high leverage levels, without taking responsibility for their actions in an economic recession (Carlbom, 2009).

The emergence of secondary buyouts¹ is a relatively new phenomenon, which has experienced significant growth in the 2000's. In the period of 2000-2004, they accounted for more than 20 percent of total transaction value and the share continued to grow throughout 2005-2007 (Kaplan and Strömberg, 2008). Secondary buyouts have even become the second most frequent exit for a

¹ A secondary buyout refers to the situation where a private equity firm acquires a portfolio company of another private equity firm.

leveraged buyout, with 24 percent of the share. The most common type of exit is a sale to a non-financial buyer (38 percent) and the third most common way of exit is an initial public offering (Kaplan and Strömberg, 2008). However, there has not been much research conducted on the rationales behind secondary buyouts. As we will elaborate further on in section 2.4, if traditional leveraged buyout theory holds, there should not be much room left for operating performance improvements for secondary buyouts.

There is a vast amount of research focusing on returns to private equity funds as well as the operating performance of their portfolio companies. A majority of them conclude that the operating performance for leveraged buyouts is improved during the holding period (Cumming et al., 2007). However, there are critics who argue that private equity firms only earn high returns through financial engineering², decreasing capital expenditures for boosting short-term profits or at the expense of employees who have to suffer from wage reductions or layoffs (Kaplan and Strömberg, 2008). Others argue that they are good at timing the market, i.e. buying when companies are valued low and selling when they are valued high (Kaplan and Strömberg, 2008).

None of the works written on the operating performance of private equity portfolio companies focus on secondary buyouts. We therefore consider it to be a highly relevant topic to investigate. A recent study in Sweden performed by Bergström et al. (2007) Investigates, among other things, if operating performance differs between primary and secondary buyouts.

The authors hypothesized that primary buyout companies would show larger improvements in operating performance than secondary, but did not find any evidence supporting this theory. However, we have a larger sample of secondary buyouts, since there have been several such exits in the last couple of years, which motivates further research on differences in operating performance between primary and secondary buyouts.

1.1 Purpose and Contribution

The purpose of this thesis is to establish if secondary buyouts manage to increase the operating performance relative to their peers and if this possible performance improvement differs from the improvements³ of the primary buyout companies. Our comparison of buyout⁴ companies will constitute of different measures of operating performance and factors that we believe affect operating performance. After having carried out the comparison, we will test how good the variables that we have defined are at explaining our definition of operating performance. This is performed through a regression analysis. By completing these two steps, our hope is that we can help explain differences or similarities in operating performance between primary and secondary buyouts, something which has not been exhaustively analyzed in the previous empirical literature.

² In the case of private equity, financial engineering refers to creating returns for investors by heavily increasing the debt burden of a portfolio company (Private Equity Council, 2007; Carlbom, 2009). It is one of the factors that have most often been accredited for value generation in leveraged buyouts.

³ Our sample of primary buyouts is similar to the one used in Bergström et al. (2007) (see section 4.2), resulting in the assumption that primary buyouts increase the operating performance relative to its peers.

⁴ A buyout performed by a private equity company is most often followed by an increase in leverage. We will therefore use the terms buyout and leveraged buyout interchangeably.

Our main contribution is that we are writing a thesis that puts special emphasis on secondary buyouts, whereas most research regarding leveraged buyouts does not take the type of buyout into consideration. Consequently, we hope to be able to help fill this gap. If we can establish that there are in fact still operating performance improvements to be made in secondary buyouts, this will help us understand why these types of deals have increased in recent years. We believe that a good way to do this is to focus on differences in operating performance between primary and secondary buyouts.

Moreover, we hope to contribute to the understanding of drivers behind improved/good operating performance by constructing a regression model, in which we include some measures that we have not seen tested together before in other studies on leveraged buyouts.

1.2 Definitions and Delimitations

We have defined a buyout as the acquisition where one or more private equity companies reach an ownership of over 50 percent of the shares in another company.

The most crucial definition for the outcome of this thesis is the one of a “secondary buyout”. It is not clear-cut how this term should be defined. As Bergström et al. (2007) have acknowledged, there is a degree of discretion in determining the type of buyout. We have decided to use the simplest definition of a secondary buyout, i.e. the situation where one private equity company acquires a firm from another private equity company. The reason for doing so is that it can be difficult to distinguish between divisional buyouts and secondary buyouts. This problem arises when there are synergies between holdings in the previous holding period. There has not been any apparent such case that we have encountered, but we cannot be entirely sure that there does not exist such a company within our sample.

We have delimited our study to the Swedish market, and more specifically to the Swedish buyout market with companies that have been exited between 1998 and the first half of 2008. One major reason for limiting the study to Sweden is the fact that there is extensive data on unlisted companies that is unique in an international perspective. All Swedish financial institutions and joint-stock companies have to provide the Swedish Companies Registrations Office with audited annual accounts according to Årsredovisningslagen (1995:1554 8 sec. 3 §) and Bokföringslagen (1999:1078 6 sec 2§), all of which are made public.

There are parts of the theoretical framework that will follow in section 2 that we will not investigate. We have decided not to study financial engineering or market timing. The reason for this is that even though such phenomena can, for certain, generate value for equity holders, it does not create value for the society as a whole. As this thesis focuses on differences in operating performance between primary and secondary buyouts, it is not a matter that we have studied.

We have also decided not to study the possible benefits of an increased management ownership or the incentive programs that are often implemented in a buyout company (see for example [Muscarella and Vetsuypens, 1990]), even though there is a rather extensive theoretical foundation on the subject. The reason for why we have decided not to do so is twofold. One is that it is hard to quantify impacts of such incentive programs, particularly as we did not have access to data on management ownership. Moreover, Bergström et al. (2007) investigated this

matter without finding any support for significant explanatory power of increased management incentives on operating performance, and since our sample is similar to theirs, we see no reason for including it in our study. The same applies to the notion of market timing.

Finally, it was our intention to study the impact of changing members of the board of directors. However, this impact is not easy to quantify. We created a dummy variable taking the value of 1 if 50 percent or more of the members of the board of directors were new elections the year after a buyout and taking the value of 0 if less than 50 percent were new elections. However, we had severe difficulties with finding data for that. In the end, we were able to find data on approximately half of our sample, implying that we would not be able to draw any conclusions with regard to differences between primary and secondary buyouts. Therefore, we decided not to use that variable.

1.3 Outline

Section 2 focuses on theory and previous research performed on leveraged buyouts. This section outlines the theoretical and empirical foundation on which we base our hypotheses, which are presented in section 3. Thereafter, we will present our data sample and the method we have used for testing our hypotheses in section 4. Section 5 contains our results and analysis, while concluding remarks can be found in section 6.

2. Theoretical and Empirical Framework

2.1 Financial Engineering and Market Timing

It is common knowledge that private equity firms use an extensive amount of debt for financing their buyouts. That is why they are called leveraged buyouts. In Axelson et al.'s (2007) study, the average buyout deal was financed with 75 % debt. In another study performed by Kaplan (1989b) the median ratio for the post-buyout debt to total capital ratio equaled 88.4 %.

According to Miller and Modigliani (1958), the only benefit of optimizing the capital structure (through an increased debt burden) is the debt tax shield that is created. The increased debt creates interest payments, which shields the company from taxes on earnings. This tax shield has a positive impact on cash flows. The lower taxes imply a higher net income than for an all equity financed company, leading to a higher return for equity holders. The debt tax shield is often quoted as an important source of value generation in leveraged buyouts (see for example [Kaplan, 1989a]).

Another type of value generation refers to private equity firms' ability to generate returns by exploiting differences in external circumstances that affect the valuation of a portfolio company, unconditional on the company's performance. This can be carried out by acquiring a company when public markets value an industry with low multiples and then divesting the company when external factors have changed so that the valuation multiples have increased. Such a strategy is most often referred to as market timing (Kaplan and Strömberg, 2008). However, Bergström et al. (2007) do not find evidence for such market timing.

2.2 Reduction of Agency Costs

2.2.1 Benefits of Debt

Jensen (1986a) outlines the benefits of debt for reducing agency costs of free cash flow. He defines free cash flow as the cash flow that is available when all positive net present value projects have been funded, taking the appropriate cost of capital into account. The agency costs arise when managers decide to invest the cash flows at a return that is lower than the cost of capital, i.e. to destroy value, instead of paying out the cash to investors. The free cash flow must be paid out to shareholders if a firm is to be run efficiently and in order to maximize shareholder value (Jensen 1986b).

When a firm takes on debt, managers are obliged to pay out future cash flows, thereby reducing the amount of free cash flows that can be spent on inefficient investments within the firm (Jensen 1986a; Stulz, 1990). Therefore, the debt functions as a motivating force: managers have greater incentives to run the firm efficiently in order to avoid default (Jensen, 1986a).

However, it should be noted that there are also negative aspects of the increased debt burden. It clearly increases the probability of bankruptcy for the firm. A highly levered firm becomes more sensitive to unforeseen market and macro shocks, which increases the probability of failure (Singh, 1990). Moreover, debt might lead to underinvestment costs (Stulz, 1990); a firm might choose not to invest in positive net present value projects if it is in financial distress. This is referred to as a debt overhang (Berk and Demarzo, 2007).

Palepu (1990) finds that leveraged buyouts appear to have two divergent effects on firm risk. The leverage increases the firms' financial risk, as could be expected. However, the business risk of the firm is reduced at the same time, as a consequence of changes in organizational structure and strategy. Consequently, Palepu (1990) concludes that leveraged buyout company investors bear less risk than if they would have invested in a similarly levered public firm.

2.2.2 Improved Incentives

Another well-known agency cost arises when there is misalignment between management and owners of a firm (Berk and Demarzo, 2007; Jensen and Murphy, 1990). In a leveraged buyout, this misalignment conflict can be solved more easily.

In a typical buyout, managers are encouraged or forced to acquire a significant equity stake (Muscarella and Vetsuypens, 1990). According to Kaplan (1989b), management ownership increases fourfold in the average leveraged buyout. Hence, the personal costs of inefficiency increase, which reduces managers' incentives to shirk (DeAngelo et al., 1984). Moreover, a larger equity stake implies an incentive for managers to work harder and to increase company earnings. With a larger equity stake, a manager gains more from each value-increasing move that is undertaken, which leads to better operating and investment decisions.

The large equity investment almost always implies a large undiversified stake for the managers in combination with the importance of keeping the job (Thompson et al., 1990). Consequently, management incentives are strengthened in two ways. Moreover, the increased managerial equity stake is often combined with new motivation and compensation systems for all employees in order to align employee incentives with company goals (Easterwood et. al., 1989; Muscarella and Vetsuypens 1990). Furthermore, the fact that the equity stake is illiquid (it is hard to sell an

equity stake in a non-listed company) implies that there are less incentives for managers to manipulate short-term earnings (Kaplan and Strömberg 2008). The equity stake cannot be sold unless there is an exit transaction. However, there is a chance that firms where management holds a large equity stake underperform as a consequence of managerial risk aversion (Holthausen and Larcker, 1996).

2.2.3 Monitoring and Control

As private equity companies control their portfolio companies and thereby the management and the board of directors, the misalignment conflict between owners and managers can be solved more easily than in a public firm (Jensen 1989). Private equity investors are often more actively involved in their portfolio companies than investors in most public companies. Acharya et al. (2009) find that the boards of private equity portfolio companies are smaller and meet more often than boards in public firms. Moreover, they find that active ownership and governance partially can explain abnormal returns found for the private equity firms that are investigated. Heel and Kehoe (2005) find that the management team is changed or strengthened in 83 percent of the top third of deals, measured as performance.

2.3 Improvements in Operational Efficiency

There is a significant amount of studies that have shown that the private equity houses manage to improve the operating performance of their portfolio companies. Among them are Bull (1989), Kaplan (1989b), Harris et. al. (2005), Palepu (1990) and Bergström et al. (2007). Cumming et. al. (2007) draw the conclusion that there is a general consensus regarding the fact that leveraged buyouts and especially management buyouts improve performance. However, there are also studies which find only modest increases in operating performance, even though the return to equity investors is high. Guo et. al. (2009) is one such study. The authors conclude that the high returns are unlikely to persist under unfavorable credit market conditions without substantial operating performance improvements. Another study performed by McKinsey shows that only 25 % of the private equity firms perform better than the stock market over time, whereas 75 % do not create value (Beroutsos et al., 2007). However, this study focuses on returns and not operating performance (at least not quantitatively). Nevertheless, a vast majority of studies has found significant operational improvements.

2.3.1 Restructuring

A buyout is most often followed by organizational restructuring of the acquired firm in order to cut costs and improve operating margins. It is common with cost reduction programs that lead to a lower production cost and a more efficient use of plants' resources (Muscarella and Vetsuypens, 1990). These restructuring programs often include measures to increase capital productivity or to reduce the capital requirements, i.e. to use the company's assets more efficiently. A typical way of boosting capital efficiency is to improve the management of working capital through reduced levels of inventory and accounts receivables (Singh 1990; Easterwood et al. 1989). According to Holthausen and Larcker (1996) private equity portfolio companies have substantially smaller amounts of working capital than their industry peers.

The reduction of working capital needs is often combined with programs that decrease capital expenditures (Smith, 1990). Bull (1989), Kaplan (1989b) and Muscarella and Vetsuypens (1996) all find that a leveraged buyout reduces investments in the post buyout period. In Kaplan's study (1989b) capital expenditures were 20 % lower for leveraged buyouts than for comparable

companies. Jensen (1989) concludes that the reduced capital expenditures found in Kaplan's (1989b) study are reductions of low productive investments, as most of the decreases were in slowly growing or declining industries. This is in line with Jensen's (1986) earlier arguments that the increased debt burden reduces managers' wasteful spending of free cash flows.

However, a reduction of capital expenditures might also entail that the private equity portfolio companies have cut capital expenditures to increase current cash flows, which might hurt future cash flows (Kaplan and Strömberg, 2008). This could be the case if current cash flows are needed for debt payments so that important long-term investments are not undertaken. Holthausen and Larcker (1996) find that capital expenditures and working capital levels are increased for reversed leveraged buyouts⁵. Their conclusion is that this is consistent with these firms being cash constrained during the holding period, which is in line with reducing capital expenditures to boost current cash flows. However, Kaplan and Strömberg (2008) discuss previous studies with different views on the matter and conclude that they do not consider the empirical evidence to be in agreement with short-termism.

A leveraged buyout often leads to strategic refocusing for the acquired company. This is often conducted through a reduction of complexity and focusing on the company's core business (Muscarella and Vetsuypens, 1990; Singh, 1990). Furthermore, divisions with a loose link to the core operations are often divested to other companies where they are of better use (Wiersema and Libeskind, 1995).

2.3.2 Performance at the Expense of Stakeholders

Schleifers and Summers (1988) argue that hostile takeover investors in general impose opportunistic behavior at the expense of other stakeholders. More specifically, they argue that investors benefit from increased operating income at the expense of employees who have to suffer from wage cuts and reductions in the workforce. Furthermore, Easterwood et al. (1989) conclude that a cost reduction in the form of a reduction of the workforce is common.

However, Kaplan (1989b) finds that employment increases even after a buyout. The industry-adjusted trend is negative but not significant. Therefore, he concludes that the results do not support the view that leveraged buyout companies gain from reducing the workforce. Palepu (1990) reaches a similar conclusion. Bergström et al. (2007) can not find any evidence of either reductions of the workforce or wage decreases, but find that a decrease in wage levels leads to improvements in operating performance. They argue that their ratio of personnel costs to employees might distort their results as it does not take different wage developments for management and workers into account. Moreover, they argue that there might not have been any slack labor capacity, implying that a reduction of the workforce would not be profitable.

Kaplan and Strömberg (2008) provide a summary of studies on leveraged buyouts' impact on employment and conclude that employment increases on average, but at a slower rate than for other similar firms.

⁵ A reversed leveraged buyout is when a leveraged buyout company is relisted on a stock exchange.

2.3.3 Growth

According to Butler (2001), there is a link between a history of strong growth and a successful exit of a portfolio company. Therefore, some portfolio companies are forced to implement internal growth strategies, whereas other companies pursue an acquisitive growth strategy. In some leveraged buyouts, the private equity houses have decided on a so-called “buy and build” strategy on beforehand, meaning that the private equity firm has acquired a company in a fragmented industry in order to consolidate the market and capture economies of scale (Wright et al., 2001). However, Wiersema and Libeskind (1995) find that leveraged buyout companies experience less growth relative to peers. They conclude that this is a consequence of the refocusing on the core business with corresponding divestitures.

2.4 Secondary Buyouts

There is relatively little literature focusing on secondary buyouts, due to the fact that it is a rather new phenomenon. If the theory on leveraged buyouts is accurate, the changes that lead to improvements in operating performance should already have been made in the primary buyout holding period. Moreover, assuming that primary buyouts do create value as the empirical findings suggest, it should be difficult for secondary buyouts to continue to outperform its peers.

The study of Bergström et al. (2007) does not find evidence on primary buyout companies showing larger relative improvements in operating performance, compared to secondary buyout companies. This implies that there might still be opportunities to improve operations even after having been transformed by a private equity company. The authors also put forward other plausible reasons for why secondary buyout companies can improve relative operating performance. As the time horizon for a private equity fund is limited, there might be other exit reasons than having finished restructuring a portfolio company, which implies that there still are changes to be made that are ordinary for a private equity company. They also conclude that different private equity firms might have different core competencies and therefore be more appropriate owners in different phases in the life cycle of a company.

3. Hypotheses

We will now form our hypotheses based on the theoretical foundation and empirical findings that we have outlined above. Some of our hypotheses are directly aimed at explaining differences between primary and secondary buyouts. Others are intended to identify drivers of relative improved operating performance for buyout companies in general and will be used in our regression analysis. If the tests of these more general hypotheses generate results that entail dissimilarities between primary and secondary buyouts, it will help us interpret possible differences in operating performance that we find. Note that the hypotheses formulated in the following paragraphs are expressed in terms of what we actually expect, and are not necessarily the same as the null hypotheses formulated for the statistical tests conducted.

3.1 Operating Performance

Previous empirical findings have focused on leveraged buyouts in general. Even though there are a few studies with deviating results, the majority of the empirical findings indicate that the performance of buyouts is improved with regard to the relevant peer group⁶ (Cumming et. al.,

⁶ Henceforth we will use the term relative performance when meaning performance with respect to the relevant peer group.

2007). The theory on leveraged buyouts indicates several ways in which the private equity firms manage to improve the operating performance of their portfolio companies: reductions of agency costs, restructuring programs for cost cutting, margin improvements and increased capital efficiency, strategic refocusing etc. Since these improvements are associated with private equity companies, they are expected to occur during the holding period of their investments. Consequently, there should be less obvious operational improvements to make after a private equity company has exited the investment. If there would be large operating performance improvements in a secondary buyout we argue that the first private equity firm has failed. Hence, continued relative operating performance improvements in secondary buyout companies would contradict leveraged buyout theory and previous empirical findings.

Moreover, the previous study that is the most relevant for our study (Bergström et al., 2007) - as it was also conducted in Sweden and on a sample similar to ours - finds that relative operating performance is improved for leveraged buyout companies. Bergström et al. (2007) also tested the hypothesis that primary buyouts show larger operating improvements than secondary buyouts. They did not find significant results that supported this hypothesis. However, as previously mentioned, we have a larger sample of secondary buyouts and should be able to draw stronger conclusions from our results on this matter.

Hypothesis 1: There are less operating performance improvements in a secondary buyout than in a primary buyout.

3.2 Leverage

A large amount of debt financing is one of the key ingredients in leveraged buyouts (see for example Axelson et al., 2007; Bergström et al., Jensen 1986; Kaplan 1989b; Kaplan and Strömberg, 2008; Muscarella and Vetsuypens, 1990). Jensen (1986) describes how the leverage can reduce agency costs by limiting the amount of free cash flows available for managers. Kaplan (1989b) argues that his findings imply that the reduction of agency costs improve operating performance. Moreover, the vast amount of empirical findings showing that private equity firms improve the operating performance of their portfolio companies suggests that there is, indeed, a linkage between leverage and performance. Bergström et al. (2007) did not find a relationship between leverage and operating performance. However, our leverage variable is constructed differently (see section 4.4.2.1). This leads to our second hypothesis.

Hypothesis 2: The increased leverage in buyouts contributes to improvements in operating performance.

It is probable that there is less debt financing available in a secondary buyout than in a primary buyout: as there are greater possibilities for performance improvements in primary buyouts, there should be more debt financing available in those deals.

Hypothesis 3: The relative level of debt financing is higher in primary buyouts than in secondary buyouts.

3.3 Capital Expenditures

There are different theories on the subject of how private equity firms affect capital expenditures of their portfolio companies. Jensen (1986a) argues that a leveraged buyout is followed by a reduction of unnecessary investments. However, critics argue that the private equity houses

decrease capital expenditures in order to boost short-term cash flows at the expense of long-term performance (Kaplan and Strömberg, 2008). It is not evident which of these theories that is correct. However, both suggest that buyouts reduce capital expenditures.

If investments necessary for long-term performance are not undertaken during the first holding period, the need for capital expenditures should increase after an exit of a primary buyout. Moreover, if wasteful spending is reduced in primary buyout companies, there should not be much room for further improvements in this area. Hence, one might expect no further reductions in capital expenditures or even an increase for secondary buyouts compared to primary. However, it is also possible to argue that the private equity firms will reduce necessary long-term capital expenditures even further in a secondary buyout in order to boost short-term profits. We have come across neither theory nor empirical findings on this matter. Therefore, it is difficult to argue in favor of any of the views. This leads us to our next two hypotheses.

Hypothesis 4: Capital expenditures are lower in primary buyout companies relative to their peers.

Hypothesis 5: There is no difference in capital expenditures between secondary buyout companies and their peers.

As we expect primary buyouts to show significant operating performance improvements and less capital expenditures than their peers, we believe that there might be a connection between a reduction of capital expenditures and improved operating performance. This is consistent with Jensen's (1986a) arguments concerning a reduction of wasteful spending, as well as critics arguments regarding a reduction of capital expenditures in order to boost short-term cash flows (Kaplan and Strömberg, 2008).

Hypothesis 6: A reduction of capital expenditures contributes to improvements in operating performance.

3.4 Working Capital

It is common with restructuring programs to increase capital efficiency in a leveraged buyout company. This can be carried out through a reduction of working capital in terms of lower inventory levels or accounts receivables (Singh 1990; Easterwood et al. 1989). A decrease in working capital should increase working capital turnover, all other things equal, as long as working capital is not negative. Analogous to the reasoning in section 3.1, we expect a relative increase in working capital turnover in portfolio companies during the first holding period, whereas there should be less room for improvement in the second period. We also hypothesize that an improved working capital turnover should lead to improved operating performance in general.

Hypothesis 7: Working capital turnover is increased during the holding period of a primary buyout company relative to its peer companies.

Hypothesis 8: Working capital turnover is not increased during the holding period of a secondary buyout company relative to its peer companies.

Hypothesis 9: An increased working capital turnover leads to improved operating performance.

3.5 Stakeholders

According to Schleifers and Summers (1988), private equity firms achieve high returns by breaching implicit contracts with stakeholders in their portfolio companies, implying lower wages or a reduction of the workforce. Kaplan and Strömberg (2008) provide a summary of studies on LBO's impact on employment and conclude that employment increases on average, but at a slower rate than other similar firms.

The study of Bergström et al. (2007) is highly relevant for us. Therefore, the fact that they do not find any significant wage cuts or workforce reductions will impact our hypotheses. Furthermore, they found that reductions in wage levels improve operating performance, whereas a reduction of the workforce does not.

However, the main focus of this thesis concerns differences between primary and secondary buyout companies and as this has not been studied extensively before, we would like to test whether there are any differences regarding relative wage levels and workforce between the two categories. We do not expect any significant relative wage cuts or labor force reductions for the primary buyout companies, and we have no reason to believe that the outcome will be any different for the secondary. This leads to the following hypotheses, aligned with the findings of Bergström et al. (2007):

Hypothesis 10: There are no reductions in wage levels for either primary or secondary buyout companies compared to their respective peers.

Hypothesis 11: There are no reductions of the labor force for either primary or secondary buyout companies compared to their respective peers.

Hypothesis 12: Reductions in wage levels lead to improvements in operating performance.

Hypothesis 13: Reductions of the workforce does not lead to improvements in operating performance.

4 Method and Data Description

4.1 Operating Performance Measures

We will use three different measures to define operating performance: EBITDA margin, return on invested capital (ROIC) and sales growth. We consider these three variables to provide a relatively accurate picture of a company's operating performance.

The EBITDA margin (EBITDA divided by sales) is a relevant measure, as EBITDA is commonly used for both valuation⁷ and quoting of leverage⁸ in the private equity industry (see for example [Axelson et al., 2007]). We choose to use the margin instead of the EBITDA number for comparison reasons. One could argue that this is not a perfect operating performance statistic (OPS) as there might be gains from decreasing margins as long as the net present value of new projects are positive, after having taken the cost of capital into account. However, we do not have information on the cost of capital for neither the buyout companies nor the peers.

⁷ Private equity portfolio companies are often valued using the enterprise value to EBITDA multiple.

⁸ Debt to EBITDA is a common leverage measure in the private equity industry (see section 4.4.2.1).

Moreover, that kind of measures, such as economic value added, include net income and not EBITDA. We want to measure operating performance irrespective of capital structure. It is therefore better to use the EBITDA margin than a measure that includes net income. That is also why previous studies on operating performance have focused on statistics such as EBITDA or operating profit instead of net income (see for example [Bergström et al., 2007; Holthausen and Larcker, 1996; Kaplan 1989b]). For the reasons outlined in this paragraph, EBITDA margin is also the statistic that we use in our main regression for explaining operating performance.

We have chosen to study ROIC⁹ as a profitability measure. We consider this to be a good appraisal of operating profitability as it takes both operating profit and capital efficiency into account (non-interest bearing liabilities are excluded). Different industries might diverge in their accounting practices but this problem does not affect our study as we are measuring differences between a specific buyout company and its peer group.

A source of uncertainty for our ROIC measure is the lack of available data on the debt levels for the peers (see section 4.3). This inflates their ROIC measure. We have restricted this problem by including a large amount of peers and comparing each buyout company with the median of its peers. However, it is still something to take into consideration when looking at our results.

The third operating performance measure is sales growth, in terms of compounded annual growth rate¹⁰. This is a relevant performance measure as growth often is an important value driver for buyout companies (Butler, 2001). However, one might argue that there are some caveats with using the sales growth accounting statistic. As we have mentioned in section 2.3.3, it is common for buyout companies to grow through acquisitions. In that case, the sales growth does not imply organic growth. It is possible to argue that the comparisons for companies with an acquisition driven growth strategy are distorted. The logic behind such reasoning is that it is effectively not the same company that is evaluated after such a strategy. The same type of reasoning applies for firms which undergo a restructuring process by divesting assets and businesses. These problems could be adjusted for by eliminating changes that are attributable to acquisitions or divestures. We have decided not to do so. The reason for this is that add-on acquisitions as well as strategic divestures have been accredited as an important value driver in buyout companies. Therefore, it would be misleading to exclude these findings.

There are also accounting differences in acquiring assets directly or indirectly (through an acquisition of another company). A direct purchase of assets subsequently leads to depreciation expenses in the income statement, whereas an acquisition of another firm also might lead to recognition of goodwill, which is tested for impairment every year. This leads to different expenses and taxes for the company (impairment of goodwill is not tax deductible). As EBITDA margin is the measure we primarily focus on, these accounting differences do not have a great impact on our results. However, the goodwill recognition impacts our ROIC measure. It

⁹ ROIC is defined as EBIT (earnings before interest and taxes) times 1 less the theoretical tax rate of the unlevered firm (T) and then divided by equity (E) plus interest-bearing debt (D): $\frac{EBIT(1-T)}{(E+D)}$. Another way to look at it is sales less operating costs (OC) times 1 less the theoretical tax rate of the unlevered firm divided by fixed assets (FA) plus current assets (CA) less non interest-bearing liabilities (NIBL): $\frac{(Sales-OC)*(1-T)}{FA+CA-NIBL}$.

¹⁰ Sales CAGR is calculated as: $\pi = \left(\frac{Sales_{\tau_E}}{Sales_{\tau_B}} \right)^{\frac{1}{\tau_E - \tau_B}} - 1$

increases the asset base, which decreases the ROIC. We are not able to solve this problem, since our accounting data do not separately disclose goodwill posts. Moreover, even if it was possible, it is not evident that goodwill assets should be adjusted for. If goodwill is recognized, it should be treated as any other cash flow generating asset, even though the recognition of goodwill in itself might be controversial (White et al., 2003). Therefore, we do not consider this as a major weakness or problem.

We use the Wilcoxon signed rank test for our event studies. This is the same method that Kaplan (1989b) used in his study. Since our subsample of secondary buyouts consists of 22 observations ($n > 20$), we can use the normal distribution as an approximation of the Wilcoxon statistic. In the Wilcoxon signed rank test, the sums of the ranks corresponding to positive and negative differences are calculated. The Wilcoxon signed rank statistic T is the smaller of these sums (Newbold et al., 2007):

$$T = \min(T_+, T_-)$$

Under the normal approximation, the Wilcoxon signed rank test has mean and variance given by:

$$E(T) = \mu_T = \frac{n(n+1)}{4}$$

and

$$\text{Var}(T) = \sigma_T^2 = \frac{n(n+1)(2n+1)}{24}$$

Given the construction of this test, extreme values will not have a significant impact on our results.

4.2 The Event

As we have described in section 1, we have decided to study buyouts in Sweden that have been exited between 1998 and the first half of 2008.

When a private equity company raises a fund, there is a time horizon for when investments can be made and when the portfolio companies are supposed to be exited. Therefore, we consider it to be most accurate to study the whole holding period of a specific portfolio company. Previous studies have made different decisions with regard to this matter. Kaplan (1989b) compared the first three years after a buyout with the last fiscal year prior to a buyout. Bull (1989) compared performance for the two years prior to a buyout to the two first years after a buyout. Others have chosen to study the year prior to the buyout and then the whole holding period (see for example [Bergström et al., 2007]). The latter is how we have chosen to conduct our study. In doing so, we realize that we are comparing holding periods of various lengths, with the shortest observed holding period being one year and the longest nine years, and that this might cause problems. However, we argue that this is the best way to investigate the impact private equity companies have on operating performance, irrespective of how long it takes. If the required organizational changes are implemented quickly, the improvements will show sooner and the investment of the private equity company can be realized.

The year prior to the buyout functions as the base year (τ_B) and the exit year (τ_E) as the last year measured in our study. As investments can be conducted and exited throughout the whole year, we had to define a cutoff point for which years to include. We chose a six-month cutoff point. Consequently, we use the same year as the base year for buyouts that took place during the second half of the year and the year prior to the buyout as the base year for buyouts that took place during the first half of the year. I.e., a buyout that took place on the 30 June 2004 will have 2003 as the base year, whereas a deal made on the 1 July 2004 will have 2004 as the base year. The same logic goes for which year that is the last year measured. We have adjusted the cutoff point correspondingly for companies whose fiscal year is not the calendar year.

For all three operating performance measures (EBITDA margin, ROIC and sales growth), we calculate the difference in percentage units of the buyout companies (BOC) between the base year and the exit year, and then relate this percentage unit change to that of the peer group (PG) in terms of the median company¹¹.

$$\Delta OPS_{BOC} - \Delta OPS_{PG} (\tau_B, \tau_E)$$

Thus, a positive value implies that the buyout company has improved its performance relative to that of the peer group. The operating performance statistics will also be tested in our regression model (see section 4.6), where the main focus will be on the EBITDA margin.

4.3 Working Capital Management and Capital Expenditures

To test whether buyout companies increase working capital efficiency and if they decrease their capital expenditures relative to their respective peer groups, we deploy the Wilcoxon signed ranks test, but in different ways. For the working capital turnover statistic, we use a ratio of sales to working capital¹² to obtain a ratio that allows us to compare companies with their peer companies. For this measure, we apply event study methodology since we want to measure any improvements made during the holding period. This statistic is computed in the same way as our three operating performance measures.

$$\Delta WC_{BOC} - \Delta WC_{PG} (\tau_B, \tau_E)$$

For the capital expenditures statistic, event study methodology is not relevant. An increase or a decrease of this statistic¹³, compared to pre-buyout data or to our peer groups, does not itself reflect possible improvements. Rather, we are interested in testing if there are any differences in the average relative level (with respect to the industry) of capital expenditures between primary and secondary buyouts during the holding periods, and ultimately if this has an impact on operating performance. We construct a ratio using capital expenditures in the nominator and total assets in the denominator. We then take the average of this ratio for all years during the holding period (i.e. we start measuring from year τ_{B+1}) and subtract by the corresponding ratio of the peer group.

¹¹ Unless stated otherwise, we will continuously use the median company when referring to the peer group.

¹² We have defined working capital as inventory plus accounts receivables less accounts payable.

¹³ Capital expenditures were computed as tangible fixed assets year t plus depreciation year t less tangible fixed assets year t-1.

$$\left[\frac{\sum_{i=1}^N CAPEX_{BOC}}{n} - \frac{\sum_{i=1}^N CAPEX_{PG}}{n} \right]$$

where $n = (\tau_E - \tau_{B+1})$

There were no cash flow statements available in our accounting data. This implies that we had to compute capital expenditures ourselves. We decided to only look at investments in tangible fixed assets. The reason for doing so is that the goodwill post is recognized as an intangible fixed asset. As we have mentioned before (see section 2.3.3), it is common with add-on acquisitions for buyout companies and these give rise to the recognition of goodwill. We do not consider this increase in intangible fixed assets to be a regular capital expenditure, which is the reason for why we have chosen to disregard investments in intangible fixed assets. We are aware of the fact that this underestimates capital expenditures in industries that invest a lot in research and development or in other intangible fixed assets. However, it is our belief that the results would have been more distorted if we would have included investments in intangible assets as capital expenditures. The reason is that an inclusion of investments in intangible fixed assets leads to an overestimation of buyout companies capital expenditures relative to their peers, whereas the underestimation of certain industries' investments leads to an error that is similar for buyout companies and their peers (i.e. the relative difference should not be affected to any larger extent).

However, this was not the only difficulty with our accounting data. Depreciation, amortization and goodwill impairments are not separately disclosed in the Orbis database. Instead they are all included in the post called depreciation. This implies that we will overestimate our definition of capital expenditures (see footnote 11). Taking this into account, we still argue that not including investments in intangible assets is the best decision that we could have taken. The logic is the same as with the first problem: An inclusion of investments in intangible assets would have overestimated capital expenditures for buyout companies relative to their peers (due to the recognition of goodwill), whereas the all-including depreciation post leads to an overestimation for all companies (since it also includes amortization). However, we are aware of the fact that our variable for capital expenditures is far from optimal.

4.4 Leverage

We have used interest-bearing debt to EBITDA as our leverage ratio. According to Axelson et al. (2007) this is the preferred metric among practitioners. We have looked at the leverage ratio for the same year as the buyout took place, i.e. not necessarily the base year. It is common for the buyout companies to decrease their leverage during the holding period. However, leveraged buyout theory focuses on the increased leverage at the time of the buyout and not the change during the holding period. We will relate this ratio to the corresponding median peer group ratio.

$$\frac{D/EBITDA_{BOC}}{D/EBITDA_{PG}}$$

Thereafter, we will use a simple T-test to see if these multiples are different for primary and secondary buyout companies. As we use a multiple, we will investigate whether the mean multiples for the respective subsamples are significantly different from 1. Here, we recognize that the sample of secondary buyout companies is too small to use a normal approximation, but since we believe that we have included the entire Swedish population of secondary buyouts, we argue that the results are accurate.

This is different to the method used in Bergström et al. (2007), where the same leverage measure was not put in relation to the peer groups. Due to the aforementioned problems with defining debt for many companies on an unconsolidated level, we do not have the same amounts of data to relate to the buyout companies for this variable. We have sufficient leverage data for approximately 8-10 peer companies for each buyout company. This is the best industry proxy that we could get. Therefore, we decided to include the variable instead of disregarding it or using the exact same method as Bergström et al. (2007).

4.5 Wage and Labor

The same event study methodology used for measuring changes in working capital turnover will be conducted for changes in wage levels and labor input. Wage levels are computed as the ratio of personnel costs to the number of employees and the relative change is measured as the difference between the compounded annual growth rate (calculated in the same way as the sales CAGR) for the buyout company and the median compounded annual growth rate for the peer group. In other words, this statistic is computed in the same way as our three operating performance statistics.

$$\Delta WAGE_{BOC} - \Delta WAGE_{PG} (\tau_B, \tau_E)$$

In a similar fashion, we look at the relative compounded annual growth rate for labor intensity (a ratio of sales to employees) in order to investigate if buyout companies reduce their workforce.

$$\Delta LABOR_{BOC} - \Delta LABOR_{PG} (\tau_B, \tau_E)$$

4.6 Explanatory Model for Operating Impact

4.6.1 Dependent Variables

We have chosen to focus primarily on explaining the relative change in EBITDA margin, as we believe that this is the best measure for explaining operating impact of buyouts. Due to the problems in measuring leverage for our peer groups, ROIC might give a distorted view of the relative performance, whereas the sales growth statistic does not necessarily entail real value generation.

In order to explain changes in the EBITDA margin, measured as $\Delta EBITDA \text{ margin}_{BOC} - \Delta EBITDA \text{ margin}_{PG}$, we will test hypotheses 1, 2, 6, 9, 12 and 13 by including our thought performance drivers as independent variables in an estimated regression model for the entire sample. Multiple regression analysis provides an estimated linear equation that predicts the dependent variable, Y, as a function of K observed independent variables, x_j , where $j = 1, \dots, K$.

$$\hat{y} = b_0 + b_1x_{1i} + b_2x_{2i} + \dots + b_Kx_{Ki}$$

where $i = 1, \dots, n$ observations. Regression analysis also provides the marginal change in the dependent variable, Y, that is related to changes in the independent variables – estimated by the coefficients b_j 's. The coefficient b_j indicates the change in Y, given a unit change in x_j , while controlling for the simultaneous effect of the other independent variables (Newbold et al., 2007).

The independent variables included in our regression model are described below.

4.6.2 Independent Variables

4.6.2.1 Leverage

In our model, we will use the previously defined D/EBITDA multiple, consisting of the debt to EBITDA ratio of the buyout companies divided by the corresponding ratio for the respective peer groups, in terms of the median company as one of the input variables.

4.6.2.2 Working Capital Turnover and Capital Expenditures

It is a common assumption that, *ceteris paribus*, working capital grows with sales. Therefore, we will use a ratio of sales to working capital to obtain a ratio that is applicable to compare companies with. A more efficient working capital management does not directly impact the EBITDA margin. However, we consider it to be a good proxy for a cost-efficient company and that it therefore indirectly impacts the EBITDA margin.

In the regression we will use the same working capital measure as in our event studies. Although we have not at this point established any significant relative differences in these two measures, we would like to investigate whether changes in these variables have impact on our operating performance measures. If we do not find any significant changes in these measures in our Wilcoxon signed ranks test, we still can not rule out the possibility that successful buyout companies improve working capital turnover and change capital expenditures, if these two variables generate the expected signs and have significant explanatory power on operating impact.

4.6.2.3 Stakeholders

The variables that we will use for wage and labor input in the regressions are the same as the ones we will use in our event studies. The same discussion is applicable for these two variables as for those of working capital turnover and capital expenditures: even if we can not find any significant changes in these measures in our event studies, we can not rule out that the higher-performing buyout companies do not cut wages and reduce the labor force.

4.6.2.4 Type of Buyout

In the regression, we will use a dummy variable taking the value of 1 if it is a secondary buyout and a value of 0 if it is a primary buyout. By doing so, we examine if the type of buyout can explain operating performance.

To summarize, our regression model will be the following:

$$(\Delta OPS_{BOC} - \Delta OPS_{PC}) = \alpha_1 + \beta_1 \times \Delta WAGE + \beta_2 \times \Delta LABOR + \beta_3 \times LEVERAGE + \beta_4 \times CAPEX + \beta_5 \times \Delta WORKING CAPITAL TURNOVER + \beta_6 \times VENDOR$$

4.7 Description of our Sample and Selection Criteria

We have examined all Swedish leveraged buyouts with a deal value exceeding USD 5 million during the chosen period. However, not all buyouts are included in the sample. We have excluded a few primary buyout companies where we have not been able to obtain reliable data for the relevant time period or where data is simply missing. As our sample of primary buyouts is relatively large, we do not consider this to be a major problem for the validity of our study. Regarding the smaller sample of secondary buyout companies, we have put in more effort to obtain data and to ensure that it is correct, and thus we do not believe that we have missed out on any such deals. See Appendix A & B for a complete list of the companies examined.

Our primary resource for obtaining information on buyout transactions that has been executed is the Mergermarket database – a database for mergers and acquisitions. During the collection of our data we found that the database does not include every single deal that has taken place in Sweden. However, there is no reason to believe that the database has excluded any type of deals systematically. We also conducted research in the Zephyr database - another database for mergers and acquisitions - to mitigate the problem of not including deals that are not disclosed in Mergermarket. Furthermore, we have been in contact with many private equity firms that have been known to invest in Swedish companies to see if they had conducted any secondary buyouts in Sweden.

To measure differences in performance, we used the Orbis database to obtain accounting data on the target companies as well as the peer group companies, even though we realize that it has its shortcomings (see section 4.4). However, as a quality control we compared these numbers to the Affärsdata database, which is a Swedish database containing the official annual reports that are filed to the Swedish Companies Registration Office. If we could not find the correct data for the buyout companies in Orbis, we used numbers from Affärsdata instead. However, the correct accounting data was most often provided in Orbis. A few buyout companies changed accounting periods during the event window, resulting in one-time financial statements for time periods shorter or longer than 12 months. In those cases, we made adjustments so that the numbers would correspond to twelve months¹⁴. These adjusted numbers are most likely not entirely accurate. However, we consider them to be the best reflection of reality that we could obtain. We did not make the corresponding adjustments for peer group companies. However, this problem seldom occurred and we also used the median for a large number of peers, which mitigates this problem.

Our sample includes 22 secondary buyouts and 50 primary buyouts¹⁵. Ideally, we would have liked to have a bigger sample, but as mentioned above, we believe that we have included all secondary buyouts that have been exited during our analyzed time period. There have been further exits of secondary buyouts recently, but due to the time lag in accounting data, these could not be included in our sample.

4.8 Selection of Peer Groups

In order to assess the relative operating performance of the buyout companies, we need to identify the relevant peer group companies. For this purpose, we used an official industry classification system, which we consider the most appropriate method for assigning peer groups. This is also in line with previous research (see for example [Kaplan, 1989b; Bergström et al. 2007]). We chose to use the NACE Revision 2 classification system, which is an official classification system designed for the European Community that has been adopted by the European Parliament (Official Journal of the European Union, 2006).

We have included the 30 largest companies in Sweden, as measured by their revenues in 2007, in each peer group. This means that the peers might not have been the largest peers during the whole holding period. An effect of this is that the growth measure might be biased upwards. However, this bias should not be large when including 30 peers. It also leads to a survivorship

¹⁴ E.g. multiplying the numbers of an income statement over the last five months by a factor of 12/5

¹⁵ A list of the studied buyouts is supplemented in the appendix.

bias, as firms that have filed for bankruptcy are not included. However, we do not believe that this bias has a major impact as we are including the largest firms.

One might argue that the marginal benefit of including another company decreases so that it becomes unnecessary to include as many as 30 peer group companies. Bergström et al. (2007) decided to include 20 companies in each peer group. However, there is one major reason for us to include more. In the Orbis database, it is difficult to define the capital structure of the peers. More specifically, the amount of debt is not provided in many cases. This is due to the fact that several of them are not consolidated groups, but subsidiaries. In those cases the debt is often held as intergroup liabilities, which is not separately disclosed in the database. This complicates the comparison of our leverage measure (see section 4.4) as well as the invested capital that is used in return on invested capital, one of our performance measures (see section 4.1). We decided to have many peers to restrict this problem.

We assign peer groups by using the four digit code of NACE Rev. 2 in most cases. This gives the most specific industry specification. However, there are cases where we have not been able to find enough peers on the four digit level and decided to go down to a two digit code, resulting in a more general industry specification. In a few instances, this was still not enough to find 30 peer companies. In those cases, we expanded the geographical scope from Sweden to the Nordic Region. Moreover, on some occasions, there existed 30 peers for a specific code, but with several companies from the same consolidated group. In those cases, we decided to keep the largest of these companies and eliminated other subsidiaries, thereby having a smaller peer group than otherwise. The reason for doing so is that keeping several companies from the same consolidated group does not truly reflect the industry structure, as these companies are not competitors.

Another problem that we came across when using the NACE Rev. 2 classification system was that several companies with consolidated numbers were classified as *7010 – Activities of head office*. Clearly, this is not a relevant code for choosing a peer group. It merely reflects the fact that it is the top company within a consolidated group. Therefore, we chose to use the code for the company within the group that best reflects their main business operations. In a few cases we could not find a relevant classification code. We then chose a code ourselves, which we considered to be the code that most appropriately reflects the company's core operations.

4.9 Outliers

Some of the observations in our original sample show extreme values for the raw change in EBITDA margin. These have all been checked and controlled for accuracy. However, in three cases¹⁶, the extreme improvements are largely due to an increase in sales. This has been the case when companies with little sales and a high negative margin, have consequently increased their sales substantially and therefore largely improved their margin in terms of percentage units, although still with a negative margin. In these cases, no value has been created, and since buyouts do not typically involve this kind of companies, they have been excluded.

¹⁶ These are Cochlear Bone Anchored Solutions, Kreatel Communications and Neopharma

4.10 Descriptive Statistics

Table 1 presents the relevant descriptive statistics for our entire sample, whereas Table 2 consists of statistics divided by type of buyout. Columns in bold, labeled *P*, contains the figures for primary buyout companies, whereas the column next to the right, labeled *S*, shows the corresponding figures for secondary. The categories labeled *Raw* show the measured changes in our three operating statistics for the portfolio companies, whereas the label *Industry Adjusted* relates these changes to the peer groups' performance. The latter will be used for our event studies. The last five rows are all industry adjusted. In all tables to come, all but the AVG. CAPEX and the LEVERAGE numbers are expressed as percentage units. The AVG. CAPEX and the LEVERAGE numbers are stated as multiples. They are all defined as outlined in sections 4.1 - 4.6.

Table 1: Company Specific Descriptive Data for *Entire Sample*

	Mean	Median	Minimum	Maximum	Std. Deviation
EBITDA margin (Raw)	1.55	1.22	-25.12	25.13	7.75
ROIC (Raw)	11.84	2.00	-76.96	385.44	56.47
SALES (Raw)	13.93	10.59	-56.76	74.82	18.20
EBITDA margin (Industry Adjusted)	1.67	1.83	-26.69	27.92	8.42
ROIC (Industry Adjusted)	11.12	1.22	-84.51	399.05	59.05
SALES (Industry Adjusted)	5.44	1.01	-70.52	72.74	20.38
AVG. CAPEX	0.28	0.66	-18.22	16.11	5.38
ΔWAGE	-0.24	-0.68	-79.57	104.43	22.47
ΔLABOR	1.14	-0.89	-67.9	64.33	18.44
ΔWC TURNOVER	-0.56	0.48	-92.37	13.49	12.69
LEVERAGE	3.16	1.93	-9.17	43.23	6.63

Table 2 divides the sample into our two categories primary (P) and secondary (S) buyouts. The table shows that all but one of the mean and median values (the median value for raw sales) of the three operating statistics are higher for primary buyouts. Furthermore, it can be noted that there is greater dispersion for all three OPS for the primary buyouts, especially for ROIC. This is, however, to be expected, since the secondary buyouts sample is much smaller and therefore

contains fewer extreme values. For EBITDA margin and growth, the mean and median values deviate less than for ROIC, which contains more substantial extreme values. This is not surprising, considering how this measure is relatively easily influenced by small changes in EBIT, when it comes to asset-light businesses. Therefore, the median values probably serve as a better indicator of industry performance. The other two statistics might be distorted in other ways. The growth measure is affected by add-on acquisitions and strategic divestitures (see section 4.1), while the EBITDA margin statistic can be significantly improved in some special cases. The latter was discussed in the previous section.

Table 2: Company Specific Descriptive Data Divided by Type of Buyout

	Mean		Median		Minimum		Maximum		Std. Deviation	
	P	S	P	S	P	S	P	S	P	S
EBITDA margin (Raw)	1.73	1.14	2.56	0.20	-25.12	-10.32	25.13	17.49	8.31	6.46
ROIC (Raw)	16.15	2.04	2.34	-1.48	-76.96	-32.87	385.44	69.47	66.11	20.98
SALES (Raw)	14.17	13.4	10.42	12.09	-56.76	-4.83	74.82	47.13	19.99	13.69
EBITDA margin (Industry Adjusted)	1.83	1.30	2.49	0.81	-26.69	-10.54	27.92	17.79	9.17	6.61
ROIC (Industry Adjusted)	15.92	0.20	2.00	-5.06	-84.51	-37.92	399.05	74.63	68.74	24.19
SALES (Industry Adjusted)	5.74	4.77	1.54	0.77	-70.52	-13.51	72.74	33.05	23.13	12.43
AVG. CAPEX	0.25	0.36	1.02	0.32	-18.22	-13.46	16.11	10.02	5.83	4.32
ΔWAGE	0.78	-2.54	-0.88	1.18	-55.21	-79.57	104.43	45.65	21.9	24.09
ΔLABOR	0.92	1.64	-1.55	0.98	-67.9	-31.09	64.33	15.71	21.25	9.76
ΔWC TURNOVER	-0.27	-1.21	0.38	0.48	-92.37	-42.14	13.49	5.34	13.95	9.47
LEVERAGE	3.39	2.65	1.95	1.93	-8.41	-9.17	43.23	10.80	7.50	4.14

The descriptive statistics presented for capital expenditures, wage, labor and working capital turnover measures are industry adjusted. All of them contain a few extreme values, but without any ample dispersion and with mean and median values around zero. The differences for the capital expenditures and leverage measures between primary and secondary buyouts seem to be inconclusive, with differing results depending on if one looks at mean or median. Generally, bearing our hypotheses regarding operating performance drivers in mind, all four measures seem to point in different directions.

5. Results and Analysis

The results of our studies are presented and analyzed in the following sections.

5.1 Operating Performance

We will continuously present the results of our tests and our event studies for our two subgroups as well as on an aggregated level. To assess whether operating performance of the buyout companies is improved and if the results differ between or subgroups, we will first present and analyze tests of the raw data and then move on to the tests of our event studies, where we link the raw data to the performance of our peer groups. We construct the test in the following order¹⁷:

H_0 : *There is no difference in operating performance improvements between primary and secondary buyouts.*

H_1 : *There are less operating performance improvements in a secondary buyout than in a primary buyout.* **(Hypothesis 1)**

Table 3 shows the changes in raw data for our entire sample. The mean increase in annualized growth is 13.93 percentage units and this change is significant on a 5 percent level. The corresponding median value is slightly lower at 10.60 percentage units. The mean increase of the EBITDA margin during the holding period is 1.55 percentage units and the median is 1.22 percentage units. The mean increase in ROIC is substantially higher than the median increase, 11.84 percentage and 2.00 percentage units respectively. The raw changes in the EBITDA margin and ROIC are not significant on a 5 percent level. These results differ from those Bergström et al. (2007) found, since they found significant support for improvements in all three operating statistics on a 5 percent level. The main difference between our two samples is that we have a larger proportion of secondary buyouts, which indicates that secondary buyout companies might perform worse than primary, in accordance with Hypothesis 1, and thus dilute the overall positive results.

Table 3: *Test of Raw Change in Operating Statistics for Entire Sample*

	Mean	Median	95% Conf.	Interval	P-value
EBITDA margin	1.55	1.22	-0.27	3.37	0.09
ROIC	11.84	2.00	-1.43	25.11	0.08
SALES	13.93	10.60	9.65	18.21	0.00

Looking at the same figures for our primary buyouts sample in Table 4, the only significant statistic is the average increase in annualized growth at 14.17 percentage units. The EBITDA margin is increased by a mean of 1.73 percentage units and ROIC by 16.15 percentage units. It is

¹⁷ The hypotheses stated in section 3, in terms of what we expect to find, are referred to in bold after the corresponding H_0 or H_1 .

worth noting that all three operating statistics, regardless of mean or median values, are higher than the corresponding figures for the entire sample. The change in ROIC is significant on a 10 percent level, whereas the change in EBITDA margin is not.

*Table 4: Test of Raw Change in Operating Statistics for **Primary Buyout Companies***

	Mean	Median	95% Conf.	Interval	P-value
EBITDA margin	1.73	2.56	-0.63	4.09	0.15
ROIC	16.15	2.34	-2.63	34.94	0.09
SALES	14.17	10.42	8.48	19.85	0.00

Table 5 shows the raw data changes for the secondary buyouts sample. All three operating statistics show smaller changes than for the primary buyouts sample, which is a logical consequence of the results presented in the two preceding paragraphs. Furthermore, the changes in the EBITDA margin and ROIC are not significantly different from zero. The mean increase in annualized growth rate is 13.40 percentage units and the median value is 12.09 percentage units. This is significant on a 5 percent level.

*Table 5: Test of Raw Change in Operating Statistics for **Secondary Buyout Companies***

	Mean	Median	95% Conf.	Interval	P-value
EBITDA margin	1.14	0.20	-1.72	4.00	0.42
ROIC	2.04	-1.48	-7.26	11.35	0.65
SALES	13.4	12.09	7.33	19.47	0.00

Tables 6-8 summarize the results of our event studies, where the relative changes in operating performance of the buyout companies are displayed. We find that for all companies (Table 6), the relative improvement of the annual growth is significant on a 5 percent level, whereas the relative changes in the EBITDA margin and ROIC are not significantly different from zero on the same level. These results also differ from those presented by Bergström et al (2007). They found significant relative increases in the EBITDA margin and ROIC, but not in the growth rate. These results give us further reasons to believe that there is a significant difference of the relative performance between primary and secondary buyout companies. The EBITDA margin is, however, significant on a 10 percent level.

Table 6: Results for Wilcoxon Signed Ranks Test on Operating Performance for **Entire Sample**

	$T_{\min}$	Mean	P-value
EBITDA margin	-	1.67	0.06
ROIC	-	11.12	0.40
SALES	-	5.44	0.03

Tables 7 and 8 support this. We find that the relative improvements of the EBITDA margin and the growth rate are both significant at the 10 percent level for primary buyouts, whereas the corresponding results for secondaries are not. ROIC is not significant in either subgroup, but it is worth noting that ROIC is based on negative ranks for primary buyouts and on positive ranks for our sample of secondaries (i.e. secondary buyouts perform worse than their peer groups).

Table 7: Results of Wilcoxon Signed Ranks Test on Operating Performance for **Primary Buyout Companies**

	$T_{\min}$	Mean	P-value
EBITDA margin	-	1.83	0.08
ROIC	-	15.92	0.17
SALES	-	5.74	0.07

Table 8: Results of Wilcoxon Signed Ranks Test on Operating Performance for **Secondary Buyout Companies**

	$T_{\min}$	Mean	P-value
EBITDA margin	-	1.30	0.59
ROIC	+	0.20	0.47
SALES	-	4.77	0.21

These results support our main hypothesis. We find improvements of operating performance in primary buyout companies, both in absolute and relative values, with two out of three industry adjusted operating performance statistics being significant on a 10 percent level (although they are not the same OPS in the two cases). Moreover, it is for the measure with the least reliable data (ROIC) that we can not prove if the performance of primary buyouts is improved. We can not find any support for either absolute or relative improvements in our secondary buyouts sample, except for the raw change in growth rate.

The mean relative increase of the EBITDA margin of 1.83 percentage units implies a not negligible value creation, looking at a 10 percent significance level. Due to the aforementioned possible measurement distortion of the ROIC statistic, the mean increase of 15.92 percentage units should be treated cautiously. The median value of 2.00 percentage units is probably a more

realistic one¹⁸. Analogously, looking at the relative change in ROIC for secondaries, the median value is -5.06 percentage units. The raw median change is also negative, -1.48 percentage units, meaning that the secondary buyout companies worsen while the peer groups improve their ROIC. This is somewhat surprising, even though this result is not significant. A plausible explanation for the negative relative change could be that these companies pursue an acquisitive growth strategy, leading to the recognition of goodwill, a higher asset base and a lower ROIC. This would also be in line with the fact that the relative growth change for secondary buyouts is higher than for primary buyouts. However, we cannot decide on this for certain, as these results are not significant.

The relative increase in annual sales growth is significant at 5 percent for the entire sample and at 10 percent for the primary buyout companies and this finding differs slightly from those Bergström et al. (2007) presented, where the relative increase for the entire sample was significant at 10 percent. It is difficult to distinguish the exact reasons for these findings. However, we have used another method. The fact that we included 30 peers instead of 20 can, of course, impact relative numbers. One possible effect of including a larger sample of peer groups is that the previously mentioned upward bias caused by high growth companies is mitigated. Companies with such extreme growth rates will not have as large an impact on a larger sample. We also have a slightly different sample and our analyzed time period is different. All these factors may have an impact on the results, but it is hard to single out which difference that leads to our stronger results.

5.2 Working Capital Management, Capital Expenditures, Labor and Wage

The results of the tests conducted on labor, wage, capital expenditures and working capital are exhibited in Tables 9-11. None of the results are significant on a 5 percent level, and only the relative improvement in working capital turnover for the entire sample and the primary buyout companies respectively is significant at 10 percent.

*Table 9: Results of Wilcoxon Signed Ranks Test on Hypothesized Performance Drivers for **Entire Sample***

	T_{min}	Mean	P-value
WAGE	+	-0.24	0.47
LABOR	-	1.14	0.79
WC TURNOVER	-	-0.56	0.06
CAPEX	-	0.28	0.18

¹⁸ All median values are presented in Tables 1 and 2.

Table 10: Results of Wilcoxon Signed Ranks Test on Hypothesized Performance Drivers for **Primary Buyout Companies**

	T _{min}	Mean	P-value
WAGE	+	0.78	0.47
LABOR	+	0.92	0.84
WC TURNOVER	-	-0.27	0.10
CAPEX	-	0.25	0.31

Table 11: Results of Wilcoxon Signed Ranks Test on Hypothesized Performance Drivers for **Secondary Buyout Companies**

	T _{min}	Mean	P-value
WAGE	+	-2.54	0.76
LABOR	-	1.64	0.34
WC TURNOVER	-	-1.21	0.17
CAPEX	-	0.36	0.45

5.2.1 Working Capital Management

The hypotheses tested were:

H_0 : Working capital turnover is not increased during the holding period of a primary buyout company relative to its peers.

H_1 : Working capital turnover is increased during the holding period of a primary buyout relative to the peer companies. **(Hypothesis 7)**

H_0 : Working capital turnover is not increased during the holding period of a secondary buyout company relative to its peers. **(Hypothesis 8)**

H_1 : Working capital turnover is increased during the holding period of a secondary buyout relative to the peer companies.

The mean relative change in working capital turnover is heavily influenced by a few extreme negative values. These extreme values have been controlled for and are correct, resulting in a discrepancy between these values and the medians. Since all the extreme values are negative, the mean values are not very representative and the median changes provide a more representative image. The relative median changes of the working capital turnover are slightly positive, both for the entire sample and for our subsamples, which would mean that the buyout companies use their working capital more effectively to generate sales. We do find some support for hypothesis 7, that primary buyout companies are better at working capital management on a 10 percent significance level.

5.2.2 Capital Expenditures

Hypotheses tested:

H_0 : *There is no difference in capital expenditures between primary buyout companies and their peers.*

H_1 : *Capital expenditures are lower in primary buyout companies relative to their peers.*
(Hypothesis 4)

H_0 : *There is no difference in capital expenditures between secondary buyout companies and their peers.* **(Hypothesis 5)**

H_1 : *There is a difference in capital expenditures between secondary buyout companies and their peers.*

We do not find any support for hypothesis 4 of lower capital expenditures for primary buyout companies compared to their peers. The null hypothesis of no difference in capital expenditures for secondary buyout companies compared to their peer groups can not be rejected, which is in line with what we expected (hypothesis 5). It is worth noting that the capital expenditures for both the entire sample and our two subgroups seem to be higher than for their respective peers. This result is highly surprising, as it contradicts both leveraged buyout theory and arguments from critics of the private equity industry. Also a bit surprising, our results indicate a higher relative level of capital expenditures for primary buyout companies than for secondary. However, as already mentioned, these differences are not significantly different from zero.

As we have mentioned before, all previous literature implicate that buyout companies in general invest less than their industry peers. One possible reason for the unexpected outcome may partly be explained by our findings of significant relative growth for all our samples (see Tables 3-5). Given a high relative growth rate, it is plausible to assume that this in part is due to increased capital expenditures. However, the significant relative growth is not accompanied by a significant relative degree of capital expenditures, implying that the growth has been established mainly by increased productivity. Thus, we can not rule out the possibility that capital expenditures are reduced relative to their peer companies, since our measure fails to recognize the aforementioned effect.

This potential problem might explain the lower relative level of capital expenditures for secondary buyout companies, since they have not increased in growth as much as the primary. It is also possible to argue that secondary buyout companies decrease capital expenditures more than primary, in order to enhance current cash flows, as described in section 3.3. Regardless, based on these findings, it is unlikely that secondary buyout companies have to increase capital expenditures during their holding periods as an effect of neglected necessary investments during the holding period of the previous owner.

5.2.3 Wage & Labor

As for the wage and labor measures, the following hypotheses were tested:

H_0 : *There are no reductions in wage levels for either primary or secondary buyout companies compared to their respective peers. (Hypothesis 10)*

H_1 : *There are differences in wage levels for primary and secondary buyout companies compared to their respective peers.*

H_0 : *There are no reductions of the labor force for either primary or secondary buyout companies compared to their respective peers. (Hypothesis 11)*

H_1 : *There are differences in the size of the labor force for primary and secondary buyout companies compared to their respective peers.*

We can not reject hypotheses 10 and 11 (see Tables 10 and 11) and this was in line with our expectations, and thus we conclude that there are no significant differences in these two measures between our two subsamples. These results are similar to those of Bergström et al. (2007). Probable reasons for this have already been provided under section 3.5.

5.3 Leverage

The hypothesis tested is:

H_0 : *The relative level of debt financing is the same in primary and secondary buyouts.*

H_1 : *The relative level of debt financing is higher in primary buyouts than in secondary buyouts. (Hypothesis 3)*

Table 12 shows that the mean multiple of D/EBITDA, 3.39¹⁹, is significant at the 5 percent level for primary buyout companies, whereas the mean multiple of 2.65 for secondary is not. This supports hypothesis 3 and previous research, and thus we can conclude that leverage is higher in primary buyouts than secondary. If this can be found to have an impact on operating performance in our following regression model, we will have reason to believe that primary buyout companies might perform better.

Table 12: Test of Difference in Leverage for Different Types of Buyout Companies

	Mean Difference	95% Conf.	Interval	P-value
Primary	2.39	0.26	4.52	0.03
Secondary	1.65	-0.19	3.48	0.08

¹⁹ The mean difference plus the test value: $2.39 + 1 = 3.39$

5.4 Operating Impact Regression Model

We will now test hypotheses 1, 2, 6, 9, 12 and 13. Table 13 displays the results of our estimated operating impact regression model for EBITDA margin on the entire sample, which is computed as:

$$(\Delta \text{EBITDA}_{\text{BOC}} - \Delta \text{EBITDA}_{\text{PC}}) = \alpha_1 + \beta_1 \times \Delta \text{WAGE} + \beta_2 \times \Delta \text{LABOR} + \beta_3 \times \text{LEVERAGE} + \beta_4 \times \text{CAPEX} + \beta_5 \times \Delta \text{WORKING CAPITAL TURNOVER} + \beta_6 \times \text{VENDOR}$$

Three of the variables are significant on a 5 percent level, namely ΔWAGE , ΔLABOR and LEVERAGE . Three out of six variables, ΔWAGE , $\Delta \text{WORKING CAPITAL TURNOVER}$ and VENDOR , generated the expected sign. Each independent variable will be discussed in the following section. The adjusted R^2 value is 0.176.

Table 13: Estimation of Operating Impact Regression Model, EBITDA margin

	Expected Sign	Estimated Coefficient	95% Conf.	Interval	P-value
Constant		3.02	.53	5.51	.02
CAPEX	-	.07	-.30	.43	.72
ΔWAGE	-	-.11	-.20	-.02	.02
ΔLABOR	-	.12	.00	.23	.05
ΔWC					
TURNOVER	+	.03	-.12	.18	.70
LEVERAGE	+	-.36	-.66	-.06	.02
VENDOR	-	-1.23	-5.35	2.89	.56
R^2	0.172				
Adj. R^2	0.096				

5.4.1 Capex

This variable did not generate the expected sign and is not significant on a 5 percent level. Neither could we find any significant support for any relative differences in the level of capital expenditure for our sample. We believe that the difficulties in computing a correct capital expenditures ratio due to unspecified data (as discussed above) have a distortive effect on this measure, and that this impacts our results. It would be interesting to further investigate this, given that all the relevant data can be obtained.

5.4.2 Wage

Since this variable is significant, it follows that a 1 percentage unit decrease in wage leads to an increase of the EBITDA margin by 0.11 percentage units, all other things equal. This supports hypothesis 11: that wage reductions can help explain true changes in the operating performance of buyout companies. This result was highly expected, since previous studies have come to similar conclusions.

5.4.3 Labor

The labor variable generates a positive sign and is significant on a 5 percent level. This implies that an increased labor intensity (sales/employees), i.e. a reduction of the workforce, improves operating performance. Our results show that a 1 percentage unit increase in the labor intensity leads to a 0.12% unit increase of the EBITDA margin. Hence, we can reject hypothesis 13. This is a bit surprising as Bergström et al. (2007) found the opposite. However, our findings are more in line with previous literature on the subject such as Schleifers and Summers (1988) and Easterwood et al. (1993).

5.4.4 Working Capital Turnover

We do not find any support for our hypothesis that a more efficient working capital management, i.e. an increase in working capital turnover leads to an increase in the EBITDA margin. However, the estimated beta coefficient has an expected positive sign.

One explanation for why our result is not significant could be the fact that there is not a clear cut relationship between improving the working capital turnover and obtaining a higher EBITDA margin.

5.4.5 Leverage

The estimated beta coefficient is negative, meaning that a lower relative Debt-to-EBITDA-ratio leads to a relative increase in the EBITDA margin. This is significant at the 5 percent level, which leads us to reject the null hypothesis that increased leverage leads to improved operating performance. This is a bit surprising. One possible explanation is that an increase in the absolute value of EBITDA will lower the leverage ratio and raise the EBITDA margin, holding all other variables constant. We have, however, not found any evidence of significant correlation between our dependent variable and our leverage ratio. Furthermore, Bergström et al. (2007), who used the same leverage statistic, but as the raw multiple rather than the industry adjusted, did not get any significant results, which does not indicate that the inclusion of the nominator of our dependent variable as a denominator in one of the explanatory variables generate significant results.

Another plausible explanation could be that higher leverage can lead to agency costs in the form of underinvestment. This view could have been supported if we also had found a decrease in capital expenditures, as that could have implied a debt overhang, which causes managers to underinvest. However, as we have already mentioned, we did not find any support for underinvestment in our sample.

Another, more direct, negative consequence of an increased debt burden is that it increases the probability of financial distress. Financial distress might lead to negative consequences, such as a loss of customers or suppliers (Berk and Demarzo, 2007). This is costly for the firm and decreases margins. Such effects are, however, not captured by our leverage measure.

5.4.6 Vendor

The sign of the beta coefficient is in line with what we had expected, but the variable is not significant. Therefore, even though we found support for our main hypothesis in our event studies, we can not conclusively say that primary buyout companies improve their operating performance more than secondary.

6. Summary & Conclusion

Private equity companies and their leveraged buyouts have existed for a long time. This has led to an extensive amount of theory and empirical studies and their ability to improve operating performance is well documented. Secondary buyouts, however, is a relatively new phenomenon which has grown in importance in previous years. The main purpose of this thesis was to test whether private equity companies are able to improve the operating performance in these secondary buyouts, as this would not be logical according to leveraged buyout theory.

First, we looked at industry adjusted differences between primary and secondary buyouts in measures that we believed have an impact on performance. This was done mainly through event studies. We then included these relative measures as independent variables in an estimated regression model on operating impact and also included a dummy variable categorizing the type of buyout. We performed our study on the Swedish market as there is exceptional accounting data available for non-listed companies.

The main finding from our event studies imply that primary buyouts improve the operating performance, whereas we cannot say that secondary buyouts show any relative performance improvements. This was in line with our hypothesis.

We do not find that buyout companies have lower levels of capital expenditures, which is surprising as it contradicts most previous literature. Moreover, we find a lower level of capital expenditures for secondary buyout companies than for primary. However, none of these results are significant. Our results also indicate that both primary and secondary buyouts improve the working capital ratio. We find that leverage is higher for primary than secondary buyouts, which was what we had expected. Wage levels and labor input was not found to be changed relative to peer companies.

Our estimated regression model shows that capital expenditures and the working capital ratio do not significantly influence our main operating performance statistic, EBITDA margin. However, we find that a decrease in leverage improves operating performance, which contradicts Jensen's (1986) arguments regarding leverage's ability to reduce agency costs and thus improving operating performance. We find that wage reductions lead to improved operating performance, which supports arguments regarding the breaching of implicit contracts put forward by Schleifers and Summers (1988). However, we find significant results that imply that an increase in the labor intensity improves operating performance, which contradicts our hypothesis.

Our hypothesis regarding labor intensity, that a reduction of the workforce would not lead to improvements in operating performance, was entirely based on the findings of Bergström et al. (2007), since their sample was similar to ours. However, the results of our study are more in line with traditional leveraged buyout theory and makes logical sense.

Our dummy variable for secondary buyouts points in the direction that we had expected, but is insignificant. Therefore, despite our event study findings, we can not positively conclude that primary buyouts improve relative operating performance more than secondary buyouts. Moreover, we find that our model for explaining operating performance is not very strong (0.096) in its explanatory power. This might not be an odd result as we used relatively few variables to try to explain performance, which surely is influenced by a vast amount of different factors.

It would be interesting to see a similar study conducted on a larger sample in the future when more secondary buyouts have exited. It is plausible that this could generate stronger results. As we had difficulties in accurately defining a good measure for capital expenditures, due to insufficiently specified accounting data, we would also like to see if this problem could be overcome in order to test whether capital expenditures have explanatory power on operating performance. Ideally, a capital expenditures measure proportional to sales growth could be constructed. Thereby, the relative level of capital expenditures could be more reliably and separately identified. It would be preferable if data on items such as goodwill and depreciation were available on a separate basis as well.

As mentioned in section 1.2, our aim was to investigate the impact of changes in the boards of the acquired companies. However, we did not manage to find sufficient data to quantify this possible impact. Considering that Acharya et al. (2009) found that board changes in the buyout companies can explain abnormal returns for private equity firms, it would be interesting to investigate if this also could explain improved operating performance. Acharya et al. (2009) argue that one of the reasons for the abnormal returns is the more active ownership and governance of the portfolio companies, which in turn is attributed to smaller boards who meet more often. Thus, it seems plausible to assume that it would be difficult to further improve companies in this respect in a secondary buyout. However, it cannot be ruled out that the secondary buyout acquirer has other core competencies than the previous owner, which could potentially lead to improvements in areas that were not fully optimized during the first holding period.

Given our finding of higher leverage in primary buyout companies compared to secondary, it is probable that secondary buyout companies are less likely to experience financial distress. Hence, there is reason to believe that secondary buyout companies have not been as negatively affected as primary during the recent credit crisis and therefore will be in a better position as the global economy turns.

The results of our event studies, even though not supported by our regression analysis, indicate that there are not as much operating performance improvements in a secondary buyout, which to

our knowledge is the first contribution to explaining differences between primary and secondary buyouts on the Swedish market. However, as our event study results are not supported by our regression analysis, we realize that we have failed in finding drivers of improved operating performance for leveraged buyout companies that can explain the differences between the two defined types of buyouts. It follows that this might be an area of particular interest for further research.

Regarding the generality and validity of our results, one has to be careful since our sample only contains 22 secondary buyouts. The fact that we had to make some adjustments in the calculations of our measures, where data were not sufficient, further limits the generality and validity of our study. Despite this fact, our results may in fact explain some true differences in characteristics and operating performance between Swedish primary and secondary buyout companies. Hopefully, more research can be conducted in the future for a more exhaustive analysis.

7. References

- Acharya, V., Hahn, M. and Kehoe, C. (2009). *Corporate Governance and Value Creation: Evidence from Private Equity*. Working Paper. LONDON BUSINESS SCHOOL.
- Axelsson, U., Jenkinson, T., Strömberg, P. and Weisbach, M. (2007), *Leverage and Pricing in Buyouts: An Empirical Analysis*. Working paper. Stockholm School of Economics.
- Berck, J. and DeMarzo, P. (2007), *Corporate Finance*. Boston: Pearson International Edition.
- Beroutsos, A., Freeman, F. and Kehoe, C. (2007), “What Public Companies Can Learn from Private Equity”, *McKinsey on Finance* (22), 1-6.
- Boston Consulting Group and the IESE Business School (2008), *Get Ready for the Private Equity Shakeout – Will this Be the Next Shock to the Global Economy?*
- Bull, I. (1989), “Financial Performance of Leveraged Buyouts: An Empirical Analysis”, *Journal of Business Venturing* 4(5), 263-279.
- Butler, P. (2001), “The Alchemy of LBOs”, *McKinsey Quarterly* (2), 140-151.
- Bergström, C., Grubb, M. and Jonsson, S. (2007), ”The Operating Impact of Buyouts in Sweden: A study of Value Creation”, *Journal of Private Equity* 11(1), 22-39.
- Carlbon, T. (2009), ”Harald Mix: Altors vd till rikskapitalisternas försvar”, *Veckans Affärer*, No. 19, pp. 47-53.
- Cumming, D., Siegel, D. and Wright, M. (2007), “Private Equity, Leveraged Buyouts and Governance”, *Journal of Corporate Finance* 13(4), 439-460.
- DeAngelo, H., DeAngelo, L. and Rice, E. (1984), “Going Private: Minority Freezeouts and Stockholder Wealth”, *Journal of Law and Economics* 27(2), 367-401.
- Easterwood, J., Seth, A. and Singer, R. (1989), “The Impact of Leveraged Buyouts on Strategic Direction”, *California Management Review* 32(1), 30-43.
- European Parliament. (2006), “REGULATION (EC) No 1893/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL”, *Official Journal of the European Union*.
- Guo, S., Hotchkiss, E. and Song, W. (2009), *Do Buyouts (Still) Create Value?*. Working Paper. Boston College.
- Harris, R., Siegel, D. and Wright, M. (2005), “Assessing the Impact of Management Buyouts on Economic Efficiency: Plant-Level Evidence from the United Kingdom”, *The Review of Economics and Statistics* 87(1), 148-153.
- Heel, J. and Kehoe, C. (2005), “Why Some Private Equity Firms Do Better than Others”, *McKinsey Quarterly* (1), 24-26.

- Holthausen, R. and Larcker, D. (1996), "The Financial Performance of Reverse Leveraged Buyouts", *Journal of Financial Economics* **42**(3), 293-332.
- Kaplan, S. (1989a), "The Effects of Management Buy-outs on Operating Performance and Value", *Journal of Financial Economics* **24**(2), 217-254.
- Kaplan, S. (1989b), "Management Buyouts: Evidence of Taxes as a Source of Value", *The Journal of Finance*, **44**(3), 611-632.
- Jensen, M. (1986a), "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers", *American Economic Review*, **76**(2), 323-329.
- Jensen, M. (1986b), "The Takeover Controversy: Analysis and Evidence", *Midland Corporate Finance Journal*, **4**(2)
- Jensen, M. and Murphy, K. (1990), "Performance Pay and Top-Management Incentives", *Journal of Political Economy* **98**(2), 225-264.
- Kaplan, S. and Strömberg, P. (2008), *Leveraged Buyouts and Private Equity*. Working paper.
- Miller, M. and Modigliani, F. (1958), "The Cost of Capital, Corporate Finance and the Theory of Investment", *American Economic Review* **48**(3), 261-297.
- Muscarella, C. and Vetsuypens, M. (1990), "Efficiency and Organizational Structure: A Study of Reverse LBOs", *The Journal of Finance* **45**(5), 1389-1413.
- Newbold, P., Carlson, W. and Thorne, B. (2007), *Statistics for Business and Economics*. New Jersey: Pearson Prentice Hall.
- Palepu, K. (1990), "Consequences of Leveraged Buyouts", *Journal of Financial Economics* **27**(1), 247-262.
- Private Equity Council (2007), *Public Value: A Primer on Private Equity*
- Shleifer, A. and Summers, L. (1988), "Breach of Trust in Hostile Takeovers", in Auerbach, A. (red.), *Corporate Takeovers: Causes and Consequences*. Chicago: University of Chicago Press.
- Singh, H. (1990), "Management Buyouts: Distinguishing Characteristics and Operating Changes Prior to Public Offering", *Strategic Management Journal* **11**(Special issue), 111-129.
- Smith, A. (1990), "The Effect of Leveraged Buyouts", *Business Economics* **25**(2), 19-25.
- Stulz, R. (1990), "Managerial Discretion and Optimal Financing Policies", *Journal of Financial Economics* **26**(1), 3-27.

White, G., Sondhi, A. and Fried, D. (2003), *The Analysis and Use of Financial Statements*. Danvers: Wiley.

Wiersema, M. and Liebeskind, J. (1995), "The Effects of Leveraged Buyouts on Corporate Growth and Diversification in Large Firms", *Strategic Management Journal* **16**(6), 447-460.

Wright, M., Hoskisson, R. and Busenitz, L. (2001), "Firm Rebirth: Buyouts as Facilitators of Strategic Growth and Entrepreneurship", *Academy of Management Executive* **15**(1), 111-125.

Appendix A - Primary Buyouts in Sample

Company	Sponsor	Entry Year	Exit Year
Acando Consulting	Accent Equity Partners	1999	2003
Aco Hud	Altor Equity Partners	2003	2004
Ahlsell	Nordic Capital	1999	2005
Alfa Laval	Industri Kapital	2000	2005
Anticimex	Nordic Capital	2001	2005
Arca Systems	Industri Kapital	1998	2005
Aura Group	Bridgepoint Capital	2000	2006
B2 Bredband	The Carlyle Group	1999	2005
Bewator Group	EQT	2002	2005
C More Entertainment	Nordic Capital	2003	2005
Carmen Systems	Gilde Investment Managers	1997	2006
Security Cube Systems	Accent Equity Partners	2002	2004
Cefar Medical	Accent Equity Partners	2003	2006
Clean Chemical Sweden	Segulah	2002	2004
Cochlear Bone Anchored Solutions (outlier)	CapMan	1999	2005
Dometic	EQT	2001	2005
Dotcom Solutions	3i	2000	2005
Education & Entertainment	Duke Street Capital, Segulah	2000	2004
Eldon	EQT	2001	2006
Elitfönster	Triton	1999	2004
Fastighets AB Tornet	Ratos	2003	2005
Findus	EQT	2000	2006
Flexlink	EQT	1997	2005
Frigoscandia Distribution	Triton	2002	2005
GCE Holding	Triton	2004	2005
Gislaved Folie	Nordic Capital	1994	2003
Guide Konsult	Nordic Capital	2001	2006
Guldfynd Sverige	Industri Kapital	1993	2001
HemoCue	EQT	1999	2007
Hilding Anders	Nordic Capital, Ratos	2001	2003
Hörnell International	3i, Accent Equity Partners	1996	2004
Intentia International	Tennenbaum Capital Partners	2004	2005
Interpeak	Ledstiernan, SEB Venture Capital	2004	2006
Intrum Justitia	Industri Kapital	1998	2005
IVT Industrier	3i	1994	2002
Kreatel Communications (outlier)	ABN Amro	2000	2006
Multicom Security	Industri Kapital	2001	2005
Mölnlycke Healthcare	Accent Equity Partners, Nordic Capital	1997	2005
NeoPharma (outlier)	3i, Capman	1999	2004
Nordic Bake-Off	Accent Equity Partners	2005	2006
Nordisk Renting	3i	1998	2003
NVS Installation	Segulah	2002	2006
Oriflame Cosmetics	Industri Kapital	1999	2004
Sab Wabco	Vestar Capital Partners	2002	2004
Semper	Triton	2003	2006
Stenqvist	EQT	1999	2003
Stjaern TV	EQT	1998	1999
Sven-Axel Svensson Bijouterier	Accent Equity Partners	2000	2004
Svenska Fönster	Axcel Industriinvestor	2000	2004
Sydsvenska Kemi	Industri Kapital	2001	2005
Thule	EQT	1999	2004
Tradex	EQT	2000	2006
Tribon Solutions	Accent Equity Partners	2002	2004
Victor Hasselblad	Cinven	1996	2003
VSM Group	Industri Kapital	1997	2005
Åkerströms	Brainheart Capital	2001	2008

Appendix B - Secondary Buyouts in Sample

Company	Sponsor	Entry Year	Exit Year
Alignment Systems	3i, Ratos	2001	2006
Carpark	Bridgepoint Capital	2001	2006
Elmo Leather	Accent Equity Partners, Nordic Capital	1999	2004
Envac Centralsug	3i, Ratos	2001	2005
Gislaved Folie	Stena Adactum	2003	2007
Hilding Anders International	Investcorp	2003	2006
HMS Industrial Networks	Segulah	2004	2007
Häggblunds Drives	RATOS AB	2001	2008
IVT Industrier	AAC Capital Partners	2002	2004
JD Stenqvist	Triton Partners	2003	2008
Jens S. Transmissioner	3i, Ratos	2001	2005
Kronans Droghandel	3i, Ratos	2001	2002
MacGregor	IK	1998	2004
Martinsson Gruppen	3i, Ratos	2001	2005
Mölnlycke Health Care	Apax Partners	2005	2007
Nederman	EQT	1999	2007
Sweden On Line	3i, Ratos	2001	2001
TAC	EQT	1998	2003
Thermia Värme	Procuritas	2004	2005
Thule	Candover	2004	2007
Total Logistik	Accent Equity Partners	1999	2006
Victor Hasselblad	Cinven/UBS Private Equity	1996	2003

Appendix C - Test of Data Sets Properties

Multicollinearity

If two or more of the explanatory variables are linearly correlated, multicollinearity arises. This can distort the estimated variable coefficients and thus make it difficult to single out the effect of each variable. We have not found any significant indications of multicollinearity between our variables. This has been controlled for by looking at all the variance inflation factors (VIF), who are all below 5, and by looking at our R^2 values (see Table 14). If high R^2 values are observed with few significant variables, this is an indicator of multicollinearity. However, given our R^2 values ($R^2=0.172$, adjusted $R^2=0.096$) and three variables significant on a 5 percent level, we have no reason to suspect multicollinearity.

Table 14: Multicollinearity Statistics

	Tolerance	VIF
INVESTMENTS	.951	1.052
WAGE	.812	1.232
LABOR	.790	1.266
WC TURNOVER	.970	1.031
LEVERAGE	.924	1.082
VENDOR	.987	1.013

Heteroscedasticity

To test for heteroscedasticity, we use the Breusch-Pagan/Cook-Weisberg test. Heteroscedasticity is a term used for a dependent relationship between the variance of the error term and the values of the explanatory variables. This means that these variances are not constant and as a consequence, the

variance of the estimated coefficients is not minimized. The results in Table 15 show that we do not have any problems with heteroscedasticity on a 5 percent significance level.

Table 15: Breusch-Pagan/Cook-Weisberg Test for Heteroscedasticity

H₀: Constant Variance	
χ²	2.05
P > χ²	0.15

Appendix D - Supplementary regressions

Estimation of Operating Impact Regression Model, ROIC

	Expected Sign	Estimated Coefficient	95% Conf.	Interval	P-value
Constant		20.12	1.91	38.33	.03
CAPEX	-	-1.90	-4.55	.75	.16
ΔWAGE	-	-.21	-.90	.47	.54
ΔLABOR	-	.46	-.39	1.31	.28
ΔWC					
TURNOVER	+	-.10	-1.21	1.01	.86
LEVERAGE	+	-1.18	-3.36	1.00	.28
VENDOR	-	-17.52	-47.66	12.62	.25
R²	0.10				
Adj. R²	0.01				

For ROIC, none of our explanatory variables are significant and, not surprisingly, the adjusted R²-value is relatively low. Three out of six variables generated the expected sign.

Estimation of Operating Impact Regression Model, Sales Growth

	Expected Sign	Estimated Coefficient	95% Conf.	Interval	P-value
Constant		5.60	.77	10.42	.02
CAPEX	-	.99	.29	1.69	.01
ΔWAGE	-	.04	-.14	.22	.67
ΔLABOR	-	.69	.46	.91	.00
ΔWC					
TURNOVER	+	.00	-.29	.30	.98
LEVERAGE	+	-.23	-.80	.35	.43
VENDOR	-	-1.60	-9.60	6.39	.69
R²	0.47				
Adj. R²	0.42				

Our estimated model does a significantly better job at explaining sales growth; even though only two variables are significant (LABOR and CAPEX), the adjusted R²-value is quite good, 0.419. However, since both LABOR and CAPEX are ratios that include sales, this is not very surprising.