

The Operating Performance of Private Equity Exits

-The search for a long-term private equity effect

Jimmy Hallberg[♫] Anders Nordström[♫]

December 2013

Master's Thesis in Finance
Stockholm School of Economics

Abstract

This thesis assesses the existence of a post-exit private equity effect on operating performance. Previous studies have mostly focused on U.S. based companies exited through reversed leveraged buyouts which could cause selection bias. By studying the Swedish market of private equity exits, we mitigate this bias by studying exits regardless of the new ownership form. Our dataset consists of 40 exits occurring between 1996 and the first half of 2006 and we measure the post-exit development up to six years after the exit. We find that previously private equity owned companies continue to significantly outperform their competitors up to three years post exit. Subsequently, the difference in performance starts to decrease and is almost completely gone six years after the exit. We also find that the post-exit ownership has no significant effect on the post-exit operating performance. Our findings are in line with some previous research conducted on U.S. data, which also finds the fading pattern of the post-exit private equity effect. However, our findings are contrary to a similar previous study conducted on Swedish data. We explain this mainly through the richer dataset with more included measures, companies and a longer event window, as well as the fact that we control for post-exit ownership. The cause of the post-exit private equity effect is argued to be related to the efficiency measures and governance structure applied by the previous private equity owner.

Keywords: Private Equity, Post-exit operating performance, Corporate Governance

Tutor: Professor Clas Bergström

Presentation: 17 December 2013, 1:00 PM

Venue: Room 538

Discussants: Rudi Faccini and Mattia Scolari

Acknowledgements: We would like to thank our tutor Clas Bergström for valuable input during the process of writing this thesis.

Contents

1. Introduction	4
2. Previous research.....	7
2.1 Performance during private equity ownership.....	7
2.1.1 Capital, employment and wages	9
2.2 Post-exit performance.....	10
2.2.1 Types of exits	10
2.2.2 Long run performance	10
2.2.3 Capital and employment.....	11
3. Hypotheses	12
3.1 Main hypotheses: Post-exit operating performance	12
3.2 Sub hypotheses	13
3.2.1 Capital expenditure and net working capital	13
3.2.2 Employment and wages.....	13
4. Methodology.....	15
4.1 Measuring operating performance	15
4.1.1 EBITDA-margin	15
4.1.2 ROIC.....	16
4.1.3 Sales CAGR.....	16
4.1.4 Potential problems in measuring operating performance	16
4.2 Measuring capital expenditures, net working capital	17
4.3 Measuring employment and wages	17
4.4 Peer groups	17
4.5 Time frame	18
4.6 Hypothesis testing	18
4.6.1 Operating performance measures	18
4.6.2 Additional measures	19
4.6.3 Statistical significance	19
4.6.4 Regression analysis	20
5. Data.....	21
5.1 Data in previous studies.....	21
5.2 Our dataset.....	21
5.2.1 Data gathering and potential problems.....	22
5.2.2 Descriptive statistics	23
6. Results and analysis.....	29
6.1. Operating performance	29
6.1.1 Results of raw tests	29

6.1.2 Results of industry-adjusted tests	31
6.1.3 Regression results	34
6.1.4 Analysis of operating performance.....	36
6.2 Capital expenditure and net working capital	39
6.2.1 Results of raw tests	39
6.2.2 Results of industry-adjusted tests	40
6.2.3 Regression results	41
6.2.4 Analysis of CAPEX and NWC.....	43
6.3 Employment and wages	44
6. 3.1 Results of raw tests	44
6.3.2 Results of industry-adjusted tests	46
6.3.4 Regression results	47
6.3.4 Analysis of employment and wage.....	48
6.4 Summary of results	49
7. Conclusion	50
8. References	52
Appendix	55
A	55
B	56

1. Introduction

In the recent years, there has been a great amount of debate regarding the private equity industry in Sweden. According to the Swedish Venture Capital Association¹ (SVCA), Swedish private equity sponsors have SEK 470 billion invested both in Sweden and abroad. Some 4.3% of the Swedish labor force work in companies owned by private equity sponsors and a substantial part of these companies are in the welfare sector. Because of this, it is not surprising that the debate has focused on the nature and quality of private equity ownership.

During the last couple of years, there have been some scandals where private equity sponsors have come under rigorous scrutiny, e.g. the Carema Care scandal in 2011 (Dagens Nyheter, 2011) and the bankruptcy of JB Education in 2013 (Emtén, 2013). In light of these scandals, critics have argued that private equity funds are only focused on maximizing the value of their current investments, leading to excessive cost-cutting and down-sizing as well as funneling tax money to tax havens (Sjöstedt, 2013). Others claim that private equity funds in general are good owners of companies and that they need to nurture and develop their investments in order to maximize the chance of realizing good profits at the exit of the investment (Jordal and Tåg, 2011).

The effect of private equity ownership can be observed from two different perspectives. The first perspective is to look at the development of the portfolio company during the time it is owned by the private equity fund in order to assess the quality of the private equity ownership. The other perspective is to look at the development of the portfolio company after the private equity fund has made its exit. The first perspective however cannot assess potential long-term effect of the private equity ownership and answer the question regarding the potential short-termism.

The question regarding private equity ownership has not only been covered in the press, but has also been a topic frequent in academic research. Previous research indicates that there is a positive effect of private equity ownership, but due to scarce availability of data, research has focused almost exclusively on the first perspective discussed above. This means that the question regarding long-term private equity effect has not yet been covered thoroughly enough.

This paper aims at investigating the long-term industry-adjusted operating performance of Swedish companies previously owned by private equity sponsors

¹ SVCA, a Swedish branch of The European Private Equity and Venture Capital Association (EVCA), a lobby organization for the European private equity sector.

(henceforth denoted exit company or exit companies) and assess if there exists a post-exit private equity effect. Previous studies on the subject have primarily focused on the U.S. market and are limited to only examine companies exited through a reverse leveraged buy-out² (RLBO), e.g. Degeorge and Zechhauser (1993), since company accounting data is only available for public companies in the U.S. We argue that these studies suffer from selection bias since they only cover one type of exit strategy. According to Kaplan and Strömberg (2009) exits through initial public offerings (IPOs) have decreased substantially and is the least common exit strategy for private equity sponsors, these findings are also supported by the EVCA (2012).

This paper also assesses the existence of an observable difference in operating performance between different types of buyers (financial buyers, strategic buyers and initial public offerings) of the particular companies studied. Since we know from previous studies that portfolio companies of private equity funds generally outperform their peers, it is crucial for the analysis of this study to control for the type of buyer in order to assess the true post-exit effect of private equity ownership. Without this control, there would be a risk for a bias in the results since the post-exit operating performance could potentially be caused by the new ownership of the exit company.

In addition, we will also analyze how other metrics including capital expenditure, net working capital, employment and wages has developed post exit. This is interesting since these metrics have a proven effect on the long-term performance of operations, but could potentially be disregarded in order to maximize short-term profits, which is something private equity funds have been accused of. Also here will we control for type of buyer post exit, for the same reason as argued above.

By using Swedish company accounting data, which is publicly available regardless of ownership form, we will be able to conduct an unbiased study. To our knowledge, this has only been done once in Sweden when Bredinger and Nyman (2011) examined the industry adjusted operational performance of 31 companies three years after exit. Our study uses a larger sample of 40 companies and a substantially longer event window in order to better capture the long-term effect. We also include more measures for operating performance and examine the effect on wage and employment, whereas Bredinger and Nyman focus on capital management effects. Our largest contribution is

² A reverse leveraged buyout occurs when a company previously bought in a leveraged buyout is sold through an IPO.

the fact that we control for the post-exit ownership effect on operating performance, capital management and employment metrics.

The main findings of our study support the existence of a positive post-exit private equity effect, as the operating performance measures EBITDA-margin, return on invested capital (ROIC) and sales CAGR for the exit companies continue to significantly outperform industry peers after the exit. However, the difference between the exit companies and their peers is largest up until three years post exit and then starts to decrease, indicating that the post-exit effect is fading over time.

Our results differs from previous findings by Degeorge and Zechhauser (1993) who found that companies exited through a RLBO performed significantly worse than their industry peers. Our findings are more in line with Holthausen and Larcker (1996) who argue that the private equity effect continues to make RLBOs superior to their industry peers up to four years after exit when it fades away. However, in our study, the private equity is evident for a slightly shorter period.

We find no evidence that the type of buyer has any significant impact on the operating performance for these particular exit companies, which strengthens the relationship between the increase in operating performance and the previous private equity ownership i.e. a post-exit private equity effect.

The structure of this thesis is set up such as: Section 2 discusses previous research regarding the subjects of buyouts and operating improvements. Section 3 covers both the main hypotheses as well as a number of sub hypotheses for the study. Section 4 gives an overview of the methodology used. Section 5 describes the dataset used and provides descriptive statistics. Section 6 presents and analyzes the results of the study. Section 7 draws conclusions of the results and discusses some potential limitations as well as giving some suggestions for future research.

2. Previous research

This section presents and discusses findings by previous research regarding the operating performance during and after the holding period. We also present research regarding the relationship between private equity effects on capital management and employment/wages.

2.1 Performance during private equity ownership

A widely used explanation of the superior operating performance of private equity owned companies is agency theory. The theory claims that there could be a conflict of interest between the owners (principal) and the managers (agent) where the owner want to maximize share value and managers want to increase their resources (Jensen 1986). The conflict requires costly monitoring of the agent which lowers the principal's return. Agency costs can be reduced by aligning the incentives of the agent and the principal with management ownership in the company (Berg and Gottschalg, 2004). A high level of debt can also reduce agency costs since management are incentivized to increase the free cash flow for interest and debt repayment (Jensen, 1986). However, the high level of debt can make risk-averse managers invest only in safe projects in order to lower the risk of bankruptcy, thus reducing shareholder return. The reduction of agency costs has no direct effect on the operating performance, but can facilitate operational improvements (Berg and Gottschalg, 2004).

Previous empirical studies (e.g. Kaplan 1989, Muscarella and Vetsuypems 1990 and Harris et al. 2005) have during the last two to three decades found clear evidence of a positive private equity effect on the operational performance and value increases of their portfolio companies. Kaplan (1989) explains the improvements by better management incentives rather than a transfer of wealth from employees to owners. Muscarella and Vetsuypems (1990) argue that that the improvements are results attributable to cost reduction rather than to revenue generation or improved asset turnover.

A significant share of previous studies is performed on U.S. data where disclosure of accounting data for non-public companies is highly voluntary. This means that these studies are made on portfolio companies that have been exited through an IPO which has made historical accounting data available. A problem with the studies is that they potentially suffer from selection bias since only one type of exit was studied as well as omitting bankrupt companies.

There are however some studies made in countries where accounting data is publicly available regardless of ownership form. According to Swedish law (Årsredovisningslag [1995:1554] 8 sec. 3 § and Bokföringslag [1999:1078] 6 sec. 2 §) all joint-stock companies and financial institutions must deliver audited annual accounts to the Swedish Companies Registrations Office where they are made publicly available. This creates an opportunity for unbiased studies where for instance Bergström et al. (2007) confirm the existence of a positive private equity effect when investigating the operating performance during private equity ownership in Sweden.

Cumming et al. (2007) argue in their summary of existing literature for private equity ownership that returns of the portfolio companies are significantly enhanced by corporate governance mechanisms such as active investors and the commitment to service debt as well as by the incentives from managerial equity ownership.

Another feature of private equity ownership is that the boards of portfolio companies are smaller and summoned more frequently. According to a study by Yermack (1986) smaller boards are more efficient than large ones. More frequent board meetings enables the private equity sponsors to better monitor the business and trim the strategy and targets as well as incentives (Easterwood et al., 1989).

Public companies are priced and evaluated by the market on a daily basis. Thus, negative company specific news and lower earnings than expected can in a matter of seconds result in a sharp decrease in company value. As a result of this, there could be a risk of managers trying to please the market by reporting a smooth development in earnings from quarter to quarter, by avoiding investments that results in dips in earnings but create long-term growth. In an interview study of 401 financial executives in public companies, Graham et al. (2005) find that 78% would chose to give up long-term economic value in order to smoothen out earnings. This supports the findings by Bushee (1998) that short-horizon institutional investors are more likely to sacrifice R&D costs in order to stabilize earnings in publicly traded companies, reducing economic growth and shareholder value.

Due to the illiquidity of ownership in the portfolio companies, managers have less incentive to manipulate short-term performance and earnings for their personal gain (Kaplan and Strömberg, 2009). In private equity ownership, managers can work undisturbed by the stock market and thus make investments and take necessary actions to create a long-term economic growth and shareholder value. Lerner et al. (2010) investigates if private equity ownership relieves managers from public shareholder

pressure or sacrifice long-term growth to boost short-term performance. Using patenting activity as a proxy for long-term growth they find no evidence for that private equity ownership leads to short-termism.

With these findings in mind, it could be argued that private equity ownership is a better ownership form when it comes to long-term growth and sound management. In 1989 Jensen foresaw the ownership form created by leveraged buyouts to grow significantly in the future and continue to play an important role in society. Jensen argued that the private equity firm is a superior form of ownership compared to the dispersed public ownership.

2.1.1 Capital, employment and wages

During private equity ownership, capital expenditures for the portfolio companies tend to go down (Kaplan, 1989, Muscarella and Vetsuypems, 1990). The same phenomenon seems to exist for working capital, i.e. lower levels of net working capital amongst private equity owned companies. Previous studies (e.g. Easterwood et al., 1989) argue that private equity sponsors aims at handling working capital in a more efficient manner during the holding period.

The effect of private equity ownership on employment and wages is a subject that gives rise to a lot of discussion regarding the preconceptions that private equity owners keep employment and wages at minimum levels in order to maximize profits. Despite these preconceptions, academia has not taken a clear stance on the matter.

Studies by e.g. Holthausen and Larcker (1996) and Bergström et al. (2007) find that private equity ownership has no negative effect on employment and wage levels during the holding period. These findings are to some extent supported in a rigorous study by Davis et al. (2011). The study investigates 3,200 U.S. private equity transactions from 1980 to 2005 and concludes that private equity ownership only has a very small negative impact on the industry-adjusted employment. The authors also bring forward that private equity ownership is a good catalyst when it comes to create new types of jobs.

2.2 Post-exit performance

2.2.1 Types of exits

Private equity sponsor can exit a portfolio company in a number of ways. Three of the most common are (1) a sale to a strategic player, for instance a company in the same sector as the portfolio company or a conglomerate, (2) a sale to another private equity sponsor or to the current management or (3) a sale through an IPO.

Kaplan and Strömberg (2009) find in a dataset of 17,171 transactions from 1970 to 2007 that 38% of the buying companies were strategic investors, 24% consisted of a secondary leveraged buyout by another private equity sponsor and only 14% of the exits were made through an IPO. The authors argue that exit through an IPO has decreased significantly in relative importance over time, in line with a less attractive IPO climate. These findings are confirmed by the EVCA, which states that exits through IPOs have decreased steadily over the past years and as of 2012, only 1.6% of exits were through IPOs (EVCA, 2012).

2.2.2 Long run performance

With agency theory being one of the main arguments for the superiority of private equity ownership, the arguments discussed in section 2.1 should be able to explain the post-exit operating performance. If this were to be true, the operating performance should be significantly worse after the private equity holding period. However, previous empirical research is not as unanimous when it comes to the post-exit operating performance as compared to the holding period.

Degeorge and Zechhauser (1993) find that after relisting, RLBOs performed significantly worse than their industry peers, although the operating performance was still positive. The authors claim that the industry-adjusted deterioration is explained by information asymmetry where the sellers have access to internal information and can exit when it is most profitable.

Holthausen and Larcker (1996) find in a study on the operating performance of RLBOs that they continue to perform better than their industry after relisting. This positive private equity effect continues to exist up to four years before it disappears. This is to some extent supported by Bruton et al. (2002) who find a similar effect, but it decreases significantly during the third year and the authors link it to the agency theory.

As with the previous empirical studies on operating performance during the holding period, the post-exit studies made have also to a large extent been made on RLBOs

which could create the same selection bias as previously discussed. With the publicly available accounting data in Sweden, this creates an opportunity to perform unbiased studies. To our knowledge, this has only been done once. In their BSc thesis, Bredinger and Nyman (2011) analyses the impact of private equity ownership on operating performance during and post holding period. The authors confirm the findings by Bergström et al. (2007) and argue that there exists a private equity effect during the holding period. Post exit, Bredinger and Nyman (2011) find that the exit companies perform significantly worse than their respective industry when measuring the performance during three years³. They argue that without the managerial incentives and financial/industrial support from the private equity sponsor, agency costs are reintroduced and/or management loses the capabilities required to maintain profitability. Another reason for the deterioration in operating performance post exit brought forward is the information asymmetry advantage that the private equity sponsor has to exit the portfolio company when profitability is maximized.

2.2.3 Capital and employment

Little research is done on the post-exit development of capital expenditures and net working capital. In their study on RLBOs, Holthausen and Larcker (1996) find that the level of capital expenditure and net working capital increases to the median level of the respective industry. Hill and Phan (1995) argues that managers are more interested in growth than firm efficiency, indicating that working capital can be assumed to increase post exit when the agency problem might return.

For the post-exit development in employment, previous research is to our knowledge limited to the studies on RLBOs. Holthausen and Larcker (1996) find no evidence that the staffing levels of RLBO firms are different from their industries whereas Jelic and Wirght (2011) argues that employment tends to increase following an IPO exit.

³ For some companies, Bredinger and Nyman (2011) were only able to include two years of post-exit data.

3. Hypotheses

The hypotheses of this thesis will be divided into two main hypotheses and eight sub hypotheses. The main hypotheses will assess if the exit companies show a positive industry-adjusted operating performance and if this is the result of the previous private equity ownership. The sub hypotheses will assess the post-exit development in capital expenditures, net working capital, employment and wages and if the development differs between the types of buyers.

3.1 Main hypotheses: Post-exit operating performance

Previous empirical research (Holthausen and Larcker, 1996 and Bruton et al., 2002) has shown that exit companies continue to outperform their peers up to three to four years which points to a positive private equity effect. With these studies suffering from selection bias and the fact that exit through an IPO is the least common type with a negative trend; we suspect that an unbiased study could show a more long-lasting effect.

Even though Bredinger and Nyman (2011) conduct an unbiased study and find no evidence of a positive post-exit private equity effect, we argue that their relative short period of measurement could be misleading. After an exit, there could be a period where the company is in a transition phase, which distorts the results. Bredinger and Nyman (2011) only use two measures of operating performance; EBITDA-margin and Return on Invested Capital (ROIC). We believe that by conducting an unbiased study with a longer period of measurement and additional measures of operating performance we will be able to capture the existence of a positive post-exit private equity effect.

H1: The post-exit operating performance of exit companies continues to be better than their respective peer group

Since the private equity effect ought to be the result of operational and strategic improvements implemented during the holding period, it is important to control the post-exit operating performance for the post-exit ownership. By doing this, we hope to rule out the possibility that a potential advantage for exit companies compared to their peers is the result of the post-exit ownership. This control is not made by Bredinger and Nyman (2011) which leaves some questions in their study unanswered which we intend to answer. In our study we expect to find that the operating performance of the exit companies is unaffected by the post-exit ownership.

H2: The possible continued operating performance advantage is not an effect of the post-exit ownership

3.2 Sub hypotheses

3.2.1 Capital expenditure and net working capital

Capital expenditure and capital management are important parts in private equity ownership. Empirical research (e.g. Kaplan, 1989 and Easterwood et al., 1989) has shown that the level of capital expenditure and net working capital goes down during private equity ownership. Holthausen and Larcker (1996) find that these items increase post-exit to the median level of the respective industry. A reason for this increase could be explained by the reintroduction of the agency problem as with Hill's and Phan's (1995) discussion regarding managers being more interested in growth than firm efficiency. Therefore, we expect to see that the post-exit levels of capital expenditure and net working capital will increase compared to the industry. We also expect that financial buyers show a negative impact on capital expenditure and/or net working capital.

H3: Exit companies have larger post-exit levels of capital expenditures than their respective peer groups

H4: Exit companies have larger post-exit levels of net working capital than their respective peer groups

H5: Financial buyers have a negative impact on the post-exit levels of capital expenditures

H6: Financial buyers have a negative impact on the post-exit levels of net working capital

3.2.2 Employment and wages

Previous empirical research has found no clear relation between employment and wages and private equity ownership. The studies made on the post-exit development have been made on RLBOs where Holthausen and Larcker (1996) find no change in either wages or employment whereas Jelic and Wright (2011) find that employment tends to increase after the exit. For the relation during the holding period, neither Holthausen and Larcker (1996) nor Bergström et al. (2007) find a relation between private equity ownership and

employment and wages. Therefore we expect that the post-exit industry-adjusted employment and wages are unchanged and that financial buyers have no effect on either employment or wages.

H7: The post-exit industry-adjusted employment is unchanged

H8: The post-exit industry-adjusted wage levels are unchanged

H9: Financial buyers have no impact on the post-exit employment

H10: Financial buyers have no impact on the post-exit levels of wages

4. Methodology

This section presents the methodology used to tests the hypotheses of this thesis. Throughout this section, i correspond to *company i*, t corresponds to t years after the exit, EC is short for *exit company* and T corresponds to the measurement periods from the exit year (zero) up until six years post exit.

4.1 Measuring operating performance

To assess if there exist a post-exit private equity effect on operating performance, we will use three measures of operating performance:

- (1) *Earnings before interest, taxes, depreciation of tangible assets, and amortization of intangible assets divided by sales (EBITDA-margin)*
- (2) *Return on invested capital (ROIC)*
- (3) *Compounded annual growth rate in sales (Sales CAGR)*

4.1.1 EBITDA-margin

$$EBITDAm_{i,t} = \frac{EBITDA_{i,t}}{Sales_{i,t}}$$

The EBITDA-margin is a good measure of operating profitability since it represents a more correct view of the underlying business compared to earnings and earnings margin. This because it excludes the depreciations/amortizations, interest and taxes which are parameters that can make two firms operating in the same business show completely different results depending on accounting standards (buying and depreciate versus leasing of capital), capital structure, interest and taxes. Since the universe of private equity is associated with altering of the capital structure, it is essential to make sure that apples are compared to apples. These arguments are in line with previous research such as Barber and Lyon (1996).

4.1.2 ROIC

$$ROIC_{i,t} = \frac{Earnings\ before\ interest\ and\ taxes_{i,t} * (1 - tax\ rate_t)}{Fixed\ assets_{i,t} + Non\ cash\ current\ assets_{i,t} - Short\ term\ payables_{i,t}}$$

ROIC should give a good measure of operating profitability in a cross industry comparison since it accounts for both operating margins and capital efficiency (Bergström et al. 2007). Also, since ROIC uses the book value rather than the market value of asset, it gives a good representation of the profitability on the actual invested assets (Damodaran, 2007). Damodaran (2007) brings up the potential problem with using ROIC since companies with a small capital base can experience very volatile measures, distorting exit company and peer group ROIC. To mitigate this potential problem, we will winsorize extreme values (Hastings et al., 1947). Winsorizing is a better alternative than trimming since the latter method reduces the number of observations.

Since the Swedish corporate tax rate changed from 28% to 26.3% in 2009, we have made adjustments in the calculation of ROIC depending on the specific year of measure.

4.1.3 Sales CAGR

$$Sales\ CAGR_{i,t} = \left(\frac{Sales_{i,T}}{Sales_{i,0}} \right)^{\left(\frac{1}{T} \right)} - 1$$

Sales CAGR is a good measure of sales growth compared to an arithmetic sales growth since it reduces the effect of volatility of periodic returns. An additional strength with the sales CAGR is that it enables a comparison of growth rates from companies in the same industry (Chan, 2009).

4.1.4 Potential problems in measuring operating performance

Operating performance should display the performance of the underlying business of a company. The three measures used in this study can however give rise to some potential problems that might distort the results.

If a company has acquired another company and the sales and assets are added together, it can be argued that from the point in time this add-on has occurred, one is not analyzing the same company as before the acquisition. However, since a company can

grow either organically or by acquisitions, we argue that add on acquisitions is a natural part of the growth of a company. Similar arguments are brought forward by Bergström et al. (2007).

Since we use the last year of private equity ownership as the starting year, there is a potential problem with a revaluation of assets after an exit due to e.g. goodwill. This could potentially distort the ROIC measure.

4.2 Measuring capital expenditures, net working capital

In order to make capital expenditure (henceforth denoted CAPEX) and net working capital (henceforth denoted NWC) comparable across different companies within the same industry (accounting for company size), we will normalize these items by company sales which also done by Muscarella and Vetsuypens (1990). Thus the normalized CAPEX and NWC for company i is defined as:

$$CAPEX_{i,t}^{Norm.} = \frac{CAPEX_{i,t}}{Sales_{i,t}}$$

$$NWC_{i,t}^{Norm.} = \frac{NWC_{i,t}}{Sales_{i,t}}$$

Henceforth, $CAPEX_{i,t}^{Norm.}$ will be denoted as CAPEX and $NWC_{i,t}^{Norm.}$ will be denoted as NWC.

4.3 Measuring employment and wages

Employment will be measured as the total number of employees in the company and the change in employment will be used by measuring the compounded annual growth rate (Employee CAGR). Wage level will be the unadjusted total wage costs in the company (excluding social costs and pensions) divided by the number of employees.

4.4 Peer groups

Peer groups are assigned by using industry classification Nomenclature Generale des Activites Economiques dans l'Union Europeenne (NACE 1.1). Groups were assigned by using the first four NACE 1.1 digits and the 20 largest Swedish peers in terms of revenues in 2005 were picked out. In some cases, 20 peer companies could not be identified and two digits were used. If not 20 peer companies could be identified even with only two digits, peer companies were obtained from the Nordics or the rest of Europe. The peer groups are chosen in the same way as in the study by Bergström et al.

(2007). All companies satisfying the criteria's have been screened manually in order to remove those peers that could not be identifiable today due to company reorganizations.

Assigning peer groups in this way can give rise to a number of potential issues. Since the peers are identified based on criteria's applied in 2006/2007, not all companies can be identified today by a number of reasons. For instance, peers can have been sold and reorganized which will make them hard to trace and thus if the peer has gone bankrupt after reorganization, it might create a potential survivorship bias. In the case where peers have been identified as bankrupt, they have been included in the dataset in order to give a fair view of the industry.

In the peer groups, we will use the median values of each group as a comparison since the mean value might be distorted by outliers etc.

4.5 Time frame

The last exits were made during the first half of 2006 and the timespan of our study stretches until 2012. This enables us to track the operating performance up until six years after the exit, capturing a business cycle. According to Holthausen and Larcker (1996) it takes three to four years for private equity characteristics to disappear. Thus we will be able to measure if this change occurs in our dataset.

The last year as private equity owned will be the starting year in our study as the private equity effect should be at its peak just before the company is sold. If we were to compare with the average performance during the holding period, this would not capture all operational changes put in place by the private equity sponsor.

4.6 Hypothesis testing

Hypotheses 1, 3, 4, 7 and 8 will be tested by measuring the industry-adjusted metrics in the stated time periods. By doing this, we will be able to observe how the exit companies have performed compared to the industry which can be affected by for instance macro factors. Where the fiscal years of an exit company and its peers differ significantly, we have made the corresponding changes to capture a more justifiable industry effect. Hypotheses 2, 5, 6, 9 and 10 will be tested by using regression analysis on the unadjusted metrics.

4.6.1 Operating performance measures

To investigate the existence of a private equity effect in operating performance, we will calculate the industry-adjusted metrics for the exit year and all years up to six years

after the exit. The definitions of our three industry-adjusted operating performance measures are:

$$EBITDA_{T,i}^{Adj.} = EBITDA_{T,i}^{EC} - EBITDA_{T,i}^{PeerMedian}$$

$$ROIC_{T,i}^{Adj.} = ROIC_{T,i}^{EC} - ROIC_{T,i}^{PeerMedian}$$

$$SalesCAGR_{T,i}^{Adj.} = SalesCAGR_{T,i}^{EC} - SalesCAGR_{T,i}^{PeerMedian}$$

4.6.2 Additional measures

To investigate if the exit companies experience any change in the additional measures CAPEX, NWC, wage and employment, we will for the first three calculate the industry-adjusted metrics and for employment we will calculate the industry-adjusted compounded annual growth rate (CAGR) for the exit year and all years until six years after the exit. For our four additional measures, the definitions of the industry-adjusted metrics are:

$$CAPEX_{T,i}^{Adj.} = CAPEX_{T,i}^{EC} - CAPEX_{T,i}^{PeerMedian}$$

$$NWC_{T,i}^{Adj.} = NWC_{T,i}^{EC} - NWC_{T,i}^{PeerMedian}$$

$$Wage_{T,i}^{Adj.} = Wage_{T,i}^{EC} - Wage_{T,i}^{PeerMedian}$$

$$EmploymentCAGR_{T,i}^{Adj.} = EmploymentCAGR_{T,i}^{EC} - EmploymentCAGR_{T,i}^{PeerMedian}$$

4.6.3 Statistical significance

The statistical significance of the results in the industry-adjusted operating performance and the additional measures will be tested by using a two sided Students t-test⁴. Using this test we will be able to examine the statistical significance between the means of two samples with matched pairs, in this case the measures for the exit companies and the median measures for the industry peers. The test will show significance if

⁴ The student's t-test is a parametric test, which can be applied for normally distributed population with unknown standard deviation, to determine if two sets of data are significantly different from each other. A sample with more than 30 observations can be assumed to follow a normal distribution (Newbold et al., 2006)

$$t = \frac{\bar{x} - 0}{s/\sqrt{n}} > t_{n-1, \alpha/2}$$

Where \bar{x} corresponds to the measured used, s is the estimated standard deviation, n is the number of observations and α is the significance level.

4.6.4 Regression analysis

To assess if the post-exit buyers have any impact on the operating performance measures and additional measures of the exit companies, we will run regression analysis.

The independent variables will be (1) a dummy variable for if the exit has been made through a sale to a financial buyer (i.e. a secondary private equity sponsor), (2) the number of years that the exit company was owned by a private equity sponsor and (3) other measures used in the study depending on the dependent variable used. For instance, if sales CAGR is the dependent variable, it is interesting to regress this measure on lagged CAPEX to see if previous years investing activity affects the development in sales. The regressions will be ordinary least square (OLS) regressions with time series data. The following regressions will be run:

- (1) $Dep_{i,t} = \alpha + \beta_1 Financial_{i,t} + \varepsilon_i$
- (2) $Dep_{i,t} = \alpha + \beta_1 Financial_{i,t} + \beta_2 Years_i + \varepsilon_i$
- (3) $Dep_{i,t} = \alpha + \beta_1 Financial_{i,t} + \beta_2 Years_i + \beta_j Indep_{i,t} + \varepsilon_i$

Where $Dep_{i,t}$ is the operating performance measures and additional measures, $Financial_{i,t}$ is a dummy variable for if the exit company was bought by a financial acquirer, $Years_i$ is the number of years that the exit company was owned by a private equity sponsor and $Indep_{i,t}$ represents other independent variables that will be used in the regressions (for instance as with the discussion above with lagged CAPEX on sales CAGR).

As regression data of this nature often suffers from inherent autocorrelation we will test for this using Wooldridge tests⁵ (Wooldridge, J., 2002) and adjust for any autocorrelation through Prais-Winsten regressions (Prais and Winsten, 1954).

⁵ Presented in Appendix B

5. Data

In this section we discuss data used in previous studies with regards to potential bias and how our dataset will mitigate this bias. We also describe the selection criteria's and data gathering process used in this study. Lastly, we present our dataset with descriptive statistics.

5.1 Data in previous studies

As discussed in section 2, previous research assessing the holding period and post exit, consists to a large extent of studies made in the U.S. where the disclosure of accounting data is voluntary. Thus, almost all studies made only uses companies which have been exited through an IPO/RLBO (e.g. Holthausen and Larcker, 1996) creating a selection bias. The selection bias arises since exiting through an IPO is the least common option for a private equity sponsor (Kaplan and Strömberg, 2009) which might result in that only lemons are put on the stock exchange. The decision of exit alternative is far from random and thus, a selection bias is likely to arise.

Bergström et al. (2007) and Bredinger and Nyman (2011) manage to remove the selection bias since these studies are performed on Swedish data and with its public availability, all types of exits can be covered.

5.2 Our dataset

Using publicly available Swedish data we will be able to conduct an unbiased study. The criteria's for the dataset were set up as (1) the deal value had to be at least \$5 million, (2) at least one of the private equity sponsors in the investor syndicate had to be among the top 300 largest sponsors in the world by capital under management, (3) the buyout company had to be Swedish, (4) the exit occurred between 1996 and the first half of 2006 and (5) the exit company had to be identifiable/comparable today, i.e. not an integrated part of a group or reorganized in a way that the current operations differ from the operations at the time of the exit. Criteria 1-4 gives a sample of 73 companies, which are the same companies used in the study by Bergström et al. (2007). When we apply criteria 5, 33 companies⁶ are removed and the final sample consists of 40 companies⁷.

⁶ For a list of the companies removed using criteria 5 and reasons for removal, see Appendix A

⁷ For a list of analysed exits, see Appendix A

With the final sample consisting of 40 companies, the central limit theorem (CLT) is fulfilled, since this can be considered a large enough sample (over 30) to assume a normal distribution (Newbold, 2006).

Using the method of assigning peers as described in section 4.4, we obtain 576 peer companies. This gives an average of 14.4 companies in each peer group and only one company has a peer group consisting of less than ten companies⁸.

5.2.1 Data gathering and potential problems

The annual accounts for the 40 exit companies as well as for the 576 peers used are obtained from the database Retriever. This database sources its content directly from company filings submitted to the Swedish Company Register Office, which should entail a substantial reliability that the numbers in thesis are correct. Due to its inherent nature, Retriever should also be more complete than for instance the ones used by Bergström et al. (2007), which can be observed by the higher number of missing values for companies in the latter study. In Retriever, company filings are available both in its original format and in a compiled Excel version. The fact that the original filings are available provides additional comfort that the numbers in the Excel format are fair and correct. Another advantage with Retriever is that it controls for cost- and function based accounts when producing the Excel files.

In our dataset, out of 40 companies only seven are consolidated accounts. This can potentially distort the true picture of the business of the company compared to using the consolidated accounts, which shows the business of the entire group. In the data selection process, we have seen some examples when a company has very few employees compared to sales and assets, which is explained by that the group structure places employees in another company. These types of problems have been dealt with during the process of data gathering where rigorous screening has been applied both to the exit companies and their peers in order to remove companies where the structure differed significantly to the year of exit. Since only seven companies have consolidated accounts, the potential problems with goodwill in the ROIC measure are minimized since goodwill is not recognized in unconsolidated accounts.

Even though one can assume that the numbers in the Retriever Excel files should be correct, there is still the possibility that Retriever's own procedures of extracting the

⁸ Vaasan Sverige AB (previously known as Nordic Bake Off) only has 7 peers, however in the study by Bergström et al. (2007), Nordic Bake Off had 8 peers.

numbers from the actual filings into excel might be a source of bias to the results of this thesis. Retriever does not state how the information is subtracted from the actual filings, but there could definitely be problems both with a manual and an automatic method, which would cause incorrect input in the Excel files used in this thesis.

Since all the annual accounts have been put together manually by the authors of this thesis, there are some potential risks of human errors that must be taken into account. However, in this study we have applied rigorous screening and controlling for errors in the dataset and we feel certain that the amounts of human errors are minimized.

5.2.2 Descriptive statistics

Figure 1 - Years as Portfolio Companies

The figure shows the frequency and the cumulative frequency for the number of years the companies in our dataset were owned by a private equity sponsor. It also displays some descriptive statistics.

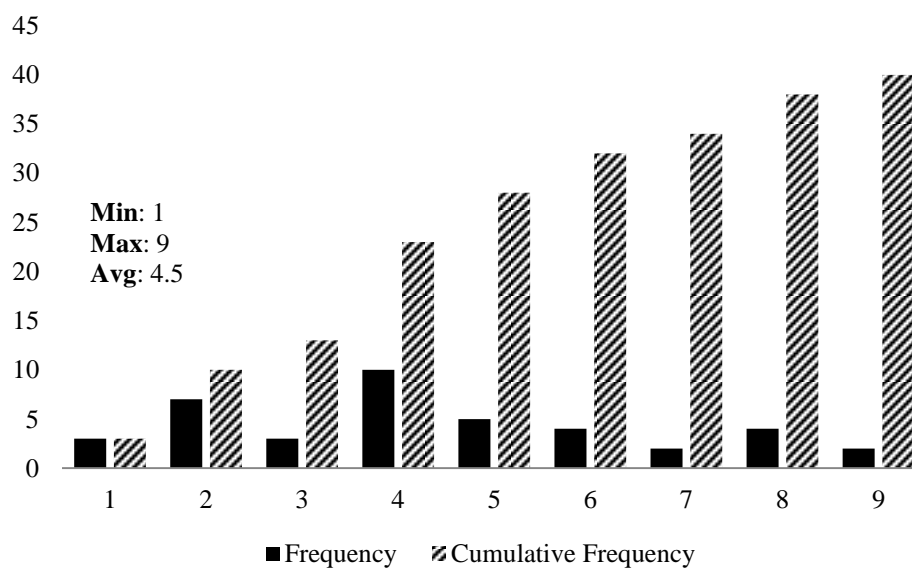


Figure 1 displays the frequency for the number of years an exit company was owned by a private equity sponsor in our dataset. The holding period ranges from one to nine years and the average holding period was 4.5 years. Approximately 70% of the holding periods were five years or less. The most common holding period is four years with ten observations. Only six companies had a holding period that exceeded seven years. These results are in line with the stated target holding period of most private equity funds which tend to be in the range of three to seven years.

Table 1 - Types of exits

The table shows the frequency and percentage for the three types of exits in the dataset of 40 exit companies.

Type of exit	n	%
Financial buyer	16	40%
Strategic buyer	22	55%
IPO	2	5%
	40	100%

Table 1 displays the type of exit made by the private equity sponsors. For our sample of 40 companies, 22 (55%) were sold to a strategic buyer, 16 (40%) were sold to a financial buyer and 2 (5%) were exited through an IPO. These results are in line with the findings by Kaplan and Strömberg (2009) and the EVCA (2012).

Table 2 - Descriptive statistics

The table provides descriptive statistics for the 40 exit companies in our dataset. The time periods corresponds to each year from the exit year up until six years after the exit. **EBITDA-margin** is defined as *earnings before interest, tax, depreciation and amortization divided by sales*. **Sales CAGR** is defined as the *compounded annual growth rate in sales*. **ROIC** (Return on invested capital) is defined as *earnings before interest and taxes times one minus taxes divided by fixed assets plus non-cash current assets minus short term payables*.

	N	Max	Min	Average	Std dev	Percentile		
						25	50	75
EBITDAm								
Year 0	38	73.83%	-12.00%	11.15%	14.39%	5.44%	8.19%	15.25%
Year 1	39	74.79%	-60.08%	11.90%	19.36%	5.96%	9.90%	16.84%
Year 2	39	80.94%	-9.10%	14.81%	16.04%	5.30%	12.00%	17.66%
Year 3	39	84.59%	-2.82%	14.88%	17.50%	3.62%	9.76%	21.51%
Year 4	38	90.54%	-25.51%	11.76%	18.59%	3.75%	9.38%	17.94%
Year 5	38	103.79%	-36.37%	12.55%	19.78%	5.64%	10.23%	15.55%
Year 6	38	89.98%	-16.45%	13.10%	17.55%	5.11%	10.24%	19.16%
Sales CAGR								
Year 1	38	214.28%	-26.47%	30.64%	52.64%	5.54%	15.19%	26.46%
Year 2	38	81.55%	-20.44%	17.24%	20.35%	5.87%	14.31%	23.23%
Year 3	38	58.65%	-5.35%	14.66%	15.54%	5.50%	13.16%	20.70%
Year 4	38	45.95%	-6.39%	10.63%	11.66%	3.58%	9.91%	13.22%
Year 5	38	36.82%	-9.15%	8.41%	10.73%	2.30%	6.78%	12.47%
Year 6	38	32.21%	-100.00%	4.02%	19.83%	1.25%	5.59%	10.18%
ROIC								
Year 0	40	91.54%	-45.28%	17.32%	30.93%	1.84%	10.16%	24.45%
Year 1	40	86.23%	-44.87%	20.65%	28.57%	4.75%	14.35%	30.57%
Year 2	40	94.21%	-18.32%	22.33%	26.84%	3.03%	15.97%	30.14%
Year 3	40	104.12%	-22.74%	20.77%	30.45%	2.37%	9.73%	36.69%
Year 4	40	106.35%	-47.79%	19.40%	36.77%	2.25%	9.81%	27.01%
Year 5	40	85.06%	-50.94%	15.90%	29.18%	3.96%	10.35%	22.29%
Year 6	40	104.82%	-39.78%	20.67%	33.06%	4.47%	13.03%	25.51%

Table 2 shows descriptive statistics of EBITDA-margin, sales CAGR and ROIC for the exit year and subsequent six years for the 40 exit companies. The average EBITDA-margin is 11.1% in the exit year. The average margin then increases for three subsequent years and reaches 14.9% in year three, before it drops to 11.9% in year four. The average margin then returns to growth and increases to 12.6% and 13.1% in year five and six respectively. We thus see a margin growth of 2.0 percentage points over the six years post-exit. The median values follow the same pattern with slightly lower numbers, with a median exit year margin of 8.2%, increasing to 10.2% six years post-exit.

The average sales CAGRs for all years post-exit are positive but are decreasing over time. The average one year CAGR is 30.6%, the average three year CAGR is 14.7% and the average six year CAGR is 4.0%, indicating that the year-on-year growth is diminishing over time.

The average ROIC for the exit companies is 17.3% in the year of the exit. It then increases for two years and reaches 22.3%, before it starts to decrease. In year five post-exit it has decreased to 15.9%, but increases to 20.7% in the sixth year post exit, which results in a total six year increase of 3.4 percentage points compared to the exit year ROIC.

Table 3 - Descriptive statistics

The table provides descriptive statistics for the 40 exit companies in our dataset. The time periods corresponds to each year from the exit year up until six years after the exit. **CAPEX** is defined as *total capital expenditures divided by sales*. **NWC** is defined as the *net working capital to sales*. **Wage** is defined as the *total KSEK wage costs (excluding social costs and pensions) divided by employees*. **Employee CAGR** is defined as the *compounded annual growth rate in total number of employees in the company*.

	N	Max	Min	Average	Std dev	Percentile		
						25	50	75
CAPEX								
Year 0	31	141.85%	-64.57%	11.95%	34.12%	0.00%	2.34%	23.80%
Year 1	39	145.56%	-129.82%	10.62%	40.93%	-0.53%	4.49%	13.00%
Year 2	39	158.96%	-12.94%	14.79%	31.32%	0.19%	1.78%	11.76%
Year 3	39	156.32%	-60.58%	8.79%	31.17%	-0.02%	2.77%	10.80%
Year 4	38	35.77%	-13.54%	5.69%	9.81%	0.00%	2.71%	10.15%
Year 5	38	94.74%	-91.10%	2.26%	25.55%	-3.14%	0.75%	5.15%
Year 6	38	2051.79%	-194.75%	53.76%	334.66%	0.02%	1.64%	7.91%
NWC								
Year 0	37	55.68%	-474.74%	-15.99%	85.68%	-6.59%	0.45%	8.62%
Year 1	39	35.96%	-96.17%	-3.76%	24.43%	-13.99%	0.94%	9.81%
Year 2	39	25.09%	-86.12%	-8.46%	24.92%	-10.57%	-3.20%	4.54%
Year 3	39	41.45%	-75.57%	-4.81%	23.88%	-23.45%	-1.19%	9.12%
Year 4	38	25.47%	-138.93%	-9.03%	30.72%	-19.80%	-0.20%	11.31%
Year 5	38	31.88%	-107.83%	-3.82%	24.73%	-11.09%	-1.46%	11.95%
Year 6	38	230.08%	-157.79%	-1.40%	51.95%	-11.41%	2.32%	12.59%
Wage								
Year 0	38	1,074.73	73.56	366.61	180.97	268.50	310.40	428.01
Year 1	39	997.36	0.27	362.71	167.18	283.91	324.45	447.64
Year 2	39	1,252.77	254.43	396.97	166.67	306.04	358.93	483.57
Year 3	39	1,055.91	0.27	404.53	175.58	316.11	359.43	472.51
Year 4	38	1,213.62	176.80	426.20	200.81	334.12	380.80	461.32
Year 5	37	1,180.68	157.19	433.08	183.04	350.62	375.37	455.03
Year 6	37	1,103.76	16.78	428.78	195.75	340.15	383.72	477.54
Employee CAGR								
Year 1	38	49.8%	(75.5%)	3.7%	18.3%	(2.3%)	3.4%	14.4%
Year 2	38	34.5%	(65.9%)	2.0%	18.2%	(0.3%)	5.1%	11.3%
Year 3	38	27.3%	(49.9%)	2.6%	14.7%	(2.1%)	7.5%	11.2%
Year 4	38	22.4%	(40.3%)	1.8%	13.8%	(3.0%)	4.0%	10.1%
Year 5	38	20.6%	(100.0%)	(1.0%)	19.7%	(2.5%)	3.4%	7.0%
Year 6	38	19.6%	(100.0%)	(3.8%)	25.2%	(3.5%)	2.9%	7.5%

Table 3 shows descriptive statistics of CAPEX, NWC, wage and employee CAGR for the 40 exit companies. The CAPEX shows extreme minimum- and maximum values which distort the average values during the measured periods. Looking instead at the

median values for the measured periods, the CAPEX is 2.3% at the year of the exit. CAPEX then almost doubles to 4.5% in year one, before decreasing below the exit year level in year two and subsequently increases to 2.8% and 2.7% in year three and four respectively. CAPEX is lower than the exit level in both year five and six post exit, with levels of 0.8% and 1.6% respectively.

The median NWC for the exit year is 0.4%, the ratio increases to 0.9%, one year post exit. Then it decreases substantially to negative 3.2% in year two and remains negative until year six, when it increases to 2.3%. This means that the NWC seems to be decreasing in the first years post exit.

The average wage increases from SEK 310,000 in the exit year to 325,000 in the year after. The average wage experiences yearly increases until the fifth year post exit, when it decreases slightly, only to return to growth again in year six to reach 383,000, which indicates a reasonable increase in wage.

The first four year's employee growth rates are positive, but decreasing from 3.7% in year one to 1.8% over four years. The five and six year CAGRs are both negative with values of -1.0% and -3.8% respectively. This indicates that the post-exit employment levels seem to be increasing right after the exit, but decreasing in later years.

6. Results and analysis

In this section we present the results from the statistical tests and the regressions. We also discuss and analyze our findings in order to assess our hypotheses.

6.1. Operating performance

6.1.1 Results of raw tests

Table 4 - Statistical tests for operating performance

The table show the results from a Student's T-test for the change in the operating performance measures for the 40 exit companies in our dataset. The test assesses if the mean value the sample is statistically different from zero. The time periods corresponds to each year from the exit year up until six years after the exit.

EBITDAm is defined as *earnings before interest, tax, depreciation and amortization divided by sales*. **Sales CAGR** is defined as the *compounded annual growth rate in sales*. **ROIC** (Return on invested capital) is defined as *earnings before interest and taxes times one minus taxes divided by fixed assets plus non-cash current assets minus short term payables*.

	Mean	Std. Err.	p-value
EBITDAm change			
1 year	0.83%	1.92%	0.6691
2 year	3.79%	1.64%	0.0264**
3 year	3.94%	2.06%	0.0641*
4 year	0.62%	1.90%	0.7474
5 year	1.40%	2.09%	0.5061
6 year	1.98%	1.84%	0.2898
Sales CAGR			
1 year	30.64%	8.54%	0.0010***
2 year	17.24%	3.30%	0.0000***
3 year	14.66%	2.52%	0.0000***
4 year	10.63%	1.89%	0.0000***
5 year	8.41%	1.74%	0.0000***
6 year	4.02%	3.22%	0.2193
ROIC change			
1 year	3.33%	5.70%	0.5622
2 year	5.01%	6.00%	0.4091
3 year	3.45%	5.66%	0.5459
4 year	2.08%	5.54%	0.7089
5 year	(1.42%)	5.93%	0.8123
6 year	3.35%	7.46%	0.6560

*** p<0.01 ** p<0.05 * p<0.10

Table 4 presents the results of the statistical tests for the change in operating performance, measured as EBITDA-margin, sales CAGR and ROIC, for the 40 exit

companies one, two, three, four, five and six years after the exit, compared to the exit year.

For the EBITDA-margin we observe that the average change is positive for all years. The average EBITDA-margin one year post exit is 0.83 percentage points higher than the exit year, but this difference is not statistically significant. The largest differences are found in year two and three post exit, with averages 3.79 percentage points and 3.94 percentage points higher than the exit year. These two observations are statistically significant on 5% and 10% respectively. In year four, the EBITDA-margin seems to decrease and the average margin is only 0.62 percentage points higher than in the exit year, a difference that is not statistically significant. The average difference subsequently increases to 1.40 percentage points and 1.98 percentage points in year five and six respectively, however none of the observations are statistically significant.

The mean values of all time period sales CAGRs are positive. All but the six year sales CAGR are also highly significant on the 1% level, whereas the six year sales CAGR is not significant at all. The average sales CAGR is decreasing for each year post exit, starting with a first year growth rate of 30.64%, which decreases to 17.24% over two years, 14.66% over three years, 10.63% over four years, 8.41% over five years and finally 4.02% over six years post exit. This means that the year on year growth rate must be decreasing over time.

The difference in ROIC compared to the exit year is 3.33 percentage points in the first year post exit. The difference increases to 5.01 percentage points in year two, only to decrease each subsequent year until year five, in which the average ROIC is 1.42 percentage points lower than the average ROIC in the exit year. The average ROIC subsequently increases in year six with a positive difference of 3.35 percentage points compared to the exit year.

The results of the raw tests on operating performance indicates that all of the metrics seems to increase in the first couple of years post exit, but the operating performance then starts to return to the exit year levels and in some instances even decrease below the exit year operating performance. This would suggest that a post-exit private equity effect might exist, an effect that is the strongest during the first years post exit but fades each year.

6.1.2 Results of industry-adjusted tests

Table 5 - Statistical tests for industry adjusted operating performance

The table show the results from a Student's T-test for the industry adjusted operating performance measures for the 40 exit companies in our dataset. The test assesses if the mean value of the sample is statistically different from zero. The time periods corresponds to each year from the exit year up until six years after the exit. **EBITDAm** is defined as *earnings before interest, tax, depreciation and amortization divided by sales*. **Sales CAGR** is defined as the *compounded annual growth rate in sales*. **ROIC** (Return on invested capital) is defined as *earnings before interest and taxes times one minus taxes divided by fixed assets plus non-cash current assets minus short term payables*.

	Mean	Std. Err.	p-value
EBITDAm Difference			
0 year	4.27%	1.61%	0.0673*
1 year	3.40%	2.69%	0.2136
2 year	5.68%	1.89%	0.0047***
3 year	6.53%	2.18%	0.0047***
4 year	2.21%	1.93%	0.2605
5 year	4.65%	3.31%	0.1684
6 year	4.54%	2.66%	0.0966*
Sales CAGR Difference			
1 year	22.14%	8.63%	0.0145**
2 year	8.03%	3.35%	0.0218**
3 year	6.48%	2.69%	0.0212**
4 year	4.20%	2.08%	0.0504*
5 year	3.64%	1.84%	0.0561*
6 year	(0.77%)	3.25%	0.8151
ROIC Difference			
0 year	7.80%	2.66%	0.0210**
1 year	7.51%	5.18%	0.1551
2 year	9.33%	4.25%	0.0343**
3 year	7.49%	4.28%	0.0880*
4 year	7.96%	5.50%	0.1556
5 year	4.00%	5.81%	0.4956
6 year	8.58%	5.79%	0.1465

*** p<0.01 ** p<0.05 * p<0.10

Table 5 shows the results from the industry-adjusted tests for the exit year and one through six years post exit. The mean values are the average difference between the

operating performance of the exit companies and the median operating performance of their respective competitors.

We notice that in the exit year, the average EBITDA-margin for the exit companies is significantly higher than the EBITDA-margin for the respective competitors, which is consistent with previous research (e.g. Kaplan 1989, Muscarella and Vetsuypens 1990 and Harris et al. 2005) claiming that the operating performance of portfolio companies are higher than the peer performance. The difference in EBITDA-margin decreases substantially in the first year post exit and is in this year not significant even on the 20% level. However, the difference then increases in year two and three with average difference of 5.68 percentage points and 6.53 percentage points respectively, compared to a the difference of 4.27 percentage points in the exit year. Both the year two and three EBITDA-margin differences are highly significant. The difference then decreases to 2.21 percentage points, 4.65 percentage points and 4.54 percentage points in year four, five and six respectively. The difference in year six is significant on the 10% level.

The sales growth in the first year post exit is on average 22.14 percentage points higher for the exit companies than their competitors. The difference decreases to 8.03 percentage points over two years post exit and then continues to decrease for each year. The first five years of sales CAGR differences are however significantly positive at the 10% level. The average difference in six year sales CAGR is however slightly negative at 0.77 percentage points, indicating that the revenue of the exit companies are growing at a faster pace in the first years post exit, but that the revenue growth decreases over time and over six years it is at par with the revenue growth of the competitors.

The average difference between exit year ROIC is 7.80 percentage points and statistically significant, indicating a higher operating performance of the exit companies before exit. This difference decreases slightly in the subsequent year, but the standard error increases causing the difference to become insignificant. The difference then increases to 9.33 percentage points in year two, a difference that is statistically significant. The difference in year three is lower at 7.49 percentage points, but it is still significantly different from zero. The ROIC difference in year five and six are both insignificant, even though the average difference in year six is almost as high as the average difference in year two at 8.58 percentage points.

Concluding the raw and industry-adjusted tests we see that the exit companies seem to maintain its pre-exit profitability and continue to outperform its peers after the exit in terms of operating performance. However, the competitors tend to decrease the gap to

the exit companies over time. We also notice that there is no significant difference in profitability between the exit companies and its peers in the first year after the exit, but a very large difference in sales growth. Consequently, when taking into account all the three measures of operating performance, our first hypothesis seems to hold.

6.1.3 Regression results

Table 6 - Regression results for EBITDAm

The table shows the results of univariate- and multivariate regressions on the EBITDAm, defined as *earnings before interest, tax, depreciation and amortization divided by sales*, for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor. P-values are reported in the parentheses.

EBITDAm	=	β_0	+ β_1 * Financial	+ β_2 * Years	Obs.	Adj. R ²
Predicted sign of coef.			+	?		
		0.100 (0.000)***	0.048 (0.168)		270	1.93%
		0.142 (0.011)**	0.051 (0.146)	-0.010 (0.376)	270	1.73%

***p<0.01 **p<0.05 *p<0.10

Table 6 shows the result from the regression of EBITDA-margin on type of buyer and number of holding years. The coefficient on the financial buyer dummy variable is positive, indicating that the EBITDA-margins post-exit are higher for companies acquired by a financial buyer. However, since neither the univariate nor multivariate regression coefficient are statistically significant, there is really not much power in these findings which indicates that the type of buyer has no effect on the post-exit operating performance. The coefficient on the number of years the variable is negative, indicating that EBITDA-margin post exit seems to decrease in number of years as a portfolio company. The coefficient is however not significant.

Table 7 - Regression results for Sales CAGR

The table shows the results of univariate- and multivariate regressions on the Sales CAGR for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor and the one year lagged capex to sales ratio (CAPEX). P-values are reported in the parentheses.

Sales CAGR	=	β_0	+ β_1 * Financial	+ β_2 * Years	+ β_3 * Lag. CAPEX	Obs.	Adj. R ²
Predicted sign of coef.			+	?	+		
		0.142 (0.000)***	0.026 (0.569)			228	4.73%
		0.119 (0.036)**	0.022 (0.673)	0.005 (0.626)	0.255 (0.000)***	221	12.16%

***p<0.01 **p<0.05 *p<0.10

Table 7 shows the result from the regression of sales CAGR on type of buyer, number of holding years and one-year lagged CAPEX. The coefficient on the financial buyer dummy variable is positive, indicating that the sales CAGRs post-exit are higher for companies acquired by a financial buyer. However, since neither the univariate nor multivariate regression coefficient are statistically significant, there is not much power in these findings which indicates that the type of buyer has no effect on the post-exit operating performance. The coefficient on the variable number of years is positive, indicating that sales CAGRs post-exit seems to increase in number of years as a portfolio company. The coefficient is however not significant. The coefficient on one-year lagged CAPEX is positive and significant on the 1%-level. This indicates that companies with higher CAPEX today show higher sales growth next year.

Table 8 - Regression results for ROIC

The table shows the results of univariate- and multivariate regressions on the Return On Invested Capital (ROIC) for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor. P-values are reported in the parentheses.

ROIC	=	β_0	+ β_1 * Financial	+ β_2 * Years	Obs.	Adj. R ²
Predicted sign of coef.			?	?		
		0.179 (0.000)***	-0.029 (0.597)		266	0.00%
		1.000 (0.001)***	-0.021 (0.700)	-0.009 (0.474)	266	0.00%

***p<0.01 **p<0.05 *p<0.10

Table 8 shows the result from the regression of ROIC on type of buyer and number of holding years. The coefficient on the financial buyer dummy variable is negative, indicating that the ROIC post-exit are lower for companies acquired by a financial buyer. However, both the univariate and multivariate regression coefficients are statistically insignificant which indicates that the type of buyer has no effect on the post-exit operating performance. The coefficient on variable number of years is negative, indicating that ROIC post exit seems to decrease in number of years as a portfolio company. The coefficient is however not significant.

Judging from the regression results we find support also for hypothesis two, as no significant relationship between post-exit ownership and post-exit operating performance seems to exist for these particular set of exit companies.

6.1.4 Analysis of operating performance

The results above indicate that the exit companies continue to outperform their peers in all measures of operating performance included in this study. This finding is the opposite of the findings of previous research including Bredinger and Nyman (2011). When the six years post exit operating of the performance 40 companies included in this study is regressed on type of buyer, we find no statistically significant relationship between them both. This means that the increase in operating performance does not seem to be caused by the post-exit type of buyer, at least not in its entirety. In turn this means that it becomes more likely that the increase in operating performance is at least partly due to the previous private equity ownership. Thus, one could argue that there

exists a long-term positive effect of private equity ownership. The fact that the results of this thesis and the results of Bredinger and Nyman (2011) differ could be the fact that the previous study does not control for the type of buyer. Their observed negative effect could then potentially be caused by the post-exit buyer and not by the pre-exit private equity owner. Bredinger and Nyman (2011) also conduct their study on a shorter event window which, combined with the fact that we find that it takes at least one year for the effect to be significant, could be another explanation to the different findings.

The results of this thesis are also in contrast to the findings of Degeorge and Zechhauser (1993), who finds deteriorating and subpar operating performance in RLBO companies post exit. However, one could find the answer to the diverging results in the fact that the previous study, per definition, includes only companies exited through an IPO, whereas this thesis studies all types of exits. As mentioned above, studies on post-exit operating performance limited to RLBOs will suffer from selection bias if only one type of portfolio companies, i.e. the worst performers, is exited in this way. The fact that this thesis shows a continued positive gap in operating performance could then be due to the fact that our sample only includes two RLBOs. Another explanation would be that if public ownership has negative effect on the operating performance of exit companies and that this fact is what is causing Degeorge and Zechhauser's results. Since our sample of RLBOs was thin, we had no chance of testing this theory, but it would indeed be interesting future research.

We find that the post-exit private equity effect seems to decrease over time. When observing all three measures we find a gap between the exit companies and its competitors up until the third year post exit. These results are consistent with the findings of Holthausen and Larcker (1996) who conclude that the post-exit private equity effect wears out after four years. The fact that the operating performance gap is decreasing over time must be considered quite expected even if one believes in a long-term private effect. If a long-term post exit effect of private equity ownership exists, it is quite intuitive that the effect will be strongest immediately after the exit and then decrease over time when the new owner applies its governance on the company, which could introduce agency problems etc. which affects the operating performance negatively. In fact it could be argued that the diminishing behavior even could be further evidence of the effect.

What is however a bit contradictory with the above argument is the fact that we find no significant difference in operating performance until the second year post exit,

indicating that there seems to be a one-year lag before the post exit effect is observable. This is however most likely explained by some reorganization effect caused by the transition in ownership, affecting the profitability negatively in the first year post exit. It is important to remember that it is only the difference in the profitability related measures that are insignificant in the first year, while the difference in sales growth is the highest in the first year.

Previous research regarding the effect of private equity ownership during the holding period is almost unanimous in favor of a positive effect. It is thus quite remarkable that we find no significant relationship between operating performance and type of buyer. This could possibly be due to the fact that the exit companies acquired by a financial buyer per definition becomes secondary buyouts and that the holding period private equity effect then is less evident

One quite interesting finding, which perhaps is a bit out of this thesis' scope, is the fact that current CAPEX investments seem to affect future revenue. This could potentially explain the fact that the six year sales CAGR is basically zero. If this is the case, one could argue that the decrease in sales growth is not due to the previous private equity ownership, but instead due to low investment levels of the post-exit buyer. In order to further validate the long-term private equity effect it is however important to discuss other aspects that could affect operating performance and which have not been controlled for in this thesis.

6.2 Capital expenditure and net working capital

6.2.1 Results of raw tests

Table 9 - Statistical tests for additional measures I

The table show the results from a Student's T-test for the change in the additional measures for the exit companies in our dataset. The test assesses if the mean value of the sample is statistically different from zero. The time periods corresponds to each year from the exit year up until six years after the exit **CAPEX** is defined as the *total capital expenditures divided by sales* . **NWC** is defined as the *net working capital to sales* .

	Mean	Std. Err.	p-value
CAPEX change			
1 year	(3.94%)	8.67%	0.653
2 year	3.27%	4.84%	0.504
3 year	(5.35%)	5.07%	0.300
4 year	(6.86%)	6.33%	0.287
5 year	(9.88%)	8.54%	0.257
6 year	(4.98%)	5.85%	0.402
NWC change			
1 year	11.8%	11.4%	0.3088
2 year	7.1%	11.7%	0.5505
3 year	11.0%	12.0%	0.3633
4 year	6.6%	10.9%	0.5485
5 year	12.1%	13.6%	0.3802
6 year	(4.7%)	7.1%	0.5101

*** p<0.01 ** p<0.05 * p<0.10

Table 9 presents the results of the statistical tests for the change in CAPEX and NWC for the 40 exit companies one, two, three, four, five and six years after the exit, compared to the exit year. CAPEX in year one is 3.94 percentage points lower than in the exit year, but the difference is highly insignificant. The CAPEX in year two is 3.27 percentage points higher than the exit year, but this difference is also equally insignificant. In the subsequent years, CAPEX is again lower than in the exit year, but all differences are still insignificant.

NWC is higher in all years subsequent to the exit year except the sixth year post exit. However none of the difference is significant. The results indicate that CAPEX seems to decrease slightly and NWC seems to increase slightly, but none of the changes are statistically significant which means that we cannot conclude that there is any real difference in either measure post exit compared to pre exit.

6.2.2 Results of industry-adjusted tests

Table 10 - Statistical tests for industry adjusted additional measures I

The table show the results from a Student's T-test for the industry adjusted levels of the additional measures for the exit companies in our dataset. The test assesses if the mean value of the sample is statistically different from zero. The time periods corresponds to each year from the exit year up until six years after the exit. **CAPEX** is defined as the *total capital expenditures divided by sales*. **NWC** is defined as the *net working capital to sales*.

	Mean	Std. Err.	p-value
CAPEX Difference			
0 year	6.00%	5.97%	0.3228
1 year	5.99%	6.36%	0.3522
2 year	11.24%	4.82%	0.0251**
3 year	4.75%	4.49%	0.2964
4 year	1.05%	1.35%	0.4404
5 year	0.30%	4.15%	0.9433
6 year	0.52%	0.54%	0.3461
NWC Difference			
0 year	(18.55%)	13.97%	0.1925
1 year	(6.78%)	3.78%	0.0806*
2 year	(11.55%)	3.78%	0.0041***
3 year	(7.16%)	3.93%	0.0763*
4 year	(10.59%)	5.10%	0.0447**
5 year	(4.70%)	4.09%	0.2583
6 year	(3.44%)	8.68%	0.6944

*** p<0.01 ** p<0.05 * p<0.10

Table 10 shows the results from the industry-adjusted tests for the exit year and one through six years post exit. The mean values are the average difference between the CAPEX and NWC of the exit companies and the median CAPEX and NWC of their respective competitors.

We see from the results that CAPEX seems to be higher for the exit companies than its respective peers in all years post exit, but also in the exit year. However, the only difference that is significant is the difference in year two. We also see that the difference is decreasing over time and in year five and six it is basically zero.

The results from the NWC test show lower levels of NWC for the exit companies than its respective competitors for all measured post-exit years and also in the exit year. The largest average difference is found in the exit year, but this difference is not significant due to a large standard error. The average differences in year one, two, three

and four are however all statistically significant. In year five and year six the different is small compared to the other years and highly insignificant.

Concluding the results for CAPEX and NWC, we find that CAPEX seems to decrease slightly in the six years subsequent to the exit; however the levels for the exit companies are higher than CAPEX for the competitors. Looking at NWC, we find that it is slightly higher in all measured years compared to the exit year, but the post exit levels for the exit companies are significantly lower than the NWC for the respective competitors. However, the effects for both CAPEX and NWC seem to be decreasing over time. This means that we find some support for hypothesis three, meanwhile our results are completely opposite of hypothesis four.

6.2.3 Regression results

Table 11 - Regression results for CAPEX

The table shows the results of univariate- and multivariate regressions on the capex to sales ratio (CAPEX) for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor. P-values are reported in the parentheses.

CAPEX	=	β_0	+ β_1 * Financial	+ β_2 * Years	Obs.	Adj. R ²
Predicted sign of coef.			?	?		
		1.000 (0.011)**	0.590 (0.021)**		263	2.63%
		1.000 (0.013)**	0.636 (0.023)**	-0.188 (0.019)**	263	4.60%

***p<0.01 **p<0.05 *p<0.10

Table 11 shows the result from the regression of CAPEX on type of buyer and number of holding years. The coefficient on the financial buyer dummy variable is positive and statistically significant in both the univariate and multivariate regressions. This indicates that companies acquired by a financial buyer have higher CAPEX than companies acquired by strategic buyers. The coefficient on the variable number of years is negative and significant on the 5% level. Thus, the level of post-exit CAPEX seems to be decreasing in the number of years that the company was owned by its previous private equity buyer.

The regression results indicate that there seems to be a relationship between post-exit CAPEX and type of post-exit owner. Thus one cannot be sure that the effect found in the previous tests, i.e. that CAPEX levels seem to be increased post-exit, is related to the previous private equity ownership, but could instead be caused by the new financial owner. Thus we find no support for hypothesis five.

Table 12 - Regression results for NWC

The table shows the results of univariate- and multivariate regressions on the net working capital to sales ratio (NWC) for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor. P-values are reported in the parentheses.

NWC	=	β_0	+ β_1 * Financial	+ β_2 * Years	Obs.	Adj. R ²
Predicted sign of coef.			?	?		
		-0.083 (0.053)*	0.052 (0.460)		268	0.00%
		0.009 (0.913)	0.066 (0.354)	-0.021 (0.018)**	268	0.00%

***p<0.01 **p<0.05 *p<0.10

Table 12 presents the results of the regression of NWC on type of buyer and number of years as a portfolio company. We see that the coefficient on the financial buyer dummy variable is positive but statistically insignificant in both the univariate and multivariate regressions and that the coefficient on the year variable is negative but insignificant. This indicates that there is no significant relationship between the type of buyer and the post-exit level of NWC, which means that the results found above still could be related to the previous private equity ownership. However, since the results in the above NWC tests were opposite our initial hypothesis, we still have no support for hypothesis six, but can instead conclude that previous private equity ownership seems to decrease NWC levels post exit.

We also find a significant negative relationship between NWC and number of years as a portfolio company, indicating that companies with a longer previous holding period seem to have lower levels of post-exit NWC.

6.2.4 Analysis of CAPEX and NWC

Our CAPEX related findings does support our initial hypothesis that post exit CAPEX levels should be higher for the exit companies then its peers. However the difference in the exit year is larger than the difference in all post exit years except the second year, indicating that the difference is actually decreasing post-exit. In the fourth, fifth and sixth years post exit, the difference is basically zero. This means that the results are quite ambiguous. On one hand, post-exit CAPEX is indeed higher for the exit companies than its peers, but on the other hand the difference between the two groups are lower than the exit year in all years but one and the difference is also decreasing over time. This makes one question the assumptions behind our initial hypothesis that the private equity funds cut back on investments during the holding period and that the CAPEX level should increase subsequent to the exit in order to compensate for the previous lack of investments. Instead it seems as the exit companies have higher levels of CAPEX right from the exit year, however since we do not include any further previous years in the study no concrete conclusions can be made. The findings in this thesis are however in line with the findings by Holthausen and Larcker (1996) who find that CAPEX levels increase post-exit.

However, since we find a significant relationship between the type of post-exit owner and CAPEX we do not know if the observed effect is at all related to the previous private equity ownership or if it is caused by the post-exit type of ownership or any other exogenous variable not controlled for.

Another interesting finding is the effect that the number of holding years seems to have on post-exit CAPEX. As can be observed, CAPEX is significantly decreasing in number of holding years, indicating that exit companies which have been owned a longer period by private equity have lower levels of CAPEX post-exit. This could be a consequence of higher levels of investments during the holding period in longer holding period portfolio companies than in shorter period ones, leading to lower needs of investments for the new owner post-exit.

Our findings regarding NWC are the diametric opposite of our initial hypothesis. We find that the exit companies have significantly lower levels of NWC up to four years after the exit. This result could be interpreted as an effect of the efficiency measures taken by the previous private equity owner during the holding period, which would be further evidence of the post-exit private equity effect. Since we find no significant relationship between the post-exit ownership and the post-exit NWC, it is

not implausible to believe that the observed effect is at least partly caused by the previous private equity effect.

The evident negative relationship between post-exit NWC and number of years as a portfolio company is quite interesting. The negative relationship indicates that if a company has been a portfolio company for a longer time, it manages to decrease its NWC level post exit. This could be further evidence of a post-exit private equity effect since it could mean that the measures taken by the previous owner leads to improved capital management after exit.

6.3 Employment and wages

6.3.1 Results of raw tests

Table 13 - Statistical tests for additional measures II

The table show the results from a Student's T-test for the change in the additional measures for the exit companies in our dataset. The test assesses if the mean value of the sample is statistically different from zero. The time periods corresponds to each year from the exit year up until six years after the exit **Employee CAGR** is defined as the *compounded annual growth rate in total number of employees in the company*. **Wage** is defined as the *total KSEK wage costs (excluding social costs and pensions) divided by employees*.

	Mean	Std. Err.	p-value
Employee CAGR			
1 year	3.7%	3.0%	0.2174
2 year	2.0%	2.9%	0.4914
3 year	2.6%	2.4%	0.2836
4 year	1.8%	2.2%	0.428
5 year	(1.0%)	3.2%	0.7478
6 year	(3.8%)	4.1%	0.3592
Wage change			
1 year	-0.11	24.38	0.9963
2 year	32.75	24.59	0.1911
3 year	40.21	22.95	0.0881*
4 year	59.59	26.86	0.0327**
5 year	68.13	23.06	0.0055***
6 year	67.19	23.54	0.0072***

*** p<0.01 ** p<0.05 * p<0.10

Table 13 shows the employee growth and difference in wage for the 40 exit companies in the first, second, third, fourth, fifth and sixth years, compared to the exit year. The average annual increase in employees is 3.7% in the first year post exit. The average

growth rate then decreases for each year in our sample. The five and six year averages are even slightly negative. However, none of these changes are significantly different from zero, indicating that the probable change is very small.

The average change in wage per employee is basically zero in the first year post exit. The wage level however increases over time and is statistically significant for years three, four, five and six with differences of c. SEK 40,000, 60,000, 68,000 and 68,000 respectively. Since the wage numbers are completely unadjusted, this is however not particularly strange and simply just an effect of reasonable annual increase in wage.

6.3.2 Results of industry-adjusted tests

Table 14 - Statistical tests for industry adjusted additional measures II

The table show the results from a Student's T-test for the industry adjusted levels of the additional measures for the exit companies in our dataset. The test assesses if the mean value of the sample is statistically different from zero. The time periods corresponds to each year from the exit year up until six years after the exit. **Employee CAGR** is defined as the *compounded annual growth rate in total number of employees in the company*. **Wage** is defined as the *total KSEK wage costs (excluding social costs and pensions) divided by employees*.

	Mean	Std. Err.	p-value
Employee CAGR Difference			
1 year	1.23%	2.99%	0.6833
2 year	(0.57%)	2.86%	0.8430
3 year	(0.38%)	2.39%	0.8752
4 year	(0.56%)	2.29%	0.8064
5 year	(2.72%)	3.12%	0.3905
6 year	(4.72%)	4.01%	0.2469
Wage Difference			
0 year	19.56	28.36	0.4947
1 year	2.09	26.88	0.9385
2 year	22.61	25.47	0.3801
3 year	22.61	26.58	0.4002
4 year	28.86	31.24	0.3616
5 year	25.62	28.84	0.3803
6 year	11.82	29.91	0.6949

***p<0.01 **p<0.05 *p<0.10

Table 14 shows the results from the industry-adjusted tests for the exit year and one through six years post exit. The first post exit year employee growth rate is slightly higher for the exit companies than for its competitors. However, all subsequent employee CAGR differences are increasingly negative, indicating that the employee growth is lower for the exit companies. All of the differences are however statistically insignificant.

Looking at differences in wage levels between the exit companies and its respective peers, we find no significant observation for any of the post-exit years, or for the exit year.

Concluding from the results we find no evidence for an increase in wage level or employee growth post-exit and thus we find support for hypotheses 7 and 8.

6.3.4 Regression results

Table 15 - Regression results for Wage

The table shows the results of univariate- and multivariate regressions on the wage per employee (Wage) for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor. P-values are reported in the parentheses.

Wage	=	β_0	+ β_1 * Financial	+ β_2 * Years	Obs.	Adj. R ²
Predicted sign of coef.			?	?		
		397,274 (0.000)***	-6,815 (0.842)		267	13,16%
		357,833 (0.000)***	-9,068 (0.792)	8,934 (0.408)	267	13,00%

***p<0.01 **p<0.05 *p<0.10

Table 15 presents the results from the wage regressions. We see from the results that the coefficient on the financial buyer dummy variable is negative and statistically insignificant in both the univariate and multivariate regression, indicating that there is no relationship between the post-exit owner and the post-exit wage levels.

Table 16 - Regression results for Employment CAGR

The table shows the results of univariate- and multivariate regressions on the compounded average growth rate in number of employees (EmplCAGR) for the exit companies. The univariate regression includes a dummy variable for if the buyer is financial or not. The multivariate regression also includes a variable for the number of years that the exit company was owned by the private equity sponsor. P-values are reported in the parentheses.

EmplCAGR	=	β_0	+ β_1 * Financial	+ β_2 * Years	Obs.	Adj. R ²
Predicted sign of coef.			?	?		
		0,000 (0.999)	0,009 (0.836)		228	0,00%
		-0,002 (0.971)	0,009 (0.841)	0,001 (0.966)	228	0,00%

***p<0.01 **p<0.05 *p<0.10

Table 16 presents the results from the employment CAGR regressions. We see from the results that the coefficient on the financial buyer dummy variable is positive and statistically insignificant in both the univariate and multivariate regression, indicating

that there is no relationship between the post-exit owner and the post-exit employment growth.

Concluding from the results we find no evidence for an increase in wage level or employee growth post-exit and thus we find support for hypotheses 9 and 10.

6.3.4 Analysis of employment and wage

From the results of the raw- and industry-adjusted tests, little can be said about the private equity effect on employment and wage levels post-exit. The wage levels for the exit companies seem to increase over time, but not at a significantly higher pace than its competitors, indicating that this increase is simply a general industry-wide wage increase. The fact that this thesis show little to none effect is in line with previous literature including Bergström et al. (2007) that there is very little correlation between private equity ownership and levels of wage and employment. The results of the industry-adjusted tests for employment goes against the finding by Jelic and Wright (2011) who argues that employment increases after a private equity exit. However, they only investigate companies that have been exited through an IPO/RLBO and with the previous discussion in this thesis regarding sample bias, it is not clear if their study can be comparable with this thesis. It is however clear that that the assumption that private equity companies slashes employee costs in order to maximize profits arguably can be dismissed with these results.

6.4 Summary of results

Table 17 - Hypotheses and support summary

The table presents a summary of our hypotheses and if we find support for them.

Hypothesis	Support?
<i>H1:</i> The post-exit operating performance of exit companies continues to be better than their respective peer group	Yes
<i>H2:</i> The possible continued operating performance advantage is not an effect of the post-exit ownership	Yes
<i>H3:</i> Exit companies have larger post-exit levels of capital expenditures than their respective peer groups	Yes
<i>H4:</i> Exit companies have larger post-exit levels of net working capital than their respective peer groups	No
<i>H5:</i> Financial buyers have a negative impact on the post-exit levels of capital expenditures	No
<i>H6:</i> Financial buyers have a negative impact on the post-exit levels of net working capital	No
<i>H7:</i> The post-exit industry-adjusted employment is unchanged	Yes
<i>H8:</i> The post-exit industry-adjusted wage levels are unchanged	Yes
<i>H9:</i> Financial buyers have no impact on the post-exit employment	Yes
<i>H10:</i> Financial buyers have no impact on the post-exit levels of wages	Yes

Table 17 presents a summary of our hypotheses and if we have found support for them in our study. We see that we find support for seven of our ten hypotheses stated based on previous empirical and theoretical research.

7. Conclusion

The role of private equity ownership has during the last years come under scrutiny from the public after scandals such as Carema Care and JB Education. Some argue that private equity ownership leads to cost cutting, downsizing and other actions that aim at maximizing profits for the owners. Others argue that private equity ownership is good for the companies since it increases the efficiency and professionalizes the business.

Academia has mostly assessed the impact of private equity ownership during the holding period which rather unanimously shows significant results of industry-adjusted improvements, i.e. a positive private equity effect. Research has also been done on the post-exit performance but most studies are on companies that have been exited through IPO/RLBO, since a substantial part of the studies has been made in countries where accounting is available for public companies, e.g. the U.S. We argue that these studies suffer from selection bias since only one type of exit is investigated and the choice of exit is non-random. Using Swedish data we manage to mitigate this bias since accounting data is publically available regardless of ownership form.

In our study we assess the existence of a long-term private equity effect by using operating performance measures such as EBITDA-margin, return on invested capital (ROIC) and compounded annual growth rate in sales (sales CAGR). We measure the difference in operating performance from the year of the exit and one, two, three, four, five and six years after the exit on the exit companies alone and on an industry-adjusted basis. To further strengthen the presence of a private equity effect, we performed regression analysis to test if the type of buyer has any impact on the post-exit operating performance. Tests in the post-exit development of additional measures such as capital expenditures (CAPEX), net working capital (NWC), employment and wage levels were also done for the same periods at the companies alone and on an industry-adjusted basis.

We find significant evidence for our two main hypotheses that (1) the exit companies manages to maintain an operational advantage compared to their respective industry and (2) the operating performance of the exit companies is unaffected by the type of buyer. This suggests that the improvements made during the holding period continue to contribute to the operational advantage of the exit companies in the long run, i.e. a positive long-term private equity effect. These results are in line with previous U.S. studies finding that the improvements made by the private equity sponsors during the holding period disappear after three to four years. Our results go against a previous

Swedish study which found no long-term private equity effect. We argue that this difference mainly through the richer dataset with more included measures, companies and a longer event window, as well as the fact that we control for post-exit ownership.

Another interesting finding of this study is that the industry-adjusted net working capital continues to decrease post-exit, contrary to the findings by previous research and our pre-study expectations.

With our main findings of the existence of a long-term positive private equity effect, we have given valuable contribution to the ongoing research on the subject of private equity ownership. Our study has given both a broader and deeper assessment of the post-exit private equity effect compared to the previous study made on Swedish data.

A limitation of our study is the rather small dataset, consisting of only 40 private equity exits. Since the Swedish private equity market is much smaller than for instance the U.S.- and U.K.-markets, it is hard to have a large dataset and still manage to use selection criteria's relating to specific company characteristics. The fact that only two of the companies in our dataset we exited through an IPO/RLBO obstruct a reliable analysis of the impact of this type of exit. It would also have been interesting to include international companies in the peer groups since globalization today enables companies to compete on the international market.

We see two suggestions for future research on the topic of private equity ownership and operating improvements. Firstly, it would be interesting to perform a study which analyses the performance before, during and after private equity ownership. By doing this, one could better assess the development of the private equity effect since companies can be studied before the operational improvements are implemented. This would however require a very rigorous data selection- and gathering process since it is not unusual that companies involved in private equity transactions are reorganized and thus hard to find accounts for in the past. Secondly, since the number of exits through IPO/RLBO in our study is very small, it would be interesting to perform this study in the future if the number of exits through IPO/RLBO has increased. This would enable a better assessment of the development in the post-exit measures such as operating performance and capital expenditure which are the main interesting findings of this thesis.

8. References

- Barber, Brad M. and Lyon, John D., 1996, Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test Statistics, *Journal of Financial Economics* 41(3), 359–399.
- Bergström, Clas, Grubb, Mikael and Jonsson, Sara, 2007, The operating impact of buyouts in Sweden: A study of value creation, *Journal of Private Equity* 11(1), 22–39.
- Bredinger, Filip and Nyman, Anders, 2011, Operating Improvements in Buyout Firms - A Quick Fix or Sustainable Improvements?, Bachelor Thesis, Stockholm School of Economics.
- Bruton, Garry D., Keels Kay J. and Scifres, Elton L., 2002, Corporate restructuring and performance: An agency perspective on the complete buyout cycle, *Journal of Business Research* 55, 709-724.
- Bushee, Brian J., 1998, The Influence of Institutional Investors on Myopic R&D Investment Behavior, *The Accounting Review* 73(3), 305–333.
- Chan, Emily, 2009, *Harvard Business School Confidential: Secrets of Success* (Wiley, Singapore).
- Dagens Nyheter, 2011, (Series of articles investigating Carema Care, starting Oct 11 2011).
- Damodaran, Aswath, 2007, Return on capital (ROC), return on invested capital (ROIC), and return on equity (ROE): Measurement and implications, working paper, Stern School of Business.
- Davis, Steven J., Haltiwanger, John C., Jarmin, Ron S., Lerner, Josh. and Miranda, Javier, 2011, Private Equity and Employment, NBER Working Paper No. 17399.
- Degeorge, François and Zeckhauser, Richard, 1993, The reverse LBO decision and firm performance, *Journal of Finance* 48, 1323–1348.
- Easterwood, John C., Seth, Anju and Singer, Ronald F., 1989, The Impact of Leveraged Buyouts on Strategic Direction, *California Management Review* 32(1), 30–43.
- Emtén, Mats, 2013, Press release, June 12
- European Venture Capital Association (EVCA), 2012, Yearbook 2012 - Activity Data on Fundraising, Investments and Divestments by Private Equity and Venture Capital Firms in Europe, May.
- Graham, John R., Harvey, Campbell R. and Rajgopal, Shiva, 2005, The Economic Implications of Corporate Financial Reporting, *Journal of Accounting and Economics* 40(1-3), 3–73.

- Harris, Richard, Siegel, Donald S. and Wright, Mike, 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.
- Hastings, Cecil, Mosteller, Frederick, Tukey, John W. and Winsor, Charles P., 1947 Low moments for small samples: a comparative study of order statistics, *Annals of Mathematical Statistics* 18, 413–426.
- Hill, Charles W.L. and Phan, Phillip H., 1995, Organizational restructuring and economic performance in leveraged buyouts: An ex post study, *Academy of Management Journal* 38(3), 704–739.
- Holthausen, Robert W. and Larcker, David F., 1996, The Financial Performance of Reverse Leveraged Buyouts, *Journal of Financial Economics* 42(3), 293–332.
- Jelic, Ranko and Wright, Mike, 2011, Exits, Performance, and Late Stage Private Equity: the Case of UK Management Buy-outs, *European Financial Management* 17(3), 560–593.
- Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance and takeover, *American Economic Review Papers and Proceedings* 76(2), 323–329.
- Jensen, Michael C., 1989, Eclipse of the public corporation, *Harvard Business Review* 67(5), 61–37.
- Jordal, Henrik and Tåg, Joacim, 2011, *Svenska Dagbladet Opinion*, Nov 23 2011.
- Kaplan, Steven N., 1989, The Effects of Management Buy-outs on Operating Performance and Value, *Journal of Financial Economics* 24(2), 217–254.
- Kaplan, Steven N. and Strömberg, Per, 2009, Leveraged buyouts and private equity, *Journal of Economic Perspectives* 23(1), 121–146.
- Lerner, Josh, Sorensen, Morten and Strömberg, Per, 2010, Private Equity and Long-Run Investment: The Case of Innovation, *Journal of Finance* 66(2), 445–477.
- Muscarella, Chris J. and Vetsuypens, Michael J., 1990, Efficiency and Organizational Structure: A Study of Reverse LBOs, *The Journal of Finance* 45(5), 1389–1413.
- Newbold, Paul, Carlson, William and Thorne, Betty, 2006, *Statistics for Business and Economics* 6th ed (New Jersey: Prentice Hall).
- Prais, G.J. and C.B. Winsten, 1954, Trend estimators and serial correlation, Discussion Paper no. 383 (Cowles Commission, Chicago, IL).
- Sjöstedt, Jonas, 2013, Riskkapitalisterna hör inte hemma i välfärden, *Aftonbladet Debatt*, Apr 17 2013.

Swedish Venture Capital Association (SVCA), 2013, Private Equity i den svenska ekonomin, Available [Online]: <http://www.svca.se/sv/Om-riskkapital/Om-riskkapital/Riskkapital-i-siffror/>

Wooldridge, Jeffery M., 2002, *Econometric Analysis of Cross Section and Panel Data*, (Cambridge, MA: MIT Press).

Yermack, David, 1996, Higher market valuation of companies with a small board of directors, *Journal of Financial Economics* 40, 185–211.

Appendix

A

Companies used*	Exit year	Companies removed	Reason for removal
Acando	2003	Alignment Systems	Reorganized after exit
ACO Hud	2004	Arca Systems	Reorganized after exit
Ahlsell	2005	Arexis	Integrated part of a group
Alfa Laval	2005	Aura Group	Integrated part of a group
Anticimex	2005	Bewator Group	Integrated part of a group
Atea	2006	Capella Group	Unable to locate
Aveva (Tribon Solutions)	2004	Carpark	Missing accounting data
B2 Bredband	2005	Cashguard SQS	Integrated part of a group
Bosch Thermoteknik (IVT Industrier)	2004	Dahl International	Integrated part of a group
Bosch Thermoteknik (IVT Industrier)	2002	Dometic	Integrated part of a group
C More Entertainment	2005	Dotcom Solutions	Integrated part of a group
Caldic Sweden (Norfoods)	2004	Elmo Leather	Peer data not available
Jeppesen Systems (Carmen Systems)	2006	Envac Centralsug	Integrated part of a group
CCS Healthcare (Clean Chemical Sweden)	2004	Fastighets AB Tornet	Missing accounting data
Entific Medical Systems (Cochlear Bone Anchored Solutions)	2005	Frigoscandia Distribution	Integrated part of a group
ComHem	2005	Gadelius	Reorganized after exit
Cramo	1999	GCE Holding	Reorganized after exit
Mr Music (Education and Entertainment)	2004	Guide Konsult	Integrated part of a group
Eldon Holding	2006	Guldfynd Sverige	Integrated part of a group
Elitfönster	2004	Hörnell International	Integrated part of a group
Faively Transport (Sab Wabco)	2004	Intentia International	Integrated part of a group
Findus	2006	Kreatel Communications	Reorganized after exit
Flexlink	2005	MacGregor	Integrated part of a group
Gislaved Folie	2003	Martinsson Gruppen	Unable to locate
Hilding Anders	2003	NeoPharma	Integrated part of a group
Imtech (NVS Installation)	2006	Oriflame Cosmetics	Peer data not available
Intrum Justitia	2005	Stjaern TV	Unable to locate
Stenqvist	2003	Sweden On Line	Integrated part of a group
Jens S. Transmissioner	2005	Sydsvenska Kemi	Integrated part of a group
Oriola (Kronans Droghandel)	2002	TAC	Unable to locate
Multicom Security	2005	Thule	Reorganized after exit
Mölnlycke Healthcare	2005	Total Logistik	Unable to locate
Nordisk Renting	2003	Tradex	Unable to locate
Plastal Sweden	2004		
Semper	2006	Reasons for removal	Number of missing
Svenska Fönster	2004	Integrated part of a group	17
Svenska Glitter (Sven-Axel Svenssons Bijouterier)	2004	Missing accounting data	2
Vaasan Sverige (Nordic Bake-Off)	2006	Peer data not available	2
Victor Hasselblad	2003	Reorganized after exit	6
VSM Group	2005	Unable to locate	6
* Old name in parentheses		Total	33

B**Table 18 - Results of the Wooldridge tests**

The tables presents the results of the Wooldridge test for autocorrelation. A significant test result indicate that there is autocorrelation between the variables.

		Independent Variables		
		Years	Financial	Lagged Capex
Dependent Variables	EBITDAm	0.0332**	0.0353**	0,1958
	Sales CAGR	0.0000***	0.0000***	0.0000***
	Capex	0,7029	0,7050	n.m.
	ROIC	0.0000***	0.0000***	0.0000***

***p<0.01 **p<0.05 *p<0.10