Operational effectiveness in buyouts

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Abstract

This thesis examines the operating performance during the holding period in 38 Swedish buyouts entered and exited between 1998 and 2008. The study consists of three parts: profitability, working capital management and employee management. Each buyout is assigned a peer group in order to adjust their development from macroeconomic effects and to compare their entry and exit point levels of performance to their industry counterparts. It is found that the industry adjusted profitability measured as ROIC and EBITDA margin increases significantly in the buyout companies during the holding period. The buyout companies have a lower average level of profitability than their peers at the entry point. In the case of ROIC it is shown that the relative underperformance at the entry point has explanatory power on the positive development during the holding period. It is also found that the level of net working capital in relation to sales decreases significantly more in the buyouts than in their respective peer groups derived from reduction of receivables and inventory. The results are to a large extent in line with previous empirical studies. The thesis presents two contributions to the research on Swedish buyouts. The positive development of performance in the buyouts during the holding period is connected to the initial underperformance. It also presents a breakdown analysis of changes in working capital.

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LIST OF SYNONYMS AND ABBREVIATIONS

Synonyms

Buyout company • portfolio company • buyout target Peer group • industry counterparts Private Equity company • PE company • PE firm • PE sponsor • Buyout sponsor Development • Delta • Difference Sales • Revenue • Turnover

Abbreviations

EBIT	Earnings before interest and tax
EBITA	Earnings before interest, tax and amortization
EBITDA	Earnings before interest, tax depreciation and amortization
EV	Enterprise value
GDP	Gross domestic product
IC	Invested Capital
LBO	Leveraged buyout
M&A	Mergers and acquisitions
NACE	Nomenclature Generale des Activities Economiques dans l'Union Europeenne (General Name for Economic Activi- ties in the European Union)
Net WC	Net Working Capital
NOPLAT	Net operating profit less adjusted tax
PE	Private Equity
ROIC	Return on invested capital
SVCA	Swedish private equity & venture capital association
SEK	Swedish Kronor
SNI	Svensk Näringsgrensindelning
UK	United Kingdom
USA	United States of America
WC	Working capital

1 INTRODUCTION

The LBO¹ phenomenon was first seen in USA in the 1960's. In USA the buyout activity increased fast during the 80's and since then the industry has become a major force in the world economy. In Sweden the PE industry has grown rapidly during the last decade thanks to favourable economic conditions and has now become a big part of the Swedish industrial life. In Sweden the PE firms had SEK 344 billion under management in April 2008. Today the PE firm's portfolio companies together employ 169 thousand people and have total revenues which equal approximately 10% of Sweden's GDP. As the industry has grown and developed it has drawn increased attention from society and media. The media coverage has increased further lately because of the credit crunch. High debt levels have forced a few PE owned companies into financial distress as the economic conditions have weakened dramatically (E24 2009).

Investors in PE funds have experienced high returns during the last decade. The net return on equity capital invested has been, on average, 15.6% over the last ten years. There are examples of PE funds that have generated over 20% per year on average.² Critics question if the PE firms add any real value to the buyout companies or merely buy companies cheap and sell expensive through good market timing. The question arises whether or not PE firms contribute to the development of their portfolio companies. The buyout business model is accompanied with a high debt level. Debt has an important impact as it gives a leverage effect on the return. The current crisis has shown that high levels of debt make buyout companies vulnerable in economic downturns. Operational performance in portfolio companies becomes even more important in weak economic conditions.

The aim of this thesis is to examine if the operational effectiveness is increased in buyout companies during the holding period. Since we want a multidimensional approach we analyse the operational effectiveness in three different areas. These areas are profitability, working capital management and employee management. They constitute the structure and the scope of the thesis. The study is performed with the aid of accounting data and

¹ Please refer to the abbreviations section for all abbreviations used throughout the thesis. ² All statistical figures are taken from the Directory and Yearbook, SVCA 2008-2009.

accounting measures. A set of measures are analysed in each of the three areas. We then test hypotheses in relation to each accounting measure with the use of the student's t test. The sample consists of 38 buyouts which are entered and exited between the years 1998 and 2008. To clear from general macroeconomic changes each buyout company is assigned with a peer group. The analysis is made on both raw data and industry adjusted data. We analyze both the change during the holding period and the respective levels at the entry to the exit points for all accounting measures used. This allows us to examine if the change in the buyout companies differ from that of their respective peers and how they perform at the entry and exit points.

2 THEORY

We briefly present the private equity field in the first part of the theory section. The second part is connected to the scope of this thesis – operational effectiveness in buyout companies.

2.1 General overview

Berg and Gottschalg (2003) define a buyout as the purchase of a controlling stake in a company or a division from its owner financed by a combination of equity and debt and the involvement of specialized financial companies.³ The buyout process is complex in its nature and value can be derived from many dimensions in the buyout process. The buyout process consists of three steps: the acquisition phase, the holding period and the divestment phase.

During the acquisition phase the PE firm conducts due diligence activities, create a business plan and establish contacts with the management of the target company. An important determinant of the success of the deal is the valuation process of the target company, as the purchase price will set the breakeven point for the acquiring PE firm. During the holding period the PE firm perform their business plan and develop the operational aspects of the company (Berg and Gottschalg 2003). During the holding period it is common that the PE firm perform add-on acquisitions to merge with the portfolio company (Loos 2005). Divestments from the buyout companies are also common during the holding period (Wiersema and Liebeskind 1995). Research have shown that about two thirds of the value generation in the buyout process takes place during the holding period while one third is created through the circumstances and configuration of the actual transaction (Anslinger and Copeland 1996).

³ We keep to this broad definition in this thesis instead of more narrow ones like management buyout, management buy in, institutional buyout etc.

2.2 Operating Performance

Operating performance in the portfolio companies is studied in three different areas: profitability, working capital management and employee management. Many publications are available with previous research in this field. Many of the commonly cited publications use data from the buyout boom in the US in the 80's but more recent studies from other countries are available as well.

Professionals in the PE industry claim that operational performance in buyout companies is a key value driver. The reason is that the price of a company when purchased and divested is often quoted as a multiple of operating earnings (EBIT, EBITA or EBITDA). The development of operating earnings during the holding period is determined by growth in sales and change in profit margin. Private equity sponsors work actively with both of these factors in order to increase the value of the buyout company. If operations have developed favourably and organic growth has been good, the PE firm will be able to sell at a higher multiple.⁴ Operations in the portfolio companies are examined thoroughly in order to decrease costs. PE sponsors also work actively with products and markets in order to develop the business and increase margins. Regarding working capital they initiate extensions of payment periods to suppliers, reduction of debtor credits and reduction of inventory after the acquisition. One important reason for this is to use the excess cash generated for repayment of loans.

One source of inspiration used when choosing the theoretical and methodological approach is the publication by Bergström et al (2007). The study is done on Swedish buyouts with entry and exit between 1998 and the first half of 2006. The aim of the research was to examine the potential increase in operating performance in excess of the industry average. EBITDA margin, ROIC and sales growth were used as measures of operating performance. Their main findings are that the development of EBITDA margin and ROIC on average is significantly better for the portfolio companies than for their respective peer companies. However it could not be proved that sales growth was higher in the buyouts. It was also concluded that changes in wage and employment levels, leverage

⁴ The multiple expansion effect is referred to in the literature as *value capturing* (Loos 2005).

and management shareholdings had a very limited explanatory power on the development of operating performance.

In a study of buyouts that took place between 1981 and 1986 it was found that the plant productivity was higher in the three years post buyout than in any of the eight years pre buyout. Even if the productivity was increasing from year to year before the buyout, the average improvement accelerated after the buyout. Concerning employees they found that the ratio of non-production to production workers decreased 6.5% on average and both the hourly and, more so, the annual compensation to production workers increased (Lichtenberg and Siegel 1990). Another study did not find that the ratio employees to assets differs between LBO targets and their respective peers (Holthausen and Larcker 1996).

Cash flow per employee has been found to increase in buyout companies post buyout. The improvement was achieved without an average reduction in the total number of employees. It was found, though, that new employees were hired in the post buyout period at a slower rate than for competitors. The increase in operating returns was attributable both to increased operating profit and improvement in management of working capital. On average the collection of receivables had accelerated and the average inventory holding period had been reduced. However, an extension of the payment period to suppliers could not be proved (Smith 1989). Other studies also show that buyout targets keep lower levels of working capital, derived from higher inventory turnover and fewer average days of accounts receivables than their industry counterparts (e.g. Singh 1990, Holthausen and Larcker 1996). Also Kaplan (1989) found increased cash flow in buyout companies. The increase was derived from higher operating income, less capital expenditure and higher inventory turnover. Easterwood et al (1989) conclude that the high debt levels in buyouts provide incentives to increase cash flow in order to cope with interest payments and to reduce the level of debt. Cash was generated e.g. by liquidating less productive assets.

A study on one buyout, "the Scott organization", found that the operating performance was increased during the holding period. To a large extent the improvement could be attributed to the cooperation between the PE firm, the board of directors and top management. The management incentives structure with increased ownership also had an important impact. In line with quantitative studies it was found that the working capital requirement, as a percentage of sales, had decreased (Baker and Wruck 1989).

Concentrating the control of a firm in the hands of a few has been shown to provide an effective mechanism to monitor and control managerial decisions (Easterwood et al 1989). A recent study concludes that PE firms portfolio companies are better managed than other firms with other types of ownership. The study also finds that PE firms disproportionately target companies whose management is underperforming (Boom et al 2009). According to our interviews PE firms aim to bring forth the full potential of the business in the portfolio companies. To make money on such a strategy is presumably easier if the full potential has not been reached pre buyout. It has also been found that PE owned companies are more likely to remove or retrain underperforming employees (Boom et al 2009).

Concerning cost cutting, one publication argues that shareholders performing hostile takeovers profit from wealth transfers from stakeholders by breaking implicit contracts, ⁵ e.g. through reducing the number of employees and cutting wages (Shleifer and Summers 1988). A recent study made on acquisitions in the UK, however, found that private equity backed LBOs had no effect on employment or wages (Amess et al 2008). On Swedish data Bergström et al (2007) concluded that buyouts are neither followed by wage cuts nor reduction of employment levels.

⁵ An implicit contract is a non-contractual agreement that has developed through a long-term relationship between two parties, e.g. between an employer and a long-time employee.

3 HYPOTHESES

As stated in the introduction, the purpose of this thesis is to examine how the private equity firms' portfolio companies' operational performance develops during the holding period. Twelve hypotheses have been formulated and tested. All hypotheses are tested on industry adjusted data. What is tested is in effect the difference between the development in the buyout companies and the development in their respective peer groups (the technical aspects are further discussed in chapter 4). The hypotheses are divided into the three categories introduced previously:

- Profitability
- Working capital management
- Employee management

3.1 Profitability

As discussed in the introduction the debt burden in the buyout companies put extra demand on profitability. The profitability is also an important part of the value creation process from the buyout sponsors point of view. To examine the development of the profitability in the buyout companies in our sample hypotheses 1 and 3 are tested. Since PE firms target underperforming companies to a disproportionate extent (Boom et al 2009) it will also be examined if the performance at the beginning of the holding period has explanatory power on the profitability development. For this purpose a regression has been conducted and hypothesis 2 has been tested. The regression is done on the ROIC data.

H1: ROIC has increased in the buyout companies relative to their peers

H2: Industry adjusted entry value of ROIC has explanatory power on the ROIC development

H3: The EBITDA margin has increased in the buyout companies relative to their peers

A breakdown of the ROIC measure has further been done according to the DuPont formula. Previous research has shown that improvements in return on capital in buyouts are derived from higher profitability in relation to sales rather than higher capital efficiency (Muscarella and Vetsuypens 1990). In relation to these results it is tested in this thesis where a potential change in ROIC is derived from by testing hypotheses 4 and 5.

H4: The NOPLAT margin has increased in the buyout companies relative to their peersH5: The IC Turnover ratio has increased in the buyout companies relative to their peers

3.2 Working capital management

The ROIC measure takes into account all invested capital. To provide a deeper insight into the development and use of capital in the companies' operations, the management of working capital is further examined. In order to use a relative measure working capital is put in relation to sales. The primary hypothesis in this section is hypothesis 6.

H6: Net Working Capital has decreased in the buyout companies relative to their peers

To understand where a potential change in working capital is derived from its different components receivables, payables and inventory are examined by testing hypotheses 7-9. All of the components have been put in relation to sales.

H7: Receivables have decreased in the buyout companies relative to their peersH8: Payables have increased in the buyout companies relative to their peersH9: Inventory has decreased in the buyout companies relative to their peers

3.3 Employee management

Research has shown that improvement in return on capital in buyouts is primarily derived from reduction of costs (Muscarella and Vetsuypens 1990). It is analyzed in this thesis how the employee management develops in the buyout companies relative to their peers because the personnel costs represents a great part of the operating costs in a company.⁶

⁶ The accounting data in Orbis actually gives the restriction to only look at personnel costs since other operating costs are not disclosed in the same way for all companies because of the difference between income statements organised by type of cost and by function.

Hypothesis 10 is tested to analyze how the personnel costs have developed in the buyout companies. It is further examined if the potential change is foremost from change in productivity per employee or if wage levels have altered by testing hypotheses 11 and 12. The analysis of *personnel costs per employee* has further relevance since there has been criticism against the private equity industry that wage levels deteriorate after the acquisition.

H10: Personnel Cost in relation to sales has decreased in the buyout companies relative to their peers

H11: Personnel Cost per employee has decreased in the buyout companies relative to their peers

H12: Sales per employee has increased in the buyout companies relative to their peers

4 METHODOLOGY

4.1 Accounting key ratios

The shares of a portfolio company are usually acquired from a holding company. The consolidated accounts for the buyout companies are then created in the holding company during the holding period. Hence it is often not possible to find consolidated accounts for the buyout company from the same entity pre acquisition and post acquisition. Since the ROIC measure and the measures of working capital and its components use average values from the start and the end of a fiscal year, this creates complications. In order to calculate the development of the accounting measures in a correct way, the first full year of ownership post acquisition is used as the entry point. The exit point has been set to the last full year of ownership before divestment. This approach has both pros and cons. We have used consolidated data from the same entity when calculating the measures that use averages. The distortions from early add-on acquisitions and divestments are also partly avoided. The approach however implies the risk of not capturing early changes.

Revenue growth is important in the buyout value creation process. Revenue growth is however not included as an accounting key ratio in this thesis because PE firms work continuously with divestments from and add-on acquisitions to the portfolio companies. Add-on acquisitions and divestments create another potential problem, as the company studied in the beginning of the holding period will not be the same company at the exit point. That is, if it has been merged with other companies, or if one or more business units have been sold. According to our interviews add-on acquisitions and divestments in order to develop the business and enhance profitability is common, and we argue that positive development due to M&A activity should not be disregarded. Acquisitions also affect the balance sheet as they in many cases causes recognition of goodwill, which could imply a downward bias in the ROIC measure. This effect could be avoided by sub-tracting goodwill from IC in the buyouts. Due to the time limit of this thesis we have chosen not to do so, thus if peer companies make acquisitions they too will recognise good-

will. The accounting data is not adjusted for add-on acquisitions, divestments or goodwill recognition.

4.1.1 Profitability

Regarding profitability operating earnings is used rather than net income because it measures the productivity of operating assets and is more appropriate due to the change in capital structure after the acquisition (Barber and Lyon 1996). The two measures of profitability used in this thesis are the ROIC and the EBITDA margin. Both measures are widely used in the finance industry and in financial theory.⁷

ROIC = NOPLAT / IC

In this thesis the following definitions of NOPLAT and IC are used:

NOPLAT = EBIT x (1-tax rate) IC = equity + interest bearing debt – cash and cash equivalents

The tax rate used is the Swedish statutory tax rate on company earnings during the period when the buyouts in our sample took place, 28%. The problem with ROIC is that not all companies have an IC big enough to make the measure meaningful, due to this not all buyouts in the sample are used in the ROIC analysis (further discussed in section 5.3.1). This makes it desirable to have another measure, relevant for all companies. The EBITDA margin is used as it measures profitability in relation to sales, rather than assets.

EBITDA margin = EBITDA / Sales

In relation to ROIC we also analyze ROIC decomposed. The breakdown is made according to the DuPont method. The DuPont breakdown means that a measure of return on capital is divided into a profit margin on sales and a turnover ratio of assets. This is done in order to examine if a potential change in ROIC is attributable to a change in profit margin, or a change in capital efficiency. Since ROIC consists of NOPLAT over IC, the breakdown is made accordingly:

ROIC = *NOPLAT margin x IC turnover ratio*, the two measures tested are:

⁷ The ROIC is frequently used in valuation theory (see e.g. Koller et al).

NOPLAT margin = NOPLAT / Sales IC turnover ratio = Sales / IC

4.1.2 Working Capital management

Net WC is put in relation to sales in order to use a relative measure.

Net WC / Sales

The definition of net WC is:

Net WC = *Receivables* + *Inventory* – *non-interest bearing current payables*

Even though the relation between sales and WC is commonly expressed as a turnover ratio of WC (e.g. in White et al p. 121), net WC is expressed as a percentage of sales in this thesis in accordance with Baker and Wruck (1989). The reason for this is that when expressing net WC as a percentage of sales the measure is defined for negative net WC, which a turnover ratio would not have been. There are buyout companies with negative net WC in our sample and it would have biased the sample incorrectly if these had been excluded from the analysis. Net WC refers to WC excluding cash. A company needs operating cash, which is sometimes regarded as a part of WC. It is however hard to determine what level of cash should be regarded as operating, and to include all cash as WC would be wrong. This is why cash is excluded from WC in the analysis. The below ratios show how the parts of net WC are analysed:

Inventory / Sales Receivables / Sales Payables / Sales

The development of all receivables and all non-interest bearing current payables are studied in this thesis, rather than only account receivables and account payables. The latter ones are commonly used when analysing the cash cycle and when measuring average days of account receivables and account payables. The reason is that we do not want to exclude any part of working capital in the analysis. In the analysis section statistics and comments upon the development of account receivables and account payables are presented as well. When analysing payables it is often put in relation to costs, in this thesis we put it in relation to sales to achieve comparability between the analyses of the different parts of WC.

4.1.3 Employee Management

To examine if the level of personnel costs change in the buyout companies during the holding period, it is put in relation to sales. The primary measure in this analysis is:

Personnel Cost / Sales

The two measures below contribute further to our analysis. Sales per employee is a measure of efficiency and personnel costs per employee is analysed in order to assess the uncertainty about whether or not PE sponsors profit from reduction of wage levels.

Personnel Cost / no. of employees Sales / no. of employees

4.2 Measurement technique

To explain how the comparison is made ROIC will be used as example. The ROIC for each buyout is measured both at the entry point and the exit point. The exit point ROIC minus the entry point ROIC is the *Delta*. In the same way the delta is calculated for each peer company. The median delta ROIC in the peer group is used to measure the development of the peers. The median is used because the average would give undesired weight to extreme values. *Industry adjusted delta* in the tables of descriptive statistics is the difference between the buyout delta and the peer median delta. If the result is positive it means that the buyout has performed better than the median of the peer group. The tables of descriptive statistics take in to account all the buyouts that are included in the respective analysis, which means that the line *Mean* for *Industry adjusted delta* of *ROIC* is the median ROIC in the peer group at the entry point is subtracted from the ROIC of the buyout at the entry point. The same is done at the exit point.

Delta = ROIC exit – ROIC entry Industry adjusted delta ROIC = delta ROIC buyout – median delta ROIC peer group Industry adjusted entry ROIC = ROIC buyout entry – median ROIC peer group entry Industry adjusted exit ROIC = ROIC buyout exit – median ROIC peer group exit

No negative numbers are converted. A positive result in the case of *Industry adjusted ROIC* means that the buyout performs better. In the case where a decrease is desirable, e.g. the *net WC / sales* ratio, a negative result means that the buyout performs in excess of the peers. In other words, the *Industry adjusted delta* for *net WC / sales* in the tables of descriptive statistics would be negative if the buyouts have outperformed their industry counterparts.

An inconsistency arises in the data, which can be seen in the tables of descriptive statistics, due to the use of the peer median delta. When the industry adjusted delta is calculated the median delta in each peer group is used. When the industry adjusted entry point is calculated the median entry point value in the peer group is used, same for the exit point. The effect of this method is that the average industry adjusted exit point minus the average industry adjusted entry point does not equal the average industry adjusted delta. It is in most cases close but not equal. The largest inconsistencies arise in the *personnel cost per employee* and *sales per employee* analysis. This is due to extreme values (further discussed in section 5.3.2).

4.3 Statistical Method

The student's t-test is used when the significance of the results is tested. ROIC will continue to serve as example. When the significance of the ROIC result is tested the null hypothesis is that the mean of the *Industry adjusted delta* = 0 (i.e. D_0 is set to 0 in equation 4.3). One tailed tests are used. The null hypothesis is tested against the alternative hypothesis that the *Industry adjusted delta* > 0. In the case of net WC, where a decrease is expected, the null hypothesis that the *Industry adjusted delta* = 0 is tested against the alternative hypothesis that the *Industry adjusted delta* < 0. The standard deviation is calculated on the differences, in accordance with the t-test technique with matched pairs. In the formula the standard deviation is divided with the square root of the sample size, i.e. 30 for the ROIC, NOPLAT margin and IC turnover ratio tests and 38 for all other tests. The student's t test is performed according to equitation 4.3.

Equation 4.3 Student's t test for matched pairs

Reject H₀ if
$$t = \frac{\overline{D} - D_0}{s_D / \sqrt{n}} > t_{n-1,\infty}$$

5 ACCOUNTING DATA

The primary source for data gathering has been Orbis (Bureau van Dijk Electronic Publishing). To avoid discrepancies the data has been complemented and randomly compared with the companies' annual reports collected from Affärsdata (Newsline Group AB).

5.1 Decision rules for sample

All Swedish buyouts entered and exited between 1998 and 2008 have been gathered. This was done by using Mergermarket's database, by scanning the PE firms' homepages and also by mail correspondence with some of the PE firms. The time frame of 10 years is chosen because the annual reports available on Affärsdata are those from the last ten years. The sample contains companies whose turnovers exceed MSEK 100 at the entry point to avoid transactions that would be labelled as venture capital investments. The study is performed on Swedish buyouts from the following PE firms: EQT, Ratos, Nordic Capital, Accent Equity Partners, 3i, Triton, Bure Equity, Industri Kapital, CapMan, Segulah and Litorina.

The minimum holding period is set to four years. The reason for this is that if the minimum holding period was shorter the same balance sheet data would be used twice, i.e. the outgoing values from the year with the entry data would be the ingoing values for the exit data in the accounting ratios that use balance sheet data.

The sample consists only of buyouts from which consolidated data could be found from the same entity throughout the holding period. Given the time limit of this thesis we have chosen not to consolidate data from different entities ourselves or to pick data from different entities for different years. The buyout companies for which the consolidated accounts are created in different legal entities for different years during the holding period have hence been excluded. This is done to get a more accurate picture of the performance. The accounting data from the peers is consolidated to an as large extent as possible (discussed further in section 5.2). There is only one buyout company for which consolidated accounts could not be found, Dotcom Solutions. This is because it consists of only one limited company, i.e. no subsidiaries to consolidate. By following our decision rules and restrictions the companies in exhibit 5.1 are to the best of our knowledge the ones we are able to study and they constitute our sample.

Company	PE Firm	Entry	Exit	Note
Arca Systems	Industri Kapital	1998	2005	excluded from ROIC analysis
Capona	Ratos	1998	2003	
MacGregor	Industri Kapital	1998	2004	
Nordisk Renting	3i	1998	2003	
TAC	EQT	1998	2003	
Acando Frontec	Accent	1999	2003	
Elmo Leather	Accent, Nordic Capital	1999	2004	
Intrum Justitia	Industri Kapital	1999	2005	excluded from ROIC analysis
J D Stenqvist	EQT	1999	2003	
SYSTeam	Bure Equity	1999	2006	
Thule	EQT	1999	2004	
TurnIT	Accent	1999	2004	excluded from ROIC analysis
Alfa Laval	Industri Kapital	2000	2005	
Dotcom Solutions	3i	2000	2005	excluded from ROIC analysis
Elit Fönster	Triton	2000	2004	
Findus	EQT	2000	2006	
Nybron Flooring	Nordic Capital	2000	2006	
Plymovent	Litorina	2000	2006	
Q-Labs	Ratos	2000	2004	excluded from ROIC analysis
Sven-Axel Svensson	Accent	2000	2004	
Tradex	EQT	2000	2006	
Alignment Systems	3i, Ratos	2001	2006	
Alimak Hek	3i, Ratos	2001	2006	
Anticimex	Nordic Capital	2001	2005	
Atea Holding	3i	2001	2006	
Dometic	EQT	2001	2005	
Eldon	EQT	2001	2006	
Eltel Networks	Industri Kapital	2001	2006	
Envac	Ratos	2001	2005	(Atle Industri)
Guide Konsult	Nordic Capital	2001	2006	excluded from ROIC analysis
Jens S Transmissioner	3i, Ratos	2001	2005	
Lindab	Ratos	2001	2006	
Sydsvenska Kemi	Industri Kapital	2001	2005	
Hydrauto	Accent	2002	2006	
NVS Installation	Segulah	2002	2006	
SATS	Nordic Capital	2002	2006	excluded from ROIC analysis
Cochlear BA	CapMan	2003	2007	excluded from ROIC analysis
Cision	Triton	2004	2008	-

Exhibit 5.1 Sample list

5.2 Assigning peer group

Each of the buyouts in the sample has been assigned a peer group. This was done manually by searching for suitable companies in the database Affärsdata. These are the five ruled used when assigning peer companies:

- 1. Only Swedish peer companies
- 2. All peer companies should have data from the same legal entity for all relevant years
- 3. The peer company should have the same SNI-code as the buyout company⁸
- 4. The peer company's revenue figure should be within one fourth and four times the revenue of the buyout company in the last whole year of the holding period
- 5. Consolidated data should be available

We never deviated from the first two rules when assigning peer companies. Several buyout companies have more than one SNI code. In these cases all of the SNI codes were used to find relevant peers. A problem with SNI codes is that the legal entity where the consolidated data for the group is created is in many cases a holding company. Then the SNI code for the holding company usually is defined as internal consulting or other services performed by headquarters. In these cases the SNI codes for their major subsidiaries, where the operational activities are performed, have been used. The minimum number of peers is set to five.

For many of the companies in the sample sufficient peers could not be found when following the above rules. In these cases the range of revenue was first expanded upwards and downwards. Peers with a turnover of less than MSEK 100 have not been used in more than a few cases when it could not be avoided. The reason to avoid relatively small peer companies is to prevent volatility in the peer group that would contradict the purpose of comparison. If sufficient peers could not be found after the expansion of the revenue

⁸ The SNI code system is based on the European Union standard NACE for industry classification

range the range of SNI codes was expanded. In most cases the SNI code detail level was cut back to include 4 or 3 digits of accuracy from the initial 5 digits. In some cases better peers were found by picking the SNI codes manually. If sufficient peers could not be found when only using companies for which consolidated data is available, the peer groups have been expanded with companies presenting only unconsolidated data. A few of the buyout companies in the sample had no relevant peers in Sweden during the hold-ing period, in these cases the peers used deviate more than desirable in size and type of business. Efforts have been made to not include currently or previously PE held companies in the peer groups.

5.3 Outliers and measurement issues

There are extreme values in the sample, some of them showing as *max* or *min* values in the descriptive statistics. Buyouts are not disregarded only because they give the data outliers. The median values in the tables of descriptive statistics are not affected by extreme values to the same extent as the averages. When extreme values have a substantial impact on the significance of the tests, results disregarding these outliers are also presented.

5.3.1 ROIC Issues

Ratios that contain balance sheet items as denominators are problematic. If the balance sheet item is relatively small the measure becomes volatile. In the case of ROIC the problem arises because some companies operate in industries with low capital intensity. In such industries ROIC does not give the best outcome when measuring profitability (Dodd and Rehm). Due to this problem not all companies in the sample are included in the ROIC analysis. If a buyout company or any of its peers have had negative IC in one or more years during the holding period, that buyout company is excluded. However, if a peer company has negative IC because of low or negative equity, only that peer company is excluded from the peer group in the ROIC analysis. Because the companies for which ROIC is not a suitable measure have been excluded, the ROIC analysis is done on 30 buyout companies (shown in exhibit 5.1).

5.3.2 Employee analysis issues

According to box plot analyses the company Nordisk Renting is an extreme outlier in the key ratios *personnel costs per employee* and *sales per employee*. The box plots were performed on raw data. The significance of the results in these analyses is however not affected by the presence of this outlier. In the analysis of sales per employee most numbers discussed are median values.

5.4 Presentation of selected accounting data

Exhibit 5.4 is a brief summary of the results from the calculations performed on the accounting data which is gathered and handled as described in this and the previous section of the thesis. The table shows the industry adjusted deltas, in effect the difference between the development of the buyout companies and the median development in their respective peer groups. They constitute the data used for testing our hypotheses. Each of the key ratios and delta figures below are analysed and discussed in the next section, the analysis.

Descripive Statistics					
Industry adjusted delta	Mean	Median	Max	Min	Std Dev
ROIC	12.30%	5.33%	150.77%	-24.09%	31.42%
EBITDA Margin	5.86%	1.70%	102.99%	-13.18%	18.53%
NOPLAT Margin	5.53%	2.17%	79.63%	-3.38%	14.91%
IC Turnover ratio	.30x	.18x	11.14x	-11.83x	3.52x
Net WC / Sales	-3.00%	-2.95%	53.07%	-28.34%	11.85%
Inventory / Sales	-2.04%	-0.73%	2.77%	-13.63%	3.53%
Receivables / Sales	-3.34%	-2.14%	16.22%	-21.16%	7.32%
Payables / Sales	-2.48%	-0.58%	14.51%	-63.13%	12.01%
Personnel cost / Sales	-1.39%	-1.05%	16.42%	-19.60%	5.92%
Personnel cost / emplyees *	0.5	-4.9	127.0	-156.9	56.9
Sale / employees *	-365	-6	2,002	-11,694	2,031

Exhibit 5.4 Summery of descriptive statistics industry adjusted delta

* KSEK

6 ANALYSIS

The empirical material gathered in the way outlined in the methodology and data sections is analysed in this chapter in relation to the hypotheses. The analyses are presented and discussed using both the raw data and the industry adjusted data. The statistical tests are only performed on the industry adjusted data, in accordance with the hypotheses. In the tables of descriptive statistics there is a mismatch between the industry adjusted entry and exit values and the industry adjusted delta values which is further discussed in section 4.2.

6.1 Profitability

In this section the analyses of ROIC, EBITDA margin and the DuPont breakdown of RIOC into NOPLAT margin and IC turnover ratio are presented. Regarding the ROIC measure, results from the regression analysis are also presented.

6.1.1 ROIC

The raw data for the buyout companies show that the mean entry value for ROIC is 1.25% and the mean exit value is 13.15%. The mean industry adjusted increase is 12.30% units. This result is significant on the 2.5% level. Hypothesis 1 that the ROIC has improved in the buyout companies relative to their peer groups is found to be true. 12.30% units is a big difference which is partly explained by a few extreme values. Because of the presence of extreme values the median can potentially be a better measure. The industry adjusted median increase is 5.33% units. An important aspect of this difference in the development of ROIC is that the buyout companies on average show a substantially lower level than their peers at the entry point of the holding period. The difference is found to be -12.80% units at the entry point, which is significant on the 1% level.

ROIC	Raw			Industry adjusted			
	Entry	Exit	Delta	Entry	Exit	Delta	
Mean	1.25%	13.15%	11.91%	-12.80%	-0.32%	12.30%	
Median	5.22%	10.89%	2.40%	-7.11%	1.39%	5.33%	
Max	27.48%	78.93%	143.29%	12.68%	63.94%	150.77%	
Min	-64.36%	-2.77%	-13.56%	-72.38%	-37.02%	-24.09%	
Std deviation	21.03%	14.71%	30.01%	21.34%	16.55%	31.42%	

Exhibit 6.1.1.1 Descriptive statistics for ROIC

We had not expected to find a significant underperformance at the entry point because PE sponsors claim they target market leaders. The reason for this result could be that there is more unrealised potential in an underperforming company. This does not have to be contradictory though, as the market leader in terms of market share or product quality is not always the most profitable or efficient. To examine if the positive development of ROIC is dependent on the low entry values a regression has been done. The regression is done in four different cases to clear the results from extreme values, as shown in exhibit 6.1.1.2.

Exhibit 6.1.1.2 Regression data

Case		R2	Beta
1	All data points included	0,617	-1,169
2	Data point 1 excluded	0,552	-0,724
3	Data points 1 and 2 excluded	0,319	-0,458
4	Data points 1, 2 and 3 excluded	0,116	-0,319

The coefficient of determination (\mathbb{R}^2) for the first case, where all data points are included, is found to be 0.617. This implies that in case one 61.7% of the industry adjusted ROIC development is explained by the industry adjusted entry point values for the buyout companies. In cases 2 and 3 the \mathbb{R}^2 value is decreasing but still strong. The fourth case where the three most extreme values have been excluded shows an \mathbb{R}^2 of 0.116. In effect 11.6% of the industry adjusted development of ROIC is explained by the industry adjusted entry value.⁹ In the first case the relation between Industry adjusted delta ROIC and the industry adjusted entry value is significant on the 1% level. Hypothesis 2 is found to be true.

⁹ We also did regressions between the EBITDA Margin development as dependent of the EBITDA Margin entry point and the ROIC development as dependent of the development of net WC/sales. We found no significant correlation in either of the regressions.

The scatter plot (graph 6.1.1) shows the industry adjusted delta values as dependent of the industry adjusted entry values for the buyout companies. The regression line shown in the scatter plot is drawn in accordance with case one, containing all data points in the sample. The three most extreme data points (labelled as 1, 2 and 3 in the chart) are handled according to exhibit 6.1.1.2.



Graph 6.1.1 Scatter plot and regression of industry adjusted ROIC data

6.1.2 EBITDA margin

The raw data show an improvement in EBITDA margin in the buyout companies during the holding period from an average entry value of 6.76% to the average exit value of 12.98%. This amounts to an increase of 6.22% units. The industry adjusted increase is 5.86% unit. The results found in the ROIC are also reflected in the EBITDA margin. The industry adjusted increase is significant on the 5% level. It is concluded that hypothesis 3 is found to be true. The average industry adjusted entry and exit values indicate that the buyout companies were underperforming at the entry point and outperform their peers at the exit point. The initial underperformance found in the average value is in line with the results from the ROIC analysis, but the median value does not support that the EBITDA margunts and external the entry point. The differences could arise from that the EBITDA margin.

gin analysis contains all companies in the sample, while the ROIC analysis excludes eight companies.

EBITDA	Raw			Inc	lustry adjuste	ed
margin	Entry	Exit	Delta	Entry	Exit	Delta
Mean	6.76%	12.98%	6.22%	-1.92%	3.88%	5.86%
Median	8.07%	10.09%	1.49%	0.71%	2.00%	1.70%
Max	60.03%	74.15%	105.23%	43.09%	58.39%	102.99%
Min	-91.51%	-0.61%	-12.00%	-96.79%	-9.72%	-13.18%
Std deviation	21.48%	14.91%	18.89%	19.43%	12.90%	18.53%

Exhibit 6.1.2 Descriptive statistics for EBITDA margin

6.1.3 DuPont analysis of ROIC

ROIC has increased more in the buyout companies than in their peer groups. By using the DuPont breakdown it is examined from where the increase is derived. The data shows that the NOPLAT margin is the main contributor to the ROIC development. The increase in the raw data amounts to 5.24% units from the entry point to the exit point. As in the ROIC and EBITDA margin analysis, a low industry adjusted level is found at the entry point. The industry adjusted increase is 5.53% units, which is a significant improvement on the 5% level. Hypothesis 4 is found to be true.

Exhibit 6.1.3.1 Descriptive statistics for NOPLAT margin

NOPLAT	Raw			Industry adjusted		
margin	Entry	Exit	Delta	Entry	Exit	Delta
Mean	1.08%	6.32%	5.24%	-3.25%	2.12%	5.53%
Median	2.50%	4.45%	1.56%	-1.38%	0.43%	2.17%
Max	34.30%	47.10%	80.89%	26.03%	39.32%	79.63%
Min	-73.33%	-0.90%	-5.91%	-75.76%	-5.23%	-3.38%
Std deviation	16.96%	9.95%	15.32%	15.80%	8.58%	14.91%

Regarding IC turnover the raw data show an entry level of 3.65x and an exit level of 4.15x for the buyout companies. The industry adjusted values indicates that the IC turnover ratio is higher for the peer groups at both the entry and the exit points. The development is 0.30x higher for the buyout companies compared to their industry counterparts on average, the improvement is however not significant on conventional levels. Our results are in line with previous research that has shown that the buyout companies' profitability improvements are mainly generated from the PE firms' ability to reduce costs rather than generate more revenue or to improve asset turnover (Muscarella and Vetsuypens 1990).

IC Turnover	Raw			Inc	lustry adjuste	ed
	Entry	Exit	Delta	Entry	Exit	Delta
Mean	3.65x	4.15x	.50x	63x	31x	.30x
Median	2.32x	2.99x	.36x	99x	46x	.18x
Max	14.85x	16.85x	10.29x	12.66x	10.42x	11.14x
Min	.12x	.10x	-11.71x	-7.77x	-7.11x	-11.83x
Std deviation	3.51x	3.96x	3.53x	3.45x	3.26x	3.52x

Exhibit 6.1.3.2 Descriptive statistics for IC turnover ratio

6.1.4 Results from profitability analysis

Both the ROIC analysis and the EBITDA margin analysis show that the buyout companies improve their profitability more than their industry counterparts during the holding period. This is in line with previous publications that have studied the profitability in buyout companies (e.g. Bergström et al 2007, Smith 1989, Singh 1990 and Kaplan 1989). We have found that the buyout companies on average underperform at the entry point compared to their industry counterparts (in line with Boom et al 2009). We further showed how the buyout companies' initial underperformance has an explanatory power on the increase in profitability during the holding period. The DuPont breakdown of the ROIC measure shows that the major part of the profitability increase is derived from reduction of costs in relation to sales, rather than higher IC turnover (in line with Muscarella and Vetsuypens 1990).

6.2 Working Capital management

The second set of measures we have studied and performed tests upon is the net working capital and its components receivables, payables and inventory. An analysis of the development of account receivables and account payables is also presented.

6.2.1 Net Working Capital

The average level of net WC in the buyout companies has improved from 9.90% of sales to 6.10%, an improvement of -3.80% units. The industry adjusted improvement is -3.00% units. The average improvement in excess of the peer companies' development is signifi-

cant on the 10% level. There is however a clear outlier in the sample. If Nordisk Renting is disregarded (the max delta values in exhibit 6.2.1) the average industry adjusted decrease is -4.51% units, which is significant on the 1% level. Hypothesis 6 is found to be true. This result is expected since PE sponsors thoroughly examine operations in order to increase efficiency. Decrease in working capital in buyouts is desirable since it creates excess cash that can be used for repayment of debt.

A difference from the profitability analysis is that the buyout targets are not underperforming at the entry point compared to their industry peers. The data indicates that the buyouts' WC / sales ratio is close to the industry average at the entry point, especially if one refers to the industry adjusted median entry value. At the exit point the buyout companies outperform their peers. Regarding the entry level it should be noted though, that the balance sheet data is an average of the start value and the end value of the first whole year post buyout. In effect the delta values disregard the changes imposed immediately after the buyout, since we do not look at pre acquisition data.

Net WC	Raw			Industry adjusted			
	Entry	Exit	Delta	Entry	Exit	Delta	
Mean	9.90%	6.10%	-3.80%	-1.89%	-3.65%	-3.00%	
Median	11.51%	6.98%	-3.68%	0.09%	-3.72%	-2.95%	
Max	38.75%	25.37%	47.32%	28.80%	13.84%	53.07%	
Min	-74.98%	-27.66%	-21.01%	-86.39%	-25.44%	-28.34%	
Std deviation	19.48%	11.86%	10.93%	17.80%	8.74%	11.85%	

Exhibit 6.2.1 *Descriptive Statistics for net WC / sales*

6.2.2 Net WC decomposed

The largest change is found in the ratio *receivables / sales*. It has changed from an average of 24.55% to 20.55%, a decrease of -4.00% units. Adjusted for industry development the decrease is on average -3.34% units. This improvement is significant on the 1% level. Hypothesis 7 is found to be true. The average industry adjusted entry value indicates a slight underperformance at the entry point, but the median does not. The presence of extreme values could imply that the median is a more accurate measure.

Receivables	Raw			Inc	ed	
	Entry	Exit	Delta	Entry	Exit	Delta
Mean	24.55%	20.55%	-4.00%	1.86%	-1.36%	-3.34%
Median	24.53%	20.56%	-2.93%	-0.98%	-2.20%	-2.14%
Max	59.36%	47.90%	13.70%	35.28%	25.27%	16.22%
Min	5.08%	4.97%	-22.29%	-11.55%	-14.15%	-21.16%
Std deviation	10.65%	9.41%	6.35%	9.08%	8.43%	7.32%

Exhibit 6.2.2.1 Descriptive Statistics for Receivables / sales

The level of inventory has also decreased in the portfolio companies, from an average entry level of 10.51% to an exit level of 8.56%, amounting to a decrease of -1.95% units. The industry adjusted decrease is close to the development in the raw data, as the difference amounts to -2.04% units. The industry adjusted improvement is significant on the 1% level. Hypothesis 8 is found to be true.

Exhibit 6.2.2.2 Descriptive Statistics for Inventory / sales

Inventory	Raw			Industry adjusted		
	Entry	Exit	Delta	Entry	Exit	Delta
Mean	10.51%	8.56%	-1.95%	0.53%	-1.46%	-2.04%
Median	9.50%	9.04%	-0.70%	0.00%	-0.47%	-0.73%
Max	28.99%	21.49%	2.57%	18.00%	8.28%	2.77%
Min	0.00%	0.00%	-10.83%	-12.05%	-11.30%	-13.63%
Std deviation	8.78%	6.84%	3.01%	5.88%	4.94%	3.53%

The ratio *payables / sales* has decreased -2.15% units from the entry to the exit point of the holding period. Adjusted for the development in the peer groups the decrease is - 2.48%. The data (exhibit 6.2.2.3) indicates that the buyout companies enter at an average level which is higher than their industry averages, and then deteriorate to the same level as their peers (or below if one refers to the median value). We do not find support for hypothesis 9, that payables has increased more in buyout companies compared to the industry average.

Exhibit 6.2.2.3 Descriptive Statistics for Payables / sales

			1				
Payables	Raw			Industry adjusted			
	Entry	Exit	Delta	Entry	Exit	Delta	
Mean	25.16%	23.01%	-2.15%	2.63%	0.07%	-2.48%	
Median	23.29%	21.39%	-0.40%	0.50%	-1.02%	-0.58%	
Мах	105.74%	50.92%	16.89%	83.63%	18.50%	14.51%	
Min	9.47%	12.13%	-63.46%	-29.46%	-14.29%	-63.13%	
Std deviation	15.44%	8.18%	11.78%	17.01%	7.75%	12.01%	

6.2.3 Account receivables and account payables

The development of account receivables and account payables has also been tested. Regarding account receivables the results are in line with the development of total receivables. A decrease is found in the buyout companies of -1.13% units. The industry adjusted decrease is -0.83% units, which is not significant. We have, however, spotted a clear outlier in the sample. A significant decrease in excess of the peers' development is found if Q-Labs is removed when performing the test. In that case the improvement amounts to -1.29% units, which is significant on the 2.5% level.

Exhibit 6.2.3.1 Descriptive Statistics for Account receivables / sales

Account	Raw			Industry adjusted		
Receivables	Entry	Exit	Delta	Entry	Exit	Delta
Mean	16.25%	15.11%	-1.13%	3.03%	2.38%	-0.83%
Median	16.34%	14.77%	-1.25%	2.20%	2.12%	-0.84%
Max	36.74%	40.18%	16.09%	18.61%	22.58%	16.19%
Min	2.02%	1.72%	-10.52%	-7.47%	-8.62%	-9.67%
Std deviation	7.45%	7.67%	4.51%	4.75%	6.26%	4.35%

Account payables, on the contrary, show an increase of 0.48% units that stands in contrast to the decrease of total payables. It cannot, however, be proven significant. This non-significant increase is in line with the findings of Smith (1989). Smith performed his studies on account payables, rather than all non interest bearing current payables.

Account	Raw		Indu	stry adjusted		
Payables	Entry	Exit	Delta	Entry	Exit	Delta
Mean	7.93%	8.24%	0.31%	1.36%	1.83%	0.48%
Median	7.15%	7.25%	-0.33%	0.89%	0.85%	0.01%
Max	21.80%	23.15%	9.21%	14.42%	17.04%	9.07%
Min	2.76%	2.51%	-4.30%	-4.72%	-4.60%	-4.05%
Std deviation	3.90%	4.16%	2.53%	3.84%	4.39%	2.78%

Exhibit 6.2.3.2 Descriptive Statistics for Account payables / sales

6.2.4 Results from working capital analysis

From the above analysis we conclude that working capital management has improved on average in the buyout companies during the holding period. Our conclusion is in line with previous publications that have found lower levels of working capital post buyout derived from higher inventory turnover and fewer average days of receivables (Smith 1989, Singh 1990, Holthausen and Larcker 1996). Our findings are also in line with Kaplan (1989) who found increased cash flow post buyout derived partly from decreased levels of inventory.

6.3 Employee Management

The analysis of employee management gives different perspectives of the changes in the buyout companies' operations. The *personnel costs / sales* ratio is tested to analyse if cost savings take place during the holding period with regards to employees. Previous research shows that increases in profitability in buyouts are derived primarily from cost savings, rather than higher capital turnover ratios (Muscarella and Vetsuypens 1990). The ratio *sales per employee* is analysed to provide a perspective of efficiency. The ratio *personnel costs per employee* is analysed to find clarity about whether or not PE firms profit from wage cuts post acquisition. It should be noted that the analysis of personnel costs per employee and sales per employee contain absolute numbers and are not inflation adjusted.

6.3.1 Personnel costs in relation to sales

The average of *personnel costs / sales* decreases by -1.08% units in the buyout companies during the holding period. The industry adjusted average decrease is slightly bigger - 1.39% units. The median value is close to the average at -1.05% units. The average decrease in excess of the development in the peer groups is significant on the 10% level. It is concluded that hypothesis 10 is found to be true. The data from the entry and exit points show a higher cost of employees in relation to sales for the buyout companies compared to their peers. The difference at the entry point is 5.79% units and at the exit point 4.75% units.¹⁰ This suggests that the buyout companies suffer from a lack of personnel efficiency before the acquisition. The efficiency is increased during the holding period, but the buyout companies are on average still underperforming in this aspect at the exit point.

¹⁰ Referring to the EBITDA margin analysis, the buyout companies are on average more profitable than their peers at the exit point. At the same time they, on average, spend more on personnel costs than their industry counterparts. Hence there seems to be a difference in cost structure between buyout companies and their peers.

Personnel		Raw		Inc	dustry adjust	ed
costs	Entry	Exit	Delta	Entry	Exit	Delta
Mean	25.90%	24.81%	-1.08%	5.79%	4.75%	-1.39%
Median	23.37%	21.21%	-0.49%	3.59%	1.77%	-1.05%
Max	75.21%	82.15%	13.82%	37.97%	44.35%	16.42%
Min	1.73%	2.49%	-18.92%	-12.95%	-11.13%	-19.60%
Std deviation	15.45%	15.67%	5.29%	10.98%	11.75%	5.92%

Exhibit 6.3.1 Descriptive Statistics for Personnel cost / sales

6.3.2 Personnel costs per employee

The personnel cost per employee has on average increased KSEK 32.4 in the buyouts during the holding period, the median is close to the average at KSEK 27.0. The average industry adjusted increase is KSEK 0.5. The median change, though, shows a decrease of KSEK -4.9. The presence of several extreme values could imply that the median is a better measure. When comparing the entry and exit values, the data suggests that the personnel costs per employee have decreased relative to the peers. Since the data is inconsistent it is hard to draw any conclusions (further discussed in section 4.2). The raw data show an increase, and we do not find support to the criticism that PE firms profit from wage decreases.

	1	5		1	1 2	
Personnel		Raw		Indust	ry adjusted	
costs (KSEK)	Entry	Exit	Delta	Entry	Exit	Delta

32.4

27.0

172.3

-135.2

57.5

36.4

19.7

728.9

-158.1

140.0

25.3

-8.5

824.9

-256.9

172.0

0.5

-4.9

127.0

-156.9

56.9

Exhibit 6.3.2 Descriptive statistics for Personnel cost per employee

382.3

349.2

77.6

181.1

1,148.2

6.3.3 Sales per employee

349.9

330.4

994.5

84.8

153.4

Mean

Max

Min

Median

Std deviation

Sales per employee has on average increased KSEK -365 less in the buyout companies compared to their peers. Since this data contains extreme outliers focus will be on the median values. The median shows a decrease in sales per employee of KSEK -6 in the buyouts, in excess of the median peer development. It should also be noted that sales per employee have increased in the buyout companies in absolute terms when referring to the median value, KSEK 125. Sales per employee is higher in the peer groups than in the buyout companies both at the entry point and at the exit point. We do not find support for

hypothesis 12, that sales per employee has increased more on average in the buyout companies than in their respective peers.

Sales		Raw		Inc	lustry adjust	ed
(KSEK)	Entry	Exit	Delta	Entry	Exit	Delta
Mean	3,097	2,933	-164	1,150	763	-365
Median	1,305	1,527	125	-230	-373	-6
Max	57,592	46,029	1,985	55,018	43,449	2,002
Min	661	710	-11,563	-2,371	-2,229	-11,694
Std deviation	9,176	7,253	1,983	9,017	7,163	2,031

Exhibit 6.3.3 Descriptive statistics for Sales per employee

6.3.4 Results from employee management analysis

A significant industry adjusted decrease in the ratio *personnel costs / sales* is found in the buyout companies during the holding period. The personnel costs in relation to sales are higher for the buyout companies both at the entry and exit point, suggesting that they suffer from lack of efficiency. This is supported by the median values at the entry and exit points for sales per employee, which are lower in the buyout companies. In the analysis of *personnel costs per employee* we do not find support for the criticism that buyout sponsors profit from wage decreases (Shleifer and Summers 1988). Our findings are in line with results in recent publications (Amess et al 2008, Bergström et al 2007).

7 CONCLUSION

The PE industry has met big problems in the current market turmoil. As the industry works with high debt levels the portfolio companies are vulnerable to economic downturns. A few PE owned companies has been forced into financial distress during the last year when the world economy has experienced the worst downturn in decades. In time of crisis the operational performance in the investment targets becomes increasingly important for the PE industry's ability to survive. This is why we have studied how operations have developed in the Swedish buyout companies during the last ten years as the industry has flourished.

We have studied the operational performance by examining the profitability on an operating level. Further we have looked at the development of working capital and the personnel management in the buyout companies. We formed our hypotheses on the three main areas and came to the following results:

Hypotheses	Support	Level of significance
H1: ROIC has increased in the buyout companies relative to their peers	Yes	2,5%
H2: The industry adjusted entry value of ROIC has explanatory power on the ROIC development	Yes	1,0%
H3: The EBITDA margin has increased in the buyout companies relative to their peers	Yes	5,0%
H4: The NOPLAT margin has increased in the buyout companies relative their peers	Yes	5,0%
H5: The IC Turnover ratio has increased in the buyout companies relative to their peers	No	
H6: Net Working Capital has decreased in the buyout companies relative to their peers	Yes	10,0%
H7: Receivables have decreased in the buyout companies relative to their peers	Yes	1,0%
H8: Payables have increased in the buyout companies relative to their peers	No	
H9: Inventory has decreased in the buyout companies relative to their peers	Yes	1,0%
H10: Personnel Cost in relation to sales has decreased in the buyout companies relative to their peerson	yes	10,0%
H11: Personnel Cost per employee has decreased in the buyout companies relative to their peers	No	
H12: Sales per employee has increased in the buyout companies relative to their peers	No	

Exhibit 7 Hypotheses test results

Both the ROIC analysis and the EBITDA margin analysis show that the buyout companies improve their profitability more than their industry counterparts during the holding period. We have found that the buyout companies on average underperform at the entry point. We further showed how the buyout companies' initial underperformance has an explanatory power on the increase in profitability during the holding period. The DuPont breakdown of the ROIC measure shows that the major part of the profitability increase is derived from reduction of costs in relation to sales, rather than higher invested capital turnover.

We conclude that working capital management has improved on average in the buyout companies during the holding period. The levels of receivables and inventory in relation to sales decrease significantly more in the buyout companies than in their respective peers during the holding period. The overall level of net WC in relation to sales also decreases. Payables have not developed as expected since we have found a slight decrease in the average level of payables. The results from the profitability analysis and working capital analysis are to a large extent in line with what we expect from interviews with professionals from the industry.

An industry adjusted decrease in personnel costs in relation to sales has been found in the buyout companies. The levels of personnel costs are however higher for the buyouts than for their peers at the entry and exit points. The median of sales per employee is lower for the buyout companies than their peers at both the entry and exit points. We cannot prove that sales per employee has increased more in the buyout companies than in their industry counterparts, but the raw data shows that sales per employee have increased in absolute terms. No support is found for the criticism that buyout sponsors profit from wage decreases.

We conclude that the operating performance has on average increased in the buyout companies during the holding period. We have presented two distinct contributions in relation to the study performed by Bergström et al (2007), which is also done on Swedish data. We have shown that the buyout companies underperform at the entry point of the holding period. We have further found that a part of the performance increase during the holding period can be explained by the initial underperformance. Finally we have proven that the management of working capital has improved during the holding period, by the reduction of receivables and inventory. The PE firm's governance of the portfolio companies as an active and strong owner obviously has a positive impact on the operating performance in the buyout companies. It has previously been shown that the increases in

operating performance in buyout companies take place because of the buyouts, and would not have happened regardless of the change of ownership (Ofek 1994). From the perspective of change in operations we find the phenomenon of private equity funds positive. We confirm the statement from PE professionals that operations are thoroughly examined to enhance efficiency and increase margins. We are however reluctant to say that the phenomenon of PE firms is solely positive as some portfolio companies experience severe difficulties to handle the debt burden they carry the in today's rapid economic downturn.

7.1 Suggestions to further research

As a suggestion to further research it would be interesting to examine how the PE firm's portfolio companies will have coped with the current economic crisis. It would also be interesting to do a study on Swedish buyouts a few years after the exit point to analyze if the performance enhancement in the companies is sustainable. A third suggestion is to investigate how the success differs between buyouts with respect to their size and history. For example, are buyouts from the stock exchange in general more successful than family firm buyouts?

Some of the criticism against the industry in recent years has to do with lack of transparency. We wonder if the portfolio companies suffer from this lack of transparency since our research show that they outperform their peers in many aspects. To perform a study that uses only publicly quoted companies as peers would be interesting, to examine if the media coverage and quarterly reports are actually better for a company's development than the focused governance of PE executives.

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Interviews

Kaiser, Harold, Managing Partner, Litorina Kapital

Ludvigson, Mikael, Managing Director, Sobro

Malmqvist, Peter, Financial analyst

APPENDIX – PEER LIST

Arca Systems

SCA PACKAGING SWEDEN AB TRELLEBORG INDUSTRI AB PERGO (EUROPE) AB IFÖ SANITÄR AB EUROMASTER AB FORBO PROJECT VINYL AB RECTICEL AB NOLATO CERBO AB KONSTRUKTIONS-BAKELIT AB COLMEC HOLDING AB HAMMARPLASTGRUPPEN AB

Capona

ESKILSTUNA KOMMUNFASTIGHETER AB FASTIGHETS AB L E LUNDBERG UPPSALAHEM AB HYRESBOSTÄDER I NORRKÖPING AB HALMSTADS FASTIGHETSAB G. PERSSON GRUPPEN AB MÄSSFASTIGHETER I STOCKHOLM AB LINKÖPINGS KOMMUNALA FASTIGHETER AB CA FASTIGHETER AB

Nordisk Renting

AMPLEX AB SVENSKA ALLER AB ESKILSTUNA KOMMUNFASTIGHETER AB ATRIUM FASTIGHETER AB FASTIGHETS AB L E LUNDBERG VBG GROUP AB

MacGregor SECO TOOLS AB ATLET AB WESTINGHOUSE ELECTRIC SWEDEN AB ROLLS-ROYCE AB MOTOMAN ROBOTICS EUROPE AB IFÖ SANITÄR AB ISABERG RAPID AB

Elmo Leather

JOHNS MANVILLE HOLDING AB TURNILS AB FENIX OUTDOOR AB AB LUDVIG SVENSSON AHLSTROM STÄLLDALEN AB FOV FODERVÄVNADER I BORÅS AB STJERNFJÄDRAR AB

Acando Frontec

REMPO AB STREAMSERVE AB PATRAFEE AB JEPPESEN SYSTEMS AB PREVAS AB

SYSTeam

QLIKTECH INTERNATIONAL AB JEPPESEN SYSTEMS AB ISE INVEST AB PREVAS AB REMPO AB STREAMSERVE AB

Dotcom Solutions

STREAMSERVE AB JEPPESEN SYSTEMS AB BOSS MEDIA AB REMPO AB PREVAS AB

Anticimex

ISS FACILITY SERVICES AB BONA AB SUN CHEMICAL AB BOSTIK AB FB ENGINEERING AB

TAC

ITT WATER & WASTEWATER AB FLÄKT WOODS AB E.ON ES SVERIGE AB BRAVIDA SVERIGE AB NIBE AB JOHN BEAN TECHNOLOGIES AB

TurnIT

FUJITSU SIEMENS COMPUTERS AB CAPGEMINI SVERIGE AB CSC SVERIGE AB AXIS COMMUNICATIONS AB REMPO AB ELFA AB SVENSKA ITSIRIUS AB LAWSON SOFTWARE SWEDEN AB

Intrum Justitia

LINDORFF SVERIGE AB SERGEL KREDITTJÄNSTER AB PRIORITET GROUP AB SVEA INKASSO AB KALERI INKASSO AB

J D Stenqvist

SÖDRA CELL AB FISKEBY BOARD AB OP-KUVERT AB ECO-BORÅSTAPETER AB KORSNÄS AB

Thule

GESTAMP HARDTECH AB WIPRO INFRASTRUCTURE ENGINEERING AB OPCON AB UPPÅKRA MEKANISKA AB DUX INDUSTRIER AB AUTOKAROSS I FLOBY AB

Nybron Flooring

STORA ENSO PULP AB STORA ENSO TIMBER AB PERGO (EUROPE) AB NACKA TRÄ & BYGGVAROR, SVEN GUSTAFSSON AB STENVALLS TRÄ AB

Alimak Hek

MICRONIC LASER SYSTEMS AB ROSEMOUNT TANK RADAR AB MYDATA AUTOMATION AB METRIMA AB SILVA SWEDEN AB BALDWIN JIMEK AB EMOTRON AB ESBE AB AB WAHLQUISTS VERKSTÄDER LEINE & LINDE AB WESTERMO TELEINDUSTRI AB REMOTE CONTROL SWEDEN AB PLYMOVENT AB

Eldon

AURA LIGHT INTERNATIONAL AB EMOTRON AB GPBM NORDIC AB ELPRESS AB NORDIC LIGHT HOLDING AB NARKES ELEKTRISKA AB

Dometic

ASKO APPLIANCES HOLDING AB FAGERHULT AB ROSEMOUNT TANK RADAR AB MOTOMAN ROBOTICS EUROPE AB BONA AB

Elit Fönster

SVENSKA FÖNSTER PRODUKTION AB LB HUS AB TRIVSELHUS AB VÄSTKUSTSTUGAN AB MJÖBÄCKS ENTREPRENAD AB

Findus

KRAFT FOODS SVERIGE AB CLOETTA SVERIGE AB ABBA SEAFOOD AB ARVID NORDQUIST HANDELSAB LYCKEBY CULINAR AB FOODMARK SWEDEN AB SVEGRO AB KÄLLBERGS INDUSTRI AB FRAM FOODS AB

Tradex

ASCOM (SWEDEN) AB MOTOMAN ROBOTICS EUROPE AB MICRONIC LASER SYSTEMS AB MYDATA AUTOMATION AB BALDWIN JIMEK AB GPBM NORDIC AB AB WAHLQUISTS VERKSTÄDER ALCADON - MRV AB REMOTE CONTROL SWEDEN AB

Alfa Laval

AB ELECTROLUX VOLVO POWERTRAIN AB AB VOLVO PENTA SKF SVERIGE AB ITT WATER & WASTEWATER AB VOLVO AERO AB ATLAS COPCO ROCK DRILLS AB BT PRODUCTS AB AGA AB

Jens S Transmissioner

ECO-BORÅSTAPETER AB KAMIC AB DUPONT PERFORMANCE COATINGS SCANDINAVIA AB GLASFIBER O PLASTPRODUKTER HOLDING I GÖTEBORG AB PERSSON & GUSTAFSSON FR. RAMSTRÖM AB NIKE HYDRAULICS AB

Hydrauto

ATLET AB BONA AB OSTNOR AB SVETRUCK AB SVEDBERGS I DALSTORP AB JOSEF KIHLBERG AB CEJN AB

NVS Installation

CARRIER REFRIGERATION SWEDEN AB E.ON ES SVERIGE AB YIT SVERIGE AB SIEMENS AB KONE AB SKANSKA INSTALLATION AB

Cochlear BA

FREDRIKSONS VERKSTADS AB BREAS MEDICAL AB CARMEL PHARMA AB OLMED ORTOPEDISKA AB GRANULDISK AB STILLE AB DENTATUS AB

Q-Labs

STREAMSERVE AB BOSS MEDIA AB PATRAFEE AB PREVAS AB IST INTERNATIONAL SOFTWARE TECHNOLOGY AB

Sven-Axel Svensson

INDISKA MAGASINET AB SBH GROUP AB J. LINDEBERG AB FILIPPA K AB CIMBRIA HOLDING AB KRISS AB

Plymovent

MYDATA AUTOMATION AB GARO AB BALDWIN JIMEK AB CAMFIL FARR POWER SYSTEMS AB M2 ENGINEERING AB REMOTE CONTROL SWEDEN AB

Guide Konsult

REMPO AB ORC SOFTWARE AB STREAMSERVE AB QLIKTECH INTERNATIONAL AB JEPPESEN SYSTEMS AB ISE INVEST AB PREVAS AB PATRAFEE AB

Atea Holding HEWLETT-PACKARD, SVERIGE, AB IBM SVENSKA AB TD TECH DATA AB INGRAM MICRO AB EXPERT SVERIGE AB LAGERCRANTZ GROUP AB

Cision

ALMI FÖRETAGSPARTNER AB **BTJ SVERIGE AB REUTERS SVENSKA AB** CSC AIRLINE SOLUTIONS SWEDEN AB ITELLA INFORMATION AB TIDNINGARNAS TELEGRAMBYRÅ AB IBX GROUP AB (PUBL)

Envac

CHEMATUR ENGINEERING AB FB ENGINEERING AB XDIN AB (PUBL) ARECO STEEL AB CAMFIL FARR POWER SYSTEMS AB ROPLAN INTERNATIONAL AB

Sydsvenska Kemi

BOREALIS AB EKA CHEMICALS AB STORA ENSO PULP AB AKZO NOBEL SURFACE CHEMISTRY AB SMURFIT KAPPA KRAFTLINER PITEÅ AB AARHUSKARLSHAMN SWEDEN AB INEOS SVERIGE AB KEMIRA KEMI AB Q-MED AB

Eltel Networks

TELE2 SVERIGE AB TELECA AB E.ON ES SVERIGE AB GÄVLE ENERGI AB VÄG- OCH VATTEN- BYGGNADSFIRMAN ERIC ANDERSSON AB

l indab

SSAB TUNNPLÅT AB SSAB OXELÖSUND AB HÖGANÄS AB FAGERSTA STAINLESS AB PLANNJA AB WELAND AB

SATS

FEELGOOD SVENSKA AB STUREBADET AB HAGABADET AB WORLD CLASS SVERIGE AB ONYX SPORTCENTER AB MEDLEY AB STUDIO AKTIVERUM AB

Alignment Systems

MICRONIC LASER SYSTEMS AB ROSEMOUNT TANK RADAR AB MYDATA AUTOMATION AB METRIMA AB SILVA SWEDEN AB BALDWIN JIMEK AB EMOTRON AB ESBE AB AB WAHLQUISTS VERKSTÄDER LEINE & LINDE AB WESTERMO TELEINDUSTRI AB REMOTE CONTROL SWEDEN AB PLYMOVENT AB