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Family Firm Buyouts in Scandinavia
–Impacts on Operational Performance

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Abstract

We analyze the impact of Private Equity sponsored buyouts on the operating performance of family firms in Scandinavia by performing an event study where changes in operating performance among the buyout targets are benchmarked against both carefully selected matching peers and an industry median benchmark. We also test a set of novel hypotheses related to performance and associated variables of interest. Our findings on changes in EBITDA margins and ROIC imply that acquired family firms tend to operationally underperform their relevant benchmarks post-buyout. However, we find support that M&A activity, financial leverage, employment and CAPEX increase in relative terms post-buyout. Finally we find indications that family firm owners value Private Equity involvement as it brings expertise and allows firms to develop and achieve higher growth.

Keywords: Private Equity, Buyout, Family firm, Operating performance, Ownership

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1. Introduction

The Private Equity industry has attracted much attention lately, both from researchers, media and politicians. The latter two groups often express criticism against the phenomenon. In a speech in April 2005, German Vice-Chancellor Franz Müntefering described private equity funds as "locusts", a view he received support for from other senior politicians, trade unions and public opinion polls (Nyrup Rasmussen, 2008). In contrast, family firms have also attracted much interest from researchers, but are perceived by many politicians to be of great importance to society. For this reason it is often argued that entrepreneurial and family ownership should be encouraged and facilitated by adapting policies and tax laws (e.g. Hedquist et al. 2002). We therefore find it highly relevant to study the union of these two phenomena, which can be observed in the special case of buyouts of family owned companies by Private Equity firms. Given the criticism against the PE industry we want to investigate the impact PE firms have on operational performance, employment and investments in family firms, and what the reasons are for families to sell their companies to PE firms. We believe that Scandinavia[1] is a suitable geographic region for a study of this kind since the countries in the region have experienced a sharp increase in the level of private equity activity the last decade. In addition accounting data for all joint-stock companies is publicly available in all four countries.

In this paper we use a unique sample of 54 Scandinavian family firm buyouts to investigate the impact on operational performance of the change in ownership. We examine a broad number of variables related to performance and buyout characteristics that are of great interest in order to understand the value creation process in buyouts. We develop and test a number of hypotheses based on economic theory and on the extensive literature on buyouts and family firms in general. We use a rigorous statistical methodology to test the hypotheses, where performance of the sample firms is compared to both a benchmark of matching peers and an industry median benchmark. Finally we analyze and discuss the results obtained in order to determine their implications and economic significance.

There exists a substantial body of research relating to on the one hand family firm characteristics and performance, and on the other hand performance improvements related to Private Equity buyouts. Many of the studies indicate that both Private Equity and family

[1] Defined as Sweden, Norway, Denmark and Finland.

ownership are beneficial for operating performance, relative to other ownership structures (e.g. Kaplan 1989, Anderson and Reeb 2003).

Buyouts of family firms, on the contrary, is a sparsely investigated field within global Private Equity research. The few studies made have mainly obtained statistically insignificant and to some extent contradictory results (Desbrières and Schatt 2002, Buttignon, Vedovato and Bortoluzzi 2005, Goosens, Mangiart and Meuleman 2007). No study of family firm buyouts has to our knowledge been performed in any of the Scandinavian countries.

This paper differs from previous studies in a number of important ways. While using generally accepted econometric methods and metrics for testing hypotheses related to performance, we have in addition developed and tested a number of hypotheses that are novel in the context of family buyout research. Our study is based on a complete and unbiased sample covering a vast majority of the family buyouts done in Scandinavia during a 9 year period, which should vouch for a high validity of the results. Furthermore we have gathered a unique data set on M&A transactions of sample and peer firms that allows us to correct the results for M&A activity, which is a common problem in studies of this kind. Extensive robustness checks for a number of different factors are made, which has not been done in the previous studies. Finally, taking the perspective of the selling families we try to determine their motivations for selling to Private Equity firms.

Our results are as follows: We find that family firms acquired by PE firms tend to operationally underperform relevant benchmarks during different time horizons when looking at changes in EBITDA margin and ROIC. Even in absolute numbers the development of these variables is negative for the sample firms during all time periods studied. Regarding the other performance metrics, we cannot reject the null hypothesis of equal performance. Not surprisingly, we find that leverage tends to increase after a buyout, both in absolute and relative terms. More surprisingly, we show that also employment generally increases after a buyout of a family firm, both relative the benchmarks and in absolute numbers. We also find that CAPEX increases the first year after the buyout. The robustness of these findings has been checked by a large number of subsample tests, which largely yielded the same results. The most significant result of the study derives from the test of difference in M&A-activity between sample and peer firms, where we find strong support for higher activity among the sample firms. Finally we find that selling families often express a belief that PE involvement will lead to enhanced growth and development opportunities for the company.

Our results bring knowledge on the impact a buyout transaction has on a family firm and add to the existing knowledge on value creation in buyouts. A private equity investment in a family firm seems to bring about financial restructuring, increased corporate finance activity and higher investments. We find that family firms attribute value to the expertise of PE firms, mainly because they add valuable knowledge and enable firms to achieve higher growth. The fact that family firm buyouts underperform their peers indicates that operating improvements may not be a major source of value generation for Private Equity firms in such transactions. However, this cannot be equated with family firms in general being a bad investment, since operational improvement is only one of several ways for PE firms to generate a return on their invested capital.

Our study and its findings raise a number of interesting questions that are worth looking further into. The main limitation of this study is the lack of data for time horizons exceeding year two after the buyout, which results in small sample sizes and low significance for those time periods. The reason is mainly that many buyouts took place relatively recently, why it would be interesting to repeat our study in a couple of years' time. Then more data will be available which allows for longer time horizons to be studied in order to determine if operating performance improves towards the end of the holding period. The impact of pre-buyout CEO type on performance could also be better studied in a larger sample. Reasons for families to sell to PE could be further investigated by performing surveys or interviews with previous family owners and other stakeholders. Furthermore it would be interesting to check whether our results are valid for family firms in other countries as well. Finally, a study of how PE firms' strategies differ with respect to different buyout types could be made.

The paper proceeds as follows: A thorough review of previous research is presented in section 2. In section 3 we develop our hypotheses based on previous empirical results and relevant theories. The methods used for gathering the sample data and testing the hypotheses are presented in section 4. In section 5 we present the results of the hypothesis testing. Section 6 contains in depth analysis of the results and concluding remarks.

2. Literature Review

2.1 Buyouts and performance

The early research on buyouts and performance is mainly American, and the first serious attempts to determine the impact of buyouts on operating performance were made in the end

of the 1980's. The most cited article in this field is probably one published by Steven Kaplan (1989). In a sample of 76 public companies taken private through MBOs in 1980-1986, Kaplan found significant improvements in operating income and net cash flows and a reduction of capital expenditures, relative to a benchmark of publicly traded industry peers. Several other US studies around the same time came to similar conclusions (Bull 1989, Lichtenberg and Siegel 1990, Smith 1990, Muscarella and Vetsuypens 1990). The next wave of LBO performance studies began in the mid 1990's and includes both European and US studies. Much of this research is summarized by Cumming, Siegel and Wright (2007). Evidence on performance impact in this second wave is somewhat mixed; for example Guo, Hotchkiss and Song (2008) find that operating performance gains are either comparable to or only slightly exceed those observed for benchmark firms.

Scandinavian research in this field is to our knowledge quite limited. One explanation could be that the large scale buyout market is a relatively new phenomenon here compared to in the US, why it is only relatively recently that research in this field has become meaningful with regard to sample size and general applicability of results. However, three studies on the subject have been performed at Stockholm School of Economics.

Glasfors and Malmros (2000) studied a sample of 21 buyouts between 1988 and 1997 and found significant improvements in ROA and EBITDA margin relative to an industry-based benchmark. Lundgren and Norberg (2006) studied firm growth, operating margins, investment activity, management of working capital, changes in employment and leverage levels. The authors were unable to find any significant industry adjusted improvements in operating performance in their sample of 67 LBOs between 1988 and 2003. The most extensive Swedish study to date in our opinion is that by Bergstöm, Grubb and Jonsson (2007), who found significantly improved operating performance with regard to EBITDA margin, ROIC and revenue growth, among 73 buyout targets exited between 1998 and H1 2006.

2.2 Family owned firms and performance

Recently several studies have been made on the topic of performance of family firms including Andersson and Reeb (2003) and Bennedsen et al. (2006). To our knowledge the most complete studies that have been made in Scandinavia are those of Cronqvist and Nilsson (2003), and at SSE Andersson and Nyberg (2005). The dataset by Andersson and Nyberg was further used to analyze performance in family firms by Edenholm and Östlund (2006) and

performance and valuation by Averstad and Rova (2007). Although there is little research on non-listed family firms and performance, there exists a modest amount of studies on listed family firms, their characteristics and how they compare to publicly listed companies with dispersed ownership. *Table A:1* in the Appendix summarises the major studies made on family firms and performance since 1999. The main findings in the literature on performance of family firms can be divided into three major segments: control, ownership and management.

Family control of listed companies, in broad terms defined as majority control in voting shares, is according to most studies positively correlated to firm performance. Firms with families in control are outperforming non-family firms at the same time as firms with excess control, where voting rights exceed cash flow rights, are performing worse than their peers. The main explanation behind this relationship is related to the fact that excess voting rights make bad decisions less painful for majority owners at the same time as it also induces minority expropriation and weak incentives for monitoring. However, as Nordic countries enjoy a high level of investor protection, most negative effects of excess control should relate to bad management and investment decisions. Nonetheless, the overall effect of family control may despite excess voting control still be positive (Barontini and Caprio 2005).

When it comes to performance linked to family control over time, studies such as Ehrhardt and Nowak (2005) and Sraer and Thesmar (2006) indicate that performance of family firms diminishes over time and generations. The study by Zellweger (2006) indicates that small family owned companies, with 50-99 employees, outperform non-family firms and posits that this is related to superior internal control in small family firms than in small non-family firms. Zellweger in addition states that outperformance of family firms derives from entrepreneurs and families enjoying more benefits than purely monetary gains from running their companies, such as happiness, personal attachment, involvement, pride and reputation. The most fundamental conclusion to be drawn when it comes to family control, as highlighted by many studies, is that family owned firms outperform other firms with dispersed ownership as interests of the owner-manager roles are aligned; hence the main driving force of outperformance is associated with low agency costs.

The relationship between the share of family cash flow ownership and family firm performance is according to a majority of studies found to be positive and non-linear or even concave (Gompers, Ishii and Metrick 2004, Maury 2005). Family firm performance is found

to peak at a certain percentage level, typically 30%, of family-owned cash flow and successively decline with further increased ownership. Findings from studies on management-owned companies (Morck, Schleifer and Vishny 1988, McConnell and Servaes 1990) however indicate that performance peaks at a certain percentage stake, declines with further increase in ownership and later increases again as management ownership intensifies.

Studies looking at the management factor of family firms indicate more or less unanimously that CEOs that are either company founders or professionally hired have positive impact on company performance. Descendant CEOs do not have the same effect, in most cases explained by family firm inefficiencies such as nepotism and higher tolerance levels to descendant CEOs than CEOs appointed due to their professional merits (Zellweger 2006).A general theme in the research on performance and family management is moreover that CEO successions, especially when descendants take over, are negatively correlated to performance. In study by Perez-Gonzales (2006), firms where CEO's are related to previous owners and managers are found to underperform relative to peer companies. Bennedsen et al. (2006) highlight the importance of family characteristics when appointing CEO's and how this decision can affect firm performance. In addition they find that family firm CEO's tend to underperform in fast-growing, highly skilled industries. Holmén and Högfeldt (2004) mainly attribute the underperformance of descendant CEOs to overinvestment and non-financial endeavors.

Beyond the above presented studies that perform empirical testing on performance and family ownership, there is a significant amount of qualitative research on capabilities within family firms that contribute to operational efficiencies and high performance. One factor identified by Miller and Le Breton - Miller (2005) is the altruistic side of family business where managers are good managers due to personal attachment and involvement. Further differentiating characteristics of family firms include generally longer CEO tenures than in average publicly listed companies, generally longer investment horizons and passed up short term profits in order to reach long term goals (James 1999). From a financial perspective family firms are found to reinvest more of their profits than non-family firms. Spending on R&D is also found to exceed that of non-family peers (Weber et al. 2003).

2.3 Buyouts of family owned firms

There is very limited research in the field of buyouts of family owned firms. One obvious explanation is that historically most of the buyout research has been made in the United States

and the availability of accounting data for non-public firms in the US is limited. This is also the case in many European countries, why this kind of research gets complicated. However, relatively recently three studies have been made on the subject in Italy, France and Belgium respectively. To our knowledge no studies of buyouts of family owned firms have been performed in Scandinavia. The samples used in the three Swedish studies mentioned in section 2.1 contain some family owned firms, but none of the studies have investigated if there is any difference in performance between those firms and the rest of the sample.

Desbrières and Schatt (2002) study a sample of 161 LBOs in France during the period 1988-1994. They divide the sample into "Family businesses" (110) and "Group subsidiaries" (51) and measure performance improvements across a number of indicators using both cash flow and accounting measures (ROE, ROI, Leverage, Liquidity, Profit margins) for the entire sample as well as for the two subsamples. The authors find that LBO targets in France in general underperform their industry benchmark after buyouts and that family businesses underperform relatively more than group subsidiaries. Looking at leverage, the study surprisingly concludes that LBO targets, and particularly the family owned, are less indebted than the industry average, although the relative difference decreases throughout the holding period.

Buttignon, Vedovato and Bortoluzzi (2005) study performance improvement in Italian buyouts of family owned businesses. Their sample only consists of 21 buyouts and consequently they obtain very few significant results. Performance is measured across a wide range of indicators. Failing to get significant statistical results, the authors instead use a case study approach and come to the conclusion that the intervention of a PE firm seems to cause discontinuity in the life of a firm, generating a shift in performance trends: from bad to good or from good to bad.

In a study of 167 Belgian buyouts, where previous ownership structure is taken into consideration, Goossens, Mangiart and Meuleman (2007) cannot conclude any relative difference in performance (as measured by profitability, growth or efficiency) between 43 family firms and other buyouts in the sample. Changes are not measured relative to a benchmark, but only compared to the historical performance of the firm itself. The authors do however find a significant difference in growth in number of employees after buyouts. Employment in family firms tends to increase whereas employment in divisional buyouts tends to decrease.

3. Theoretical background and hypothesis development

One of the main arguments in favor of Private Equity buyouts is that PE firms are able to create substantial value in buyout targets by concentrated and active ownership and by reducing agency costs. When it comes to family owned businesses these characteristics are already in place, which begs the question of whether PE firms really can accomplish improvements in buyouts of family owned firms.

The general framework of agency theory, established by Jensen and Meckling (1976), states that there are direct costs to companies where ownership and management interests are not aligned. Concentrated ownership, which is prevalent both in family firms and PE owned firms, is said to reduce agency costs through incentives alignment (Fama and Jensen, 1983). This is also the case when the owner and manager are the same entity, which eliminates the monitoring costs to the principal-agent problem. Other benefits of concentrated ownership include increased flexibility in decision-making, less administrative inertia and increased incentives for management to perform well.

As literature on family firms has shown, family firms have low levels of agency costs and possess a multitude of characteristics that make them operationally well performing. The altruistic trait in owners of family firms, long investment horizons, non-financial aspects such as reputation and enjoyment, family pride and devotion are all factors contributing to high performance levels. Family control in itself has a monitory and disciplinary effect on managers as long-term relationships and family ties makes slack and financial short-sightedness more difficult. Family control should therefore be beneficial not only due to the fact that ownership is concentrated but also because family ownership involves a complex set of fixed relationships (De Angelo and De Angelo, 1985). It could therefore be argued that PE firms are unlikely to be able to significantly improve the operating performance of family firms after a buyout.

Hypothesis 1A: The change in operating performance of acquired family firms is equal to that observed for peers[2].

However, the reduction or absence of agency costs alone does not guarantee business success (Bull 1989), nor does it guarantee that the company's resources are not wasted on private benefits of the owner/CEO. Therefore other factors need to be taken into consideration as well

[2] Throughout this section the term "peer" should be understood as "relevant benchmark"

when evaluating the likely impact of a change in ownership. In addition to providing concentrated ownership, PE firms can also improve monitoring of processes, cut costs, and bring professional experience and financial know-how to their portfolio companies (Kaplan and Strömberg 2008). On balance we think that these contributions of PE firms as owners could be substantial enough to improve the operating performance of previously family owned firms despite the many beneficial features of family ownership.

Hypothesis 1B: The change in operating performance is greater for the sample firms than for peers.

As research on family firms has shown, family owned firms that are managed by its founder or a professional CEO tend to perform better than firms managed by a descendant CEO. In the case where the pre-buyout CEO was either professionally hired or the founder of the firm, the potential for operating performance improvements should therefore be smaller compared to the case where the CEO is a descendant to the founder.

Hypothesis 2: The magnitude of operating performance improvement related to a family firm buyout depends on the type of CEO prior to the buyout taking place.

One important source of value generation in buyouts is the corporate tax savings that can be made by increasing the leverage in the buyout target. Leverage leads to higher tax deductible interest payments, and thus provides a tax shield with a positive impact on cash flows. This theory is commonly called the tax benefit hypothesis, and has empirical support from previous studies (Kaplan 1989, Berg and Gottschalg 2005). In addition, family firms are often risk averse, which make them reluctant to take on debt, why they are likely to have lower leverage than comparable non-family firms to begin with (Miller and Le Breton-Miller 2005). We therefore believe that we will find an increase in leverage during the post-buyout period

Hypothesis 3: Leverage will increase in the buyout firms relative to their peers

According to Shleifer and Summers (1988) one way to create value for an acquirer of a firm is to transfer value from the employees by reducing the work force and decrease wages. By doing this the acquirer breaks or renegotiates the implicit contracts between the labor force and the previous owners. Due to the nature of family owned businesses, we believe that implicit contracts between owner and employees may be even more abundant in such companies. Several empirical studies have shown that a modest decline in employment generally takes place post-buyout relative to a peer group (Kaplan 1989, Muscarella and

Vetsuypens 1990, Davis et al 2008). This leads us to believe that we will observe a relatively lower employment growth in sample firms than in the peer group.

Hypothesis 4: Employment is reduced post-buyout relative to peers.

According to agency theory, firms with dispersed ownership and weak control are likely to invest in negative net present value projects since management does not carry the cost of unprofitable investments but only enjoys the benefits associated with running a larger company (Jensen 1986). According to this hypothesis, a decrease in capital expenditure should be expected after a buyout, since management then has incentive to maximize shareholder value (Kaplan 1989). In the case of family buyouts, as argued above, there are no agency problems prior to the buyout, why there is no reason to suspect excessive capital expenditures for this reason. However, as research indicates, family firms tend to reinvest a larger share of profits than non-family firms. Higher interest payments and distributions to the owners, which are common features of LBOs, may cause this investment pattern to change. This would lead us to believe that there might be a reduction in CAPEX post-buyout in family firms.

Hypothesis 5A: CAPEX is reduced in family firms post-buyout relative to the peers.

On the other hand, family firms often suffer from liquidity constraints. This is due to the fact that they are risk averse and therefore reluctant to take on debt (Miller and Le Breton – Miller 2005) and that they have difficulties in issuing equity to external investors (Fiori, Tiscini and di Donato 2007). Liquidity constraints are likely to cause under-investment, why it could be argued that CAPEX will increase post-buyout since previously neglected positive NPV investments then will be undertaken.

Hypothesis 5B: CAPEX is increased in family firms post-buyout relative to the peers.

According to several studies (Muscarella and Vetsuypens 1990, Bruton et al 2002, Berg and Gottschalg 2005) one important lever of value creation for PE firms is the enhancement of strategic distinctiveness of buyout targets to improve overall financial performance. This strategy implies that activities that are not part of core businesses often are divested to third parties that can make better use of them. Family owners are less likely to undertake such critical restructuring since research shows that they are more emotionally attached to their companies and therefore less willing to make drastic decisions (Miller and Le Breton – Miller 2005). A second implication of this strategy is increased M&A activity since PE firms actively will try to lever distinctive competencies and resources of buyout targets e.g. by

acquiring competing or complementary businesses. Lastly, the removal of liquidity constraints in family firms post-buyout is also likely to have a positive impact on M&A activity. All in all it is reasonable to assume that both divestments and acquisitions will be more frequent for the sample of buyouts than for their peer group.

Hypothesis 6: Divestments and M&A activity will be higher among the buyout firms after the buyout than in the peer group.

As legal and political issues such as tax laws in Scandinavia make it troublesome for family firms to go through generational changes, one reason why families are interested in selling their companies to Private Equity firms could stem from the lack of other options. Small and middle sized enterprises looking for capital are also unlikely to go through IPO processes as these processes are cumbersome and time-consuming. However, in order to assure the continuation of a family firm and continued growth, a buyout could be in line with family ambitions rather than a pure exit strategy. A recently completed study (Lindebergs Grant Thornton, 2007) on the exit routes family firms consider sheds interesting light on the value added by Private Equity. The study shows that selling to Private Equity investors clearly dominates other exit alternatives such as going through IPO's, selling to partners or merging the company with other industrial players. The reason for why family firms are selling is thus interesting to study. Are family firms selling their businesses as other options are more costly and troublesome or do they sell because Private Equity involvement can offer added value?

Hypothesis 7: Family owners see added value in selling to Private Equity firms.

4. Method

4.1 Sample identification

The final sample of 54 buyout deals of previously family owned firms has been obtained through a thorough process drawing data from several complementing sources.

We first compiled a list of all active PE-firms in the Nordic region by going through the list of members of the Private Equity and Venture Capital Associations of Sweden, Denmark, Norway and Finland, selecting all firms that regularly do majority buyout investments and have been active before 2006. Our search resulted in a list of 34 PE-firms presented in *Table A:2* in the Appendix.

The next step in the process was to gather data on all the buyouts done by these firms in the time period 1997-2005. This period was chosen for two main reasons: 1996 is the first and 2006 the last year with comprehensive deal and accounting data available in most databases we have access to. [3] Furthermore, a nine year period is long enough to contain more than one economic cycle why it will provide us with more robust results than a shorter period.

The data on buyouts was gathered by using information from two different deal databases (Zephyr and Capital IQ) as well as from each PE firm's website. The databases normally contain information about the seller, unless the seller is a family or individual. It was therefore easy to single out the potentially family owned firms, which were then manually examined one by one by going through websites and press clippings to determine the pre-acquisition ownership. Only buyouts where a majority stake was acquired has been included. Not enough data was available concerning retained minority stakes, why this factor will not be taken into consideration in the analysis.

The accounting data needed for the analyses has mainly been retrieved from Bureau van Dijk's Odin and Zephyr databases. Complementing sources used include Affärsdata, Opplysningen 1881 and actual filed annual reports, which were obtained from Affärsdata or Bolagsverket. Despite our efforts we were unable to find the required data for all 66 companies generated by the selection process, why we have excluded 12 deals, resulting in a final sample of 54 buyouts made by 24 different PE firms. We believe that this sample covers a majority of family firm buyouts in Scandinavia during the period, and we have no reason to believe that the sample should be systematically biased in any way. The final sample is presented in *Table A:3* in the Appendix.

The data on mergers, acquisitions and divestments made by the sample firms and their peers was gathered through assiduous searches of press releases and Bureau van Dijk's Zephyr database. All in all this survey resulted in a, to our knowledge, complete list of M&A transactions although information on divestments was clearly in short supply. Finally, data on pre-buyout CEO types of all sample firms was gathered. This information was manually retrieved from press releases and similar information associated with the specific firms. All CEO's for all firms were found and identified.

4.2 Selection of benchmarks

[3] Our methodology requires data from the two years surrounding the sample period.

In order to determine how a firm is performing it is necessary to compare it with a relevant benchmark. We have constructed two different benchmarks; one based on a carefully selected matching peer for each sample firm and one based on a group of publicly traded companies in the same industry as the sample firm.

4.2.1 Selection of matching peer

The construction of the matching peer benchmark is based on the findings of Barber and Lyon (1996), whose main conclusion was that the selection of peers primarily should be based on both industry and similar pre-event performance in order to get well specified test statistics. In the case of small firms, firm size matching is also important. Since our theoretical framework states that performance is related to ownership structure, we have chosen our matching peers not only based on pre-event performance, size and industry, but we also require that they were family owned throughout the entire sample period.

Within the industry of the sample firm, based on 4 digit NACE classifications, we filtered out all firms of similar size, i.e. with a turnover the year prior to sample firm buyout (t_{-1}) within the range of 20% - 400% of the sample firm's turnover. We sorted the companies based on pre-event performance, as measured by EBITDA margin, and of the family-owned firms with an EBITDA margin of +/- 5 percentage units from the sample firm's we chose the one we judged the most similar with regard to business activities. When this procedure did not result in a peer (12 cases), we firstly broadened the industry definition to 3 digits and secondly dropped the size constraint. Then the family-owned peer with the most similar pre-event performance was chosen.

4.2.2 Selection of industry benchmark

As a complement we have also constructed an industry benchmark for each sample firm, by analogy with several previous performance studies (e.g. Kaplan 1989, Bergström, Grubb and Jonsson 2007). In line with the ownership discussion in the section above we have consciously chosen publicly traded firms, since that will tell us more about the impact of ownership structure than a general industry benchmark would.

The relatively limited number of publicly traded companies in Scandinavia, especially within certain industries, complicates the assignment of peer groups. Our main concern has been to define the industry as narrowly as possible and still get an acceptable number of peers. The narrowest definition we have used is a 4 digit SIC code match, which has only been possible

in two cases. We have then systematically widened the circles until the widest definition we use, which is Kenneth French's 49 industry classifications based on 4 digit SIC.[4] The smallest number of peers in any group is six; for most groups the number exceeds ten. As performance benchmark we use the median values of each peer group.

4.3 Measures of performance

As demonstrated in the literature review in section 2 above, there is no consensus about what metrics should be used to measure performance. However, we can be certain that there is no single measure that alone can capture a firm's performance adequately (Bruton et al 2002), why our objective must be to find a set of metrics that complement each other in that respect. In the literature there is much debate of whether cash flow based or accrual based measures are most appropriate to use. Some argue that managers can manipulate accrual based measures in order to depress them before an acquisition (e.g. Smith 1990). However, DeAngelo (1986) showed that there is no evidence that managers systematically manipulate earnings prior to transactions where the company is taken private. Furthermore Barber and Lyon (1996) showed that a cash based performance measure is generally less powerful than an accrual based measure. In line with several other studies (Bull 1989, Loughran and Ritter 1997, Weir and Laing 1998, Ghosh 2001, Desbrières and Schatt 2002, Goossens, Mangiart and Meuleman 2007) we therefore choose to employ accrual based measures.

According to Berg and Gottschalg (2005) value generation for the investors in a buyout can be achieved in a number of ways. However, true value creation in a firm can only be achieved by improvement in revenues, improvement of margins or the reduction of capital requirements, i.e. operating improvements. It is this value creation we intend to capture with our chosen measures: EBITDA margin, ROIC, revenue growth and net working capital/revenues.

The advantage of EBITDA is that it measures earnings from operations without taking the effects of the capital structure into consideration (interest expense and tax), which makes it superior to e.g. net income since capital structure often changes after a buyout (Barber and Lyon 1996). Furthermore EBITDA is less sensitive to accounting policies than both net income and EBIT, which are both affected by the depreciation and amortisation schedule chosen. Finally, the fact that the PE industry itself focuses on EBITDA margins as a

[4] Kenneth R. French website

performance measure and basis for valuation (Bergstöm, Grubb and Jonsson 2007), convinces us that it is a highly relevant measure for the purpose of this study.

Based on Koller, Goedhart and Wessels (2005) and in line with Bergstöm, Grubb and Jonsson (2007) we use Return on Invested Capital[5] (ROIC) as a complementing measure of operating profitability. ROIC differs from EBITDA margin in that it uses assets as deflator instead of revenues, which theoretically should provide us with both a measure of profitability and capital efficiency. On the downside, ROIC is more sensitive to differences in accounting practices between companies. The way ROIC is defined also implies that we avoid the issue of including non-operating assets in the calculation, which would be the case if we had used e.g. ROA, a commonly used measure in performance studies (Barber and Lyon 1996).

Revenue growth is another commonly used measure of operating performance. This is not surprising since, ceteris paribus; an increase in revenues increases the value of a company.

Net working capital is defined as short term assets minus short term (non-interest bearing) liabilities, and measures the capital needed for the daily operations of the firm. The ratio NWC/Revenues shows how efficiently the working capital is used.

We measure leverage as Net Debt/Book Equity. We use Net Debt instead of Total Debt since it avoids possible biases due to different cash management policies among companies and thus provides a cleaner measure.

To test hypothesis 5, which is not directly linked to performance but still relies on accounting measures, we will look at CAPEX[6] deflated by revenues.

4.4 Econometric analysis

In order to check that the sample firms and their assigned peers are similar in size and performance at the pre-buyout year, we perform a matched pair t-test (Bruton et al. 2002, Schatt and Desbrières 2002).

To test our hypotheses we look at the change in the relevant variables rather than levels, since test statistics using the change in a firm's operating performance relative to a benchmark yield

[5] Definition of ROIC: $ROIC = \frac{EBIT * (1-\tau)}{FA + CA - STP}$ where FA is Fixed Assets, CA is Current (non-cash) Assets, STP is Short-Term Payables and τ is the corporate tax rate (assumed to be 28%).

[6] Definition of CAPEX: Fixed Assets $_t$ - Fixed Assets $_{t-1}$ + Depreciation $_t$

more powerful test statistics than if levels are used (Barber and Lyon 1996). Thus, our test variables are constructed as: $(P_{St} - P_{S(t-1)})$ - $(P_{Bt} - P_{B(t-1)})$, where S denotes the sample firm, B is the benchmark and P is the performance measure. We do the testing for three different estimation windows: t_{-1} to t_1; t_{-1} to t_2 ; t_{-1} to t_3. The year of the buyout, t_0, is not considered due to difficulties in correctly assigning the performance to the pre- or post-buyout owners.

For the actual testing, we mainly use the Wilcoxon's signed rank test, which is a non-parametric alternative to the paired student's t-test when analyzing related samples or repeated measurements on a single sample (Newbold, Carson and Thorne 2003). The reason for choosing Wilcoxon's test is that the distribution of most of the variables we look at is skewed, why the distributional assumptions that underlie the t-test cannot be satisfied. Wilcoxon's signed rank test calculates the positive and negative rank sums of the sample and uses the sum of the positive (or negative) ranks as test statistic (T). For large samples, such as ours (n>20), a normal distribution is assumed for the rank sums, why the outcome of the testing will be expressed in terms of Z-values[7], and significance in p-values (Newbold, Carson and Thorne 2003). All our tests are two-sided, which gives lower significance than the one-sided alternative, but higher statistical power.

CEO data is analyzed using a Kruskal-Wallis test in order to determine whether there are any differences related to pre-buyout CEO type. The Kruskal-Wallis test is non-parametric and similar to a Mann-Whitney test although better suited for tests of more than two groups (Newbold, Carson and Thorne 2003). We also perform dummy variable regressions where sample firm performance is used as dependent variable and founder and professional CEO types are used as dummy variables. Performance of peer firms was chosen as a reasonable control variable:

$$Performance_s = \alpha + \beta_1 Performance_p + \beta_2 CEOfounder + \beta_3 CEOprofessional + \varepsilon_i$$

4.5 Methodological issues and limitations of the study

This section highlights the major problems related to our data and methodology, and how we have chosen to address them.

[7] $Z = \frac{T - \mu_T}{\sigma_T} \overset{a}{\sim} N(0,1)$

The base year (t_{-1}) is defined as the latest closing of the books prior to the buyout. When the financial year does not equal the calendar year, the date of the transaction has been taken into consideration when determining t_{-1}. When a financial year is shorter or longer than 12 months we have annualized the revenue data to improve comparability.

In some cases employment data is missing for single years. We have then interpolated the number of employees by taking the average of the surrounding years. For ten sample firms there was no data available for t_{-1}, why we have used the year t_0 as base year. For two sample firms data for the group parent was unavailable. In those cases we have used a substantial operating subsidiary as a proxy for the group.

Many sample firms have industry classification NACE 7415 (Management activities of holding companies) / SIC 671 (Holding offices) since they are group parents. In those cases we have primarily used the industry code for their main operating subsidiary; alternatively assigned the code that best corresponds to their business activities.

The sample and peer firms are drawn from four different countries, all with different currencies. Since all our performance measures are either ratios or relative this does not affect the results. However, the size matching requires homogenous revenue numbers, why we have converted all revenue figures for t_{-1} to SEK using the average exchange rates for the specific years.

As mentioned in section 4.3 we use Net Debt to measure leverage. For three sample firms Net Debt was not available, why we instead used Total Debt as the nominator. In those cases the same adjustment has been made for the matching peer.

Finally, since we are using ROIC as one of our performance measures, goodwill recognition is a problem. In a buyout transaction, as well as in add-on acquisitions, the company's assets are revalued to the purchase price, which creates goodwill on the balance sheet. This inflates the asset base in the post-buyout period compared to the pre-buyout period and thus creates a downward bias for ROIC. Since the accounting data we use is not detailed enough to separate goodwill from other intangible assets, we cannot adjust for the purchase goodwill and will thus have to accept that ROIC is conservatively measured for the sample firms.

5. Results

5.1 Test of pre-buyout size and performance

The paired sample t-test of pre-buyout EBITDA margin does not show a significant difference between the sample and peer firms. After removing two outliers, the mean EBITDA margin is 11.71 % for sample firms and 10.38 % for the peer group. Test results can be found in *Table A:4* in the Appendix.

Testing for size gives the result that the sample firms are significantly larger than the peer group, even after removing two outliers. Finding a difference is not unexpected, since the size constraint has been subordinate to the other criteria in the selection process. Nor is the difference large enough to cause concern, since the mean turnover values of 380 vs. 214 million SEK are well within our definition of similar size (20-400%), and can doubtlessly be said to belong to the same segment of the market.

5.2 Descriptive statistics

Detailed descriptive statistics for all variables can be found in *Table A:5* in Appendix.

The geographical distribution of the sample firms is as follows: Denmark 8, Finland 5, Norway 11, Sweden 30. The overweight of Swedish firms is not surprising given the larger size and higher maturity of the Swedish PE market compared to the other Scandinavian countries. The distribution of the sample over time can be seen in *Figure 1* below, where it is evident that the distribution is skewed toward the end of the sample period.

Figure 5:1 Sample firm distribution

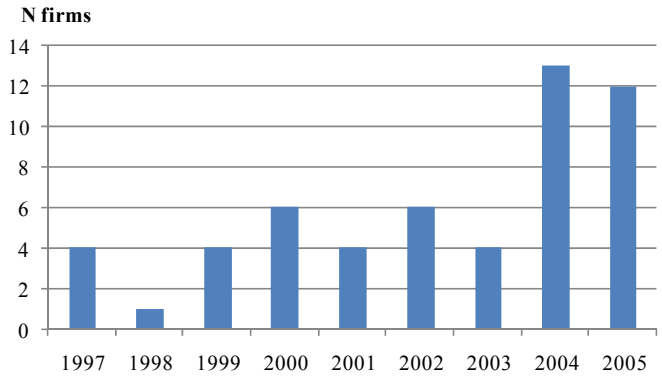


Figure 5:1 Firms by year of buyout

The general observations that can be made from the descriptive statistics for the sample firms are that median revenue growth is 19% for year t_{-1} to t_1 but tapers down during year t_{-1} to t_2 and t_{-1} to t_3 to 12.6% and 10.17% CAGR respectively (although for much smaller samples). Median change in EBITDA margin is negative all three periods, ranging from -1.1 percentage units year t_{-1} to t_1 to -3.5 percentage units year t_{-1} to t_3. The median change in ROIC is also negative for all years, whereas median employment growth is positive in all periods. Median change in leverage and in CAPEX/Revenues is positive for the two years following the buyout but negative for the third year. Median change in NWC/Revenues is positive year t_{-1} to t_1 and negative for year t_{-1} to t_2 and t_{-1} to t_3. In total 51 M&A transactions have been undertaken by 24 sample firms. 50% of the acquired family firms had professional CEOs, one third of the firms had founder CEOs, and one sixth had descendants CEOs.

5.3 Testing of Hypotheses

In this section we report the main results of our testing on the full sample of buyouts. All test results are presented in *Table A:5* in the Appendix.

5.3.1 Performance

We expect the test statistics for Revenues, ROIC and EBITDA margin to have positive signs alternatively be equal to zero, and the test statistic for NWC/Revenues to have a negative sign alternatively be equal to zero.

No significant results are obtained for difference in Revenues. The signs consistently indicate a higher growth relative to the industry benchmark but not compared to the matching peers. Differences in EBITDA consistently show negative signs, with a significant result at 10% level for year three compared to the matching peers. The sign is also negative for ROIC during all time periods, with highly significant results for year one and two compared to both benchmarks. Low significance is obtained for NWC/Revenues, but the signs indicate an increase year one and a decrease the following two years.

5.3.2 Impact of CEO Type

We expect that firms with descendant CEOs pre-buyout will show the most striking changes in performance after PE entry. Results from the Kruskal-Wallis tests (*Table A:9*) do not indicate statistically significant differences in post-buyout performance among the CEO types. However, mean ranks results indicate that performance improvement in firms with founder CEOs pre-buyout is lower than in firms with pre-buyout descendant- or professional CEOs.

Especially the change in EBITDA margin is larger for firms that had descendants or professionals as CEOs. The only somewhat significant result obtained in the Kruskal-Wallis test is for the variable NWC/Revenues year t_{-1} to t_3, at the 8% level. Surprisingly when looking at all variables, there are indications that firms with pre-buyout professional CEOs seem to have improved the most after the entry of Private Equity owners.

The regressions of pre-buyout CEO types on performance variables do not show results significant at any reasonable level. Results are reported in *Table A:10*. The signs of the coefficients are however interesting as they are in line with our expectations. Looking at changes in the EBITDA margin, coefficients for founder-CEO and professional-CEO are negative whereas descendant-CEO represented by the regression constant has a positive coefficient. Testing NWC/Revenues, the only negative coefficient of the three is that related to descendant-CEOs.

5.3.3 Leverage

We expect the test statistic to have a positive sign for all time periods. When performing the tests we have excluded the ten transactions where year zero (t_0) is used as base year, since at this point in time the increase in leverage due to the buyout has already occurred. If not excluded, they would create a downward bias.

We obtain positive signs for all time periods, both when testing against peer and industry benchmarks. For year t_{-1} to t_1 and t_{-1} to t_2 the result is significant at a 2% and 5% level respectively when testing against the industry benchmark.

5.3.4 Employment

We expect the test statistic for difference in employment to have a negative sign when testing our full sample. Contrary to our expectations we get positive signs for all time periods relative the peer and the industry benchmarks. The results are significant at the 10% level year t_{-1} to t_1 and at the 5% level t_{-1} to t_2 compared to the industry benchmark.

5.3.5 CAPEX

We expect either negative or positive signs all years. As mentioned in section 4.5, acquisition goodwill will inflate the value of fixed assets at year zero. This causes an upward measurement bias in CAPEX that year, which we avoid by excluding year zero from our

estimation window. To avoid a downward bias in CAPEX/Revenues t_{-1} to t_1, we have excluded the ten sample firms where we use year zero as base year.

We get a positive sign for t_{-1} to t_1 and t_{-1} to t_2 and a negative sign for t_{-1} to t_3 relative both benchmarks. The results for t_{-1} to t_1 are significant at the 10% level, whereas the other results have very low statistical significance.

5.3.6 Divestments and M&A

We expect divestments and general M&A activity to be higher for sample firms than for the matching peers. The test performed on the total number of transactions of the sample firms relative the peers during year t_0 to t_3 shows a highly significant positive result (p-value 0.00009) indicating that M&A activity clearly differs over the sample period. Not enough data was found on divestments to do empirical testing of that part of the hypothesis.[8]

5.3.7 Reason for selling

Our belief is that Private Equity buyouts are in line with family ambitions. By studying a total of 18 press releases related to the different buyouts in our sample, we find that PE firm involvement generally is considered to be in line with previous owner ambitions and thus can be regarded as bringing added value compared to other alternatives at hand. Most frequently PE investors are appreciated and commented for their good industrial skills, access to capital, willingness to take on new challenges and ability to accelerate growth. The reason of accelerated growth is explicitly stated in 50% of the press releases studied. Family firms that go through generational changes seem to appreciate Private Equity firms for their resilience, industrial expertise and professionalism (See *Table A:11* in the Appendix).

5.3.8 Robustness Check

We check the robustness of our results by controlling for a number of buyout-related characteristics that could potentially affect the variables we measure. We believe this testing is mainly relevant for the performance variables, but we have performed the tests for all our variables, and the results are reported in *Tables A:6* through *A:8* in the Appendix. The definitions of our subsamples are presented in *Table 5:1* below.

[8] We have recorded 5 divestments for sample firms and 0 for peers, but we strongly doubt that we have complete and representative data.

Table 5:1 Definition of subsamples

Subsample	Definition
-1 to 4	Sample period extended by one year
Experienced PE firm	Buyouts made by the ten most experienced PE firms in the sample
Same nationality	Same nationality of PE firm and buyout target
Buyouts post-2003	Buyouts made during the boom period after 2003
Exited Buyouts	Sample firms that have been exited to date
Swedish buyouts	Only Swedish sample firms
Firms with ***no*** M&A	Sample firms where ***no*** M&A activity has occured during the sample period
Firms with M&A	Sample firms where M&A activity has occured during the sample period

Given the limited sample size for latter years, we focus the testing on the first year following the buyouts for all subsamples except for -1 to 4, which obviously covers the fourth year after the buyouts, and the two M&A-related samples, which cover all three years after the buyouts. In the Discussion section we will further elaborate on the rationale for our choices of subsample cuts.

Examining the subsample test results regarding performance in *Table A:7* in Appendix, we find that for year t_{-1} to t_4 the results obtained are similar to those related to other time horizons. Worth noting is that the sign of Revenue growth is positive breaking the negative trend found year t_{-1} to t_2 and t_{-1} to t_3. Looking at experienced PE firms, the results of our tests are very much in line with the full sample, in some cases at even more significant levels. Testing whether same nationality has an impact, results are almost identical with regard to sign, except for NWC/Revenues which now has a negative sign. Investigating buyouts done post 2003, we get some interesting results including significantly higher Revenue growth and a positive, although insignificant, sign for EBITDA relative to matching peers. Looking at exited buyouts, results are largely identical to those of the full sample. Lastly an investigation of Swedish firms indicates higher (but insignificant) Revenue growth and lower NWC/Revenues than for the full sample; negative signs for ROIC and EBITDA still persist.

Looking at the two M&A-related subsamples, the highly significant negative results obtained in the full sample regarding EBITDA and ROIC persist for both samples with varying degree of significance, as can be seen in *Table A:8* in Appendix. For Firms with no M&A, Revenue growth has a negative sign for all three years, whereas it is positive for Firms with M&A for t_{-1} to t_1 and t_{-1} to t_2. Firms with no M&A show significant positive signs for leverage increase, whereas the M&A sample actually has negative signs for t_{-1} to t_2 and t_{-1} to t_3. Both samples show relative increase in employment compared to peers during all three years.

5.4 Summary of Results

All our full sample results are summarized in *Table 5:2* through *Table 5:4* below with Z and p-values for all variables and time periods investigated.

Table 5:2 Sample firm data compared to matching peer data

Variable	Expected Sign	-1 to 1		-1 to 2		-1 to 3	
		Z-Value	P-Value	Z-Value	P-Value	Z-Value	P-Value
Revenue Growth	0/+	0.412	0.680	-0.415	0.678	-0.283	0.778
EBITDA margin	0/+	-0.862	0.388	-1.509	0.131	-1.762	0,078*
ROIC	0/+	-1.959	0,050**	-1.667	0,096*	-0.747	0.456
NWC/Sales	0/-	0.257	0.798	-0.706	0.480	-1.095	0.274
ND/E	+	1.413	0.158	1.503	0.134	0.260	0.796
Employment	-	1.622	0.106	1.170	0.242	0.539	0.590
CAPEX/Sales	+/-	1.775	0,076*	0.578	0.563	-0.220	0.826
M&A	+					3.920	0,000***

* 10% significance level
** 5% significance level
*** 2% significance level

Table 5:2 Expected change for each separate variable and actual test results.

Table 5:3 Sample firm data compared to industry benchmark data

Variable	Expected Sign	-1 to 1		-1 to 2		-1 to 3	
		Z-Value	P-Value	Z-Value	P-Value	Z-Value	P-Value
Revenue Growth	0/+	0.619	0.536	1.184	0.236	0.148	0.882
EBITDA margin	0/+	-1.481	0.138	-0.792	0.428	-1.224	0.220
ROIC	0/+	-2.503	0,012***	-2.641	0,008***	-1.442	0.150
NWC/Sales	0/-	0.563	0.574	-0.724	0.470	-1.547	0.122
ND/E	+	2.548	0,012***	2.195	0,028**	0.118	0.906
Employment	-	1.926	0,054*	2.171	0,030**	1.373	0.170
CAPEX/Sales	+/-	1.848	0,065*	0.140	0.889	-0.284	0.776

* 10% Significance level
** 5% Significance level
*** 2% Significance level

Table 5:3 Expected change for each variable and actual test results.

Table 5:4 Summary of hypotheses and test outcomes

Variable	Hypothesis tested	Support	Rejected
Performance	*1A: The change in operating performance is equal for sample firms and peers.*	*No*	*Yes*
	1B: The change in operating performance is greater for sample firms than for peers.	*No*	*Yes*
CEO Type	*2: The magnitude of operating performance improvement related to a family firm buyout depends on the type of CEO prior to the buyout taking place.*	*No*	*No*
Leverage	*3: Leverage will increase in the buyout firms relative to their peers.*	*Yes*	*No*
Employment	*4: Employment is reduced post-buyout relative to peers.*	*No*	*Yes*
CAPEX	*5A: CAPEX is reduced in family firms post-buyout relative to the peers.*	*No*	*Yes*
	5B: CAPEX is increased in family firms post-buyout relative to the peers.	*Yes*	*No*
M&A activity	*6: Divestments and M&A activity will be higher among the buyout firms after the buyout than in the peer group.*	*Yes*	*No*
Selling to PE	*7: Family owners see added value in selling to Private Equity firms.*	*Yes**	*No*

**No statistical testing performed, support only anecdotal*

Table 5:4 Support implies that a null hypothesis stating the opposite of the hypothesis in question has been rejected at a reasonably high level of statistical significance. Rejection implies that the hypothesis in question has been rejected at high levels of statistical significance.

6. Summary and Discussion

Summarizing the results regarding performance, we have shown with high significance that family firm buyouts tend to operationally underperform relevant benchmarks across at least two crucial performance variables during different time horizons. As mentioned in section 4.5 the measurement of ROIC is likely somewhat downward biased for the sample firms. However, we do not believe that this slight downward bias alone can explain the negative results obtained. This view is further supported by the EBITDA metric, which consistently shows similar negative results. Regarding the other performance metrics, we cannot reject the null hypothesis of equal performance.

Looking at the other hypotheses in our study, little useful evidence was found to support the hypothesis of pre-buyout CEO impact on performance. Insignificant indications of lower performance improvement in firms with a founder CEO were found. The least surprising result was that leverage increased after a buyout. Contrary to most previous research, general perception and our own expectations, employment actually increased post-buyout. Concerning CAPEX spending, we found statistical support for higher CAPEX among sample firms during year one. The most significant result of the study derived from the test of difference in M&A-activity between sample and peer firms, where we found strong support for higher activity among sample firms. Our last hypothesis, concerning reasons for selling to PE firms, seems to have some support from the motivations quoted in press releases from the

transactions. However, the value of these statements should not be over-estimated since they often are of standardized character and even when not so, the seller has few incentives to say anything else than what new owners would wish to be said.

One major objection to the method we have chosen is that the time horizon may be too short to properly evaluate the impact on performance by the change in ownership. The investment horizon for PE firms is normally 5-7 years and it is conceivable that the first years after a buyout are characterized by large investments and changes in the company needed to achieve future growth. Such activities could lower profitability and efficiency in the short run, why relative performance will be worse during the first couple of years after the buyout and then possibly improve as the exit date approaches. To address this issue we extended the time horizon to four years for sample firms where data was available and where exit had not taken place. Due to the small sample size we did not expect to get any significant results, but rather to see if a trend shift could be observed in the signs of the tested variables. The only result that differed was a positive but insignificant sign for revenue growth compared to the peer group. This could be an indication that a trend shift takes place at some point during the holding period, but a larger sample would be required to verify this hypothesis. Despite the small sample size a highly significant negative result was still obtained for EBITDA margin.

Since many of our results are a bit surprising, particularly in the light of most previous buyout research, we found it necessary to check the robustness of the results by controlling for a number of buyout-related characteristics that could potentially affect the variables studied. In doing so we focused on the one side of the cut we ex ante deemed relevant with respect to economic significance. Results for the residual subsamples are therefore not reported, with the exception for the two M&A-related samples where we considered both sides to be of interest.

Since creating value through operating improvements requires skill and experience, it could be argued that more experienced PE firms should perform better than less experienced firms. Our sample contains a large number of PE firms, some of which have a substantial track record and some with less experience. To test whether experienced PE firms perform better we created a subsample of buyouts made by the top ten PE firms with regard to number of years in the business.[9] In this analysis it is mainly the performance variables that are of interest, and we would expect the result to be better than for the full sample. However, the

[9] 3i, CapMan, CVC Capital, Doughty Hanson, EQT, Industri Kapital, Nordic Capital, Procuritas, Ratos and Segulah

results of the testing were much in line with the full sample, thus it seems that our results were robust to this aspect as well.

Investing abroad is normally more complicated and risky than doing domestic investments, partly since monitoring is more difficult but also because business cultures may differ. We therefore removed all buyouts where the target company and the PE firm were of different nationalities to see if this could have an impact on our results regarding performance. The only indication of better performance was a change of sign for NWC/Revenues from positive to negative; otherwise the results remained the same.

The number of buyouts tends to increase during boom periods, and in order to see if performance also is higher for firms acquired during such periods, we created a subsample of all deals made after 2003. The choice of cut-off point is based both on the fact that 2004 is commonly considered to be the beginning of the most recent boom period and that our sample distribution shows a sharp increase in number of buyouts from 2004 and onwards (See *Figure 5:1* above). As mentioned in the Result section we did obtain some interesting results including significantly higher Revenue growth and a positive, although insignificant, sign for EBITDA relative to the matching peers. An alternative interpretation of this result could be that the PE industry in Scandinavia has become better at creating value by operational improvements the last couple of years. Whether this is a boom effect, an effect of improved skill, or a combination of both, is difficult to tell from our data.

It is likely that poorly performing companies are held on to by the PE firms for longer time periods. Several factors support this reasoning; by holding on to an investment that will generate a loss for a longer time period instead of realizing it immediately a less alarming negative IRR figure will be achieved. In addition it is probably more difficult to exit an underperforming company than a well performing one. In analogy with this it can be hypothesized that exited firms on average performed better during the holding period than non-exited firms. We tested this by creating a subsample of all buyouts that had been exited to date. The results we obtained for the full sample proved to be largely robust to this modification of the sample.

In many ways Sweden is a much more mature PE market than the rest of Scandinavia. To see if this higher maturity and perhaps sophistication has an impact on performance, our final subsample contained only Swedish sample firms. Although insignificant, the results showed

increased revenue growth and decreased NWC/Revenues relative to the full sample test. Otherwise no difference was observed.

M&A activity can potentially distort accounting numbers, why we reran the tests on a subsample where neither the sample firms nor the matching peers had participated in M&A activity. The variables most likely to be affected by such an adjustment are ROIC, Revenue growth and Employment growth. We expected ROIC to be higher for the subsample because we now avoid the goodwill recognition that occurs following an add-on acquisition and inflates invested capital. Revenue and Employment growth should be lower since all acquisitive growth now has been removed from the sample. As shown in the result section, ROIC was still negative with high significance. Revenue growth now had a negative sign, but otherwise no obvious divergence from the full sample results could be observed.

It thus seems that our results on operating performance are largely robust. The obvious interpretation to make would be that PE firms simply cannot contribute much to a well run family firm, but rather destroy value by not being able to fully realize the operational potential of the firm. We believe that this view may be too simplistic, and therefore try to find an alternative interpretation of the fact pattern observed

Most previous buyout research has been made on samples consisting mainly of public companies and divisions, where much of the investment rationale and potential for value creation typically lie in cost cutting, divestment of assets and downsizing of excess work force. For such a sample our results concerning increased employment, M&A activity and CAPEX would be strange, why we suspect that PE firms generally have a different approach to and strategy for the companies in our sample. If family firms in general are well run and relatively efficient, a PE firm would be more interested in using the company as a platform to build on, lever existing resources and increase investments in order to expand the business further, which would explain our observations. Such a strategy could also possibly explain the lower relative performance during the period studied; as discussed above, high investment activity and changes in company structure are likely to take place during the first years following buyouts. Short run profitability could possibly be traded for future growth, which we could see some indication of when extending the time horizon to four years. Furthermore this interpretation is in line with the expectations of accelerated growth and further expansion expressed by selling families.

In the light of this it is interesting to look at our two M&A related subsamples in *Table A:8* in Appendix, where exactly 50% of the firms have participated in M&A activities and 50% have not. Without having studied the characteristics of the firms in each subsample, it could be hypothesized that the existence of M&A activity is an indication of the strategy chosen by the PE firm for the particular buyout target, in line with the reasoning above. However, with the data we have and the results obtained we cannot conclude that either of the strategies in general is more successful than the other when it comes to operating performance.

We believe that our results are useful in understanding the value creation process in buyouts of family firms and that it adds new insights to the ongoing debate of the role Private Equity plays in the financial sector. Findings on variables indirectly related to performance such as leverage, M&A activity CAPEX and employment seem to indicate that PE firms add financial knowledge and increase investments in buyout targets, which could induce and facilitate further growth. This also indicates that PE firms contribute to the economy by vitalizing and restructuring different sectors. In the light of this we dare say that we do not find any support for the "locust" view on the Private Equity industry mentioned in the introduction. For families considering selling their companies to a PE firm this finding is of course of great interest.

In spite of this, one cannot disregard the fact that the most relevant finding of our study is that of the relative operating underperformance. If our results prove valid over the entire investment period, this indicates that operating improvements do not seem to be a major source of value generation for Private Equity firms in family buyouts, at least not ex-post. However, jumping from this insight to the conclusion that PE firms should avoid investing in family firms is probably rash. After all, operating improvement is only one of several ways that a PE firm can obtain a return on their investment. The increase in the number of family buyouts lately seems to support this view, unless investors are assumed to be highly irrational.

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Appendix

Table A:1 Previous research on the effects on family firm performance

ROA (Return On Assets) is commonly defined as Net Income/ Total assets. OROA (Operating Return On Assets) EBIT/ Book value of total assets. Barth et al. use TFP (Total Factor Productivity) whereas Lee uses revenue-, employment- and EBT (Earnings Before Taxes) growth. ROE is throughout the research generally defined as Net Income/ Equity book value. Excess control is defined as excess voting rights relative to cash-flow ownership through the use of dual-class shares and advanced ownership structures. Ownership relates to the cash flow ownership of the largest stakeholders. Firms are generally considered to be family owned when families hold more than 20% of equity although this rate differs between studies.

			Effects on family firm performance					
			Family Control effects		Cash Flow Ownership Effect	CEO Type		
Research	Focus region	Performance measure	Control	Excess control		Founder	Descendant	Professional
Kowalewski et al. (2007)	POL	ROA	Neutral			Neutral		Neutral
Adams et al (2007)	USA	ROA				Positive		
Edenholm and Östlund (2006)	SWE	ROA, OROA	Positive	Positive	Positive	-	-	-
Zellweger (2006)	SWI	ROE	Negative[3]			Negative	Negative	
Favero et al (2006)	ITA	ROA, ROE[2]	Positive	Positive	-	Positive	Positive	Positive
Ehrhardt et al (2006)	GER	ROA	Positive	-	-	-	Negative	-
Lee (2006)	USA	Margins, growth	Positive	-	-	-	-	-
Bennedsen et al (2006)	DEN	OROA	-	-		-	Negative	Positive
Sraer and Thesmar (2006)	FRA	ROA, ROE, other	Positive	-	-	Positive	Positive	Positive
Bennedsen and Nielsen (2005)	Europe	ROA	-	Neutral[4]	-	-		-
Maury (2005)	Europe	ROA	Positive	-	Neutral	Positive	Positive	Neutral
Barontini and Caprio (2005)	Europe	OROA	Positive	Negative	-	Positive	Neutral	Negative
Perez-Gonzales (2005)	USA	ROA, OROA, M-B	-	-	-	-	Negative	-
Barth et al (2004)	NOR	TFP	Negative	-	Neutral	-	Negative	Neutral
Villalonga and Amit (2004)	USA	ROA, Sales growth	Positive	-	-	-	-	-
Gompers et al (2004)	USA[1]	ROE, margins, growth	Positive	Negative	Neutral	-	-	-
Cronqvist and Nielsen (2003)	SWE	ROA	-	Negative	-	-	-	-
Andersson and Reeb (2003)	USA	ROA, OROA	Positive	-	Neutral	Positive	-	Positive
Mustakallio (2002)	FIN	Profitability and growth	Positive	-	-	-	-	-
Han et al (1999)	Global	ROE and M-B	Positive	-	-	-	-	-
Majority of findings, average:			**Positive**	**Negative**	**Neutral**	**Positive**	**Negative**	**Positive**

1. Only dual-class firms
2. Only descendant CEO firms were positive for ROE
3. Positive for firms with 50-99 employees
4. varies over regions

Table A:2 PE Firms in study

A total of 34 PE-Firms were originally selected on the criteria of Scandinavian market presence, focus on majority buyouts investments and activity prior to 2006.

3i	CVC Capital Partners	Nordstjernan
Accent Equity	Dania Capital	NorgesInvestor
Advent International	Dansk Kapitalanlaeg	Norvestor
Altor	Doughty Hanson	Polaris
Amplico	EQT	Procuritas
Amymone Capital	Ferd	Ratos
Apax	FSN Capital	Segulah
Axcel	Furuholmen (True North)	Sponsor Capital
Borea Opportunity	Industri Kapital	Triton
Bure Equity	Litorina	Volati
CapMan	MB Funds	
Credelity	Nordic Capital	

Table A:3 Buyouts in sample

Our sample of family firm buyouts consists of 54 buyouts in total. The sample was obtained by research of all buyouts in the Scandinavian region made from 1997 to 2005. Peers were selected according to industry, size, pre-event performance and the condition of family ownership.

Buyout Target	Country	Entry	Exit	Peer Company	PE Firm
EET Nordic	DK	1997	2007	Nordic Lan & Wan Communication OY	CVC Capital
Duni AB	SE	1997	2007	S-Gruppen AS	EQT
Adveta AB	SE	1997	2001	Lectoria AB	Segulah
EKH Ekonomihuset AB	SE	1997	1999	Norden Assuranse AS	Segulah
Vittra AB	SE	1998	-	Treider AS	Bure Equity
Hilding Anders	SE	1999	2004	Harbo Fritid AB	Nordic Capital
Håells Modulsystem AB	SE	1999	2002	Intra Holding AS	Segulah
Louis Poulsen A/S	DK	1999	2006	Nordic Light AB	Polaris
ADR Haanpää Oy	FI	1999	2005	Scandinavian Motortransport AB	EQT
Xlent AB	SE	1999	2003	IT-Arkitekterna Konsult i Stockholm AB	Ratos
MrMusic	SE	1999	2004	Efi AS	Segulah
Ordning & Reda	SE	2000	2003	Gallerix	Segulah
Tradex Converting AB	SE	2000	2006	AS Den Norske Høytalerfabrikk	EQT
Sven-Axel Svensson Bijouterier AB	SE	2000	2004	Arts & Crafts AS	Accent Equity
Novasol A/S	DK	2000	2002	Sande Reisebyrå Alta AS	Polaris
Marioff Corporation Oy	FI	2001	2007	Auramarine OY	Nordic Capital
LM Glasfiber A/S	DK	2001	-	Oy Lival AB	Doughty Hanson
Plantasjen ASA	NO	2001	2007	Jysk AS	EQT
Kultajousi OY	FI	2001	2006	Kremmerhuset Ting & Sånt AS	CapMan
Staffpoint Oy	FI	2002	-	Bjerke & Luther AS	CapMan
Finn-Power Oy	FI	2002	2008	LKN Industri - Automation AB	EQT
Appelberg Publishing Group AB	SE	2002	-	Ågerups Repro AB	Bure Equity
Dansk Droge	DK	2002	2006	Naturell AB	Polaris
Xdin	SE	2002	2005	Rejlers Ingenjörer AB	Bure Equity
EuroFlorist Sverige AB	SE	2002	2007	Interflora AB	Accent Equity
Ilva A/S	DK	2003	2007	Skeidar Oslo AS	Advent International
Metallfabriken Ljunghäll Ab	SE	2003	-	Alteams OY	CapMan
Cefar Medical AB	SE	2003	-	Electra-Box Diagnostica AB	Accent Equity
Wermland Paper	SE	2003	2008	Waggeryd Cell AB	Procuritas
Tornum	SE	2004	-	Bygg Teknisk Stål AS	Volati Industri AB
Välinge Holding AB	SE	2004	-	Laatoitusliike Laattamestarit OY	Nordstjernan AB
Atlings Maskinfabrik	SE	2004	-	Alfing I Älmhult AB	Amymone Capital
Wernersson Ost AB	SE	2004	2007	AB Anders Löfberg	Accent Equity
Silva Sweden AB	SE	2004	2006	Brannan AB	Amplico Kapital AB
Powermill Service Group AB	SE	2004	-	Assist Servicekedjan AB	Segulah
DDD A/S	DK	2004	-	Radi Medical Systems AB	Axcel
Terje Hoili AS (Europris)	NO	2004	-	Överskottsbolaget AB	Industri Kapital
EDT AS	NO	2004	-	Linbak Retail Systems AS	Nordic Capital
Point International AS	NO	2004	-	Linbak Retail Systems AS	Nordic Capital
Q-MATIC AB	SE	2004	2007	Jakob Hatteland Assembly AS	3i Group
Popin (Andreas Dieserud) AS	NO	2004	2007	Bik Bok AB	Furuholmen Capital
Noratel AS	NO	2005	-	Sew-Eurodrive AB	Ferd Private Equity
MAGNUSSEN ARNE AS	NO	2005	-	Hallandsägg AB	CapMan
Norsk Kylling AS	NO	2005	-	Guldfågeln AB	CapMan
A/S Hammel Mobelfabrik	DK	2005	-	Bröderna Johansson Sängfabrik AB	Dania Capital
Brandtex Group A/S	DK	2005	-	Bestseller Retail Europe A/S	EQT
Panorama AS	NO	2005	-	AB Gense	Norvestor Equity
Kid Interiør AS	NO	2005	-	Princess Gruppen AS	Industri Kapital
PAX Electro Products AB	SE	2005	-	L.V.I. - Produkter AB	Litorina Kapital
Inflight Service Europe AB	SE	2005	-	Den Norske Isbilen AS	CapMan
Annas Pepparkakor AB	SE	2005	-	Leksandsbröd AB	Accent Equity
Sveico AB	SE	2005	-	Gerdins Cutting Technology AB	Volati Industri AB
Nils Hansson Åkeri AB	SE	2005	-	Håkull AS	Nordstjernan AB
Wiking Gulve A/S	DK	2005	-	Laminathuset Combi Craft AS	Dania Capital

Table A:4 Paired sample statistics

Paired t-test analysis of pre-buyout size and performance of sample firms and matching peers

Variable	Sample		Matching peers		Test statistics (S-P)	
	Mean	Std. Deviation	Mean	Std. Deviation	t	Sig. (2-tailed)
EBITDA margin t-1 (%)	11,71	11,87	10,38	8,958	1,42	0,163
Revenue t-1 (KSEK)	380607	513113	214241	365567	2,19	0,042

Table A:5 Descriptive data and Wilcoxon's signed rank test statistics

Wilcoxon's signed rank tests are used to test for significant differences between sample and matching peers (S-P) and sample and the industry benchmark (S-B). The sign of Z values indicates the direction of the relative difference. T-values are added for reference, but no p-values are reported since normality assumptions underlying the t-test are not satisfied.

Variable	Sample Firms			Matching Peers		Test Statistics S-P			Industry Benchmark		Test Statistics S-B		
	n	Mean	Median	Mean	Median	Z	Sig.	t- value	Mean	Median	Z	Sig.	t-value
Revenue growth -1 to 3	25	420,6%	26,7%	57,6%	37,1%	-0,283	0,778	1,378	39,5%	36,5%	0,148	0,882	1,460
Revenue growth -1 to 2	37	242,4%	33,7%	52,5%	26,2%	-0,415	0,678	1,483	30,8%	32,3%	1,184	0,236	1,634
Revenue growth -1 to 1	51	35,6%	19,1%	27,8%	18,7%	0,412	0,680	0,600	22,2%	21,7%	0,619	0,536	1,497
ΔEBITDA margin -1 to 3 [a]	25	-7,8%	-3,5%	0,3%	0,6%	-1,762	0,078*	-1,946	-1,3%	-1,0%	-1,224	0,220	-1,751
ΔEBITDA margin -1 to 2 [a]	37	-5,0%	-2,6%	-0,7%	-0,5%	-1,509	0,131	-1,739	0,1%	0,5%	-0,792	0,428	-1,312
ΔEBITDA margin -1 to 1 [a]	51	-3,2%	-1,1%	0,4%	0,5%	-0,862	0,388	-1,315	1,3%	-0,0%	-1,481	0,138	-1,890
ΔNWC/Revenues -1 to 3	21	-14,2%	-7,4%	1,2%	1,3%	-1,095	0,274	-1,316	2,8%	1,4%	-1,547	0,122	-1,167
ΔNWC/Revenues -1 to 2	33	-8,2%	-2,2%	0,4%	0,7%	-0,706	0,480	-1,012	8,8%	-1,5%	-0,724	0,470	-0,955
ΔNWC/Revenues -1 to 1	46	3,5%	3,0%	1,5%	1,9%	0,257	0,797	0,362	0,7%	-0,8%	0,563	0,574	0,850
ΔROIC -1 to 3 [a]	21	-7,3%	-2,3%	-0,4%	-1,8%	-0,747	0,455	-0,913	-0,1%	-0,5%	-1,442	0,150	-1,687
ΔROIC -1 to 2 [a]	34	-12,3%	-6,3%	-2,2%	-2,2%	-1,667	0,096*	-2,278	-0,3%	0,5%	-2,641	0,008***	-2,982
ΔROIC -1 to 1 [a]	48	-7,6%	-2,2%	2,5%	0,9%	-1,959	0,050**	-2,351	0,4%	0,2%	-2,503	0,012***	-2,876
Leverage increase -1 to 3	17	19,8%	-29,2%	-42,9%	-1,6%	0,260	0,796	0,606	-4,4%	-5,9%	0,118	0,906	0,654
Leverage increase -1 to 2	29	138,4%	62,2%	-22,0%	6,3%	1,503	0,134	1,220	-4,2%	-0,2%	2,195	0,028**	1,671
Leverage increase -1 to 1	43	107,6%	36,3%	-12,9%	-0,4%	1,413	0,158	1,603	-4,4%	-0,7%	2,548	0,012***	2,049
Employment growth -1 to 3	21	203,5%	20,2%	53,1%	25,0%	0,539	0,590	0,890	26,1%	24,0%	1,373	0,170	1,185
Employment growth -1 to 2	33	137,8%	19,3%	40,5%	23,8%	1,170	0,242	0,949	18,3%	12,0%	2,171	0,030**	1,285
Employment growth -1 to 1	44	28,0%	13,7%	21,4%	4,7%	1,622	0,105	0,415	11,5%	7,1%	1,926	0,054*	2,303
CAPEX/Revenues -1 to 3	14	-2,0%	-2,7%	-1,0%	0,0%	-0,220	0,826	0,127	-3,3%	-1,5%	-0,284	0,776	0,121
CAPEX/Revenues -1 to 2	25	2,5%	0,1%	0,5%	0,3%	0,578	0,563	0,957	-1,3%	-0,2%	0,140	0,889	0,829
CAPEX/Revenues -1 to 1	36	9,1%	1,1%	-2,2%	0,0%	1,775	0,076*	2,187	-1,5%	-0,5%	1,848	0,065*	1,821
M&A Activity comparison	54												
Sample and Peer firms						3,921	0,000088***	4,112					

*) 10% significance level
**) 5% significance level
***) 2% significance level

a) percentage unit change

Table A:6 Subsample descriptive statistics

Descriptive statistics for the variables in the different subsamples. Except for the test "-1 to 4" all values reported refer to year -1 to 1.

	-1 to 4		Experienced PE firm		Same nationality		Buyouts post-2003		Exited Buyouts		Swedish buyouts	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Revenue growth	802.7%	39.2%	25.3%	25.0%	35.3%	17.4%	59.9%	25.8%	20.7%	20.7%	46.1%	19.1%
ΔEBITDA margin[a]	-8.4%	-7.5%	-2.0%	-0.7%	-4.9%	-1.4%	0.9%	-0.7%	-5.7%	-1.7%	-6.2%	-1.0%
ΔNWC/Revenues	-16.2%	-4.6%	9.9%	1.2%	-2.4%	-0.8%	3.3%	7.3%	6.3%	2.9%	-0.6%	3.0%
ΔROIC [a]	-12.4%	-3.5%	-5.5%	-2.6%	-8.7%	-0.9%	-3.3%	-0.4%	-9.8%	-5.3%	-8.3%	-0.9%
Leverage increase	10.0%	-22.1%	141.7%	36.4%	65.5%	13.7%	137.8%	27.4%	106.6%	36.5%	75.1%	18.5%
Employment growth	5.1%	0.2%	17.3%	12.5%	31.8%	11.2%	31.2%	11.0%	22.1%	16.7%	41.9%	28.0%
CAPEX/Revenues	2.8%	-3.9%	18.7%	4.0%	-1.3%	0.0%	14.7%	4.2%	6.3%	1.0%	-2.2%	0.0%
n	15		28		37		24		27		29	

[a)] percentage unit change

Table A:7 Subsample Wilcoxon's signed rank test statistics

Subsample tests were performed in order to check the robustness of the tests as well as to evaluate whether specific characteristics related to PE buyouts could give rise to any differences in results. The same form of Wilcoxon's signed rank test was performed as in the full sample i.e. sample against matching peers (S-P) and sample against industry benchmark (S-B). Except for the test "-1 to 4" all values reported refer to year -1 to 1.

Variable		-1 to 4		Experienced PE firm		Same nationality		Buyouts post- 2003		Exited buyouts		Swedish buyouts	
		Z	**Sig.**	**Z**	**Sig.**	**Z**	**Sig.**	**Z**	**Sig.**	**Z**	**Sig.**	**Z**	**Sig.**
Revenue growth	S-P	0,596	0,550	-0,368	0,712	0,491	0,624	1,825	0,068*	-0,546	0,586	1,129	0,258
	S-B	-	-	0,343	0,732	0,049	0,960	1,308	0,190	0,089	0,930	0,384	0,700
ΔEBITDA margin	S-P	-2,045	0,040**	-0,038	0,970	-0,934	0,350	0,456	0,648	-1,105	0,270	-0,913	0,362
	S-B	-	-	-0,140	0,888	-1,687	0,092*	-0,760	0,448	-1,384	0,166	-1,634	0,102
ΔNWC/ Revenues	S-P	0,282	0,778	1,153	0,250	-0,879	0,380	0,608	0,544	0,639	0,524	-1,086	0,278
	S-B	-	-	0,763	0,446	-0,654	0,512	1,408	0,160	-0,030	0,976	-0,457	0,648
ΔROIC	S-P	-1,412	0,158	-1,457	0,146	-0,744	0,458	-1,347	0,178	-1,629	0,104	-0,724	0,470
	S-B	-	-	-1,371	0,170	-1,958	0,0502*	-1,055	0,292	-1,600	0,110	-1,537	0,124
Leverage increase	S-P	0,560	0,576	1,790	0,074*	0,529	0,598	2,172	0,030**	0,330	0,742	-0,122	0,904
	S-B	-	-	2,728	0,006***	0,889	0,374	2,172	0,030**	1,442	0,150	0,330	0,742
Empl. growth	S-P	0,804	0,422	0,146	0,884	1,881	0,060*	0,523	0,602	1,430	0,152	3,143	0,002***
	S-B	-	-	0,243	0,808	1,587	0,112	0,859	0,390	1,734	0,082*	2,514	0,012***
CAPEX/ Revenues	S-P	0,169	0,866	2,201	0,028**	0,860	0,390	2,417	0,016***	1,502	0,133	0,450	0,653
	S-B	-	-	2,296	0,022**	0,791	0,429	1,982	0,048**	1,546	0,122	0,370	0,711

[*)] 10% significance level
[**)] 5% significance level
[***)] 2% significance level

Table A:8 M&A adjusted subsample descriptive data and Wilcoxon's signed rank test statistics
The full sample has been divided into two samples based on the M&A activity among the sample firms. In the first group no M&A activity has been recorded for the sample firm, nor for the matching peer during the sample period. Descriptive statistics and Wilcoxon's signed rank test statistics relative matching peers (S-P) are reported for the same variables and time periods as for the full sample in *Table A:5*.

	Firms with no M&A			Test stat S-P		Firms with M&A			Test stat S-P	
Variable	**n**	**Mean**	**Median**	**Z**	**Sig.**	**n**	**Mean**	**Median**	**Z**	**Sig.**
Revenue growth -1 to 3	10	58,9%	27,2%	-0,153	0,878	15	661,8%	26,7%	-0,284	0,776
Revenue growth -1 to 2	18	69,6%	34,6%	-0,240	0,811	19	398,0%	31,2%	0,724	0,469
Revenue growth -1 to 1	25	40,5%	18,1%	-0,363	0,716	26	30,9%	22,4%	0,775	0,439
ΔEBITDA margin -1 to 3 [a]	10	-4,8%	-3,2%	-0,561	0,575	15	-4,8%	-3,2%	-1,874	0,061*
ΔEBITDA margin -1 to 2 [a]	18	-5,1%	-3,4%	-0,936	0,349	19	-5,1%	-3,4%	-1,026	0,305
ΔEBITDA margin -1 to 1 [a]	25	-4,4%	-1,4%	-0,794	0,427	26	-4,4%	-1,4%	-0,419	0,675
ΔNWC/Revenues -1 to 3	9	-9,5%	-8,3%	-0,059	0,953	12	-17,7%	-5,7%	-1,020	0,308
ΔNWC/Revenues -1 to 2	17	-5,1%	-3,8%	-0,402	0,687	16	-11,2%	0,0%	-0,517	0,605
ΔNWC/Revenues -1 to 1	24	-0,8%	3,8%	-0,057	0,954	22	8,2%	1,4%	0,471	0,638
ΔROIC -1 to 3 [a]	9	-18,2%	-16,0%	-1,362	0,173	12	0,9%	0,9%	-0,157	0,875
ΔROIC -1 to 2 [a]	18	-17,1%	-11,5%	-1,590	0,112	16	-7,2%	1,1%	-0,621	0,535
ΔROIC -1 to 1 [a]	26	-10,5%	-5,3%	-1,994	0,046**	22	-4,1%	-0,5%	-0,730	0,465
Leverage increase -1 to 3	7	156,0%	62,2%	0,507	0,612	10	-62,9%	-37,9%	-0,153	0,878
Leverage increase -1 to 2	15	223,2%	96,8%	2,329	0,020***	14	255,6%	25,7%	-0,220	0,826
Leverage increase -1 to 1	22	135,2%	19,7%	1,899	0,058*	21	73,4%	28,9%	0,608	0,543
Employment growth -1 to 3	9	41,6%	27,0%	0,652	0,515	8	324,9%	18,7%	0,078	0,937
Employment growth -1 to 2	17	34,4%	18,1%	0,923	0,356	16	241,2%	20,2%	0,621	0,535
Employment growth -1 to 1	24	20,7%	12,8%	1,229	0,219	20	36,7%	14,0%	1,083	0,279
CAPEX /Revenues -1 to 3	6	0,1%	-0,2%	0,524	0,600	8	7,8%	-4,9%	-0,700	0,484
CAPEX /Revenues -1 to 2	13	-0,6%	-0,6%	0,454	0,650	12	12,4%	0,6%	0,392	0,695
CAPEX /Revenues -1 to 1	19	-1,6%	-0,1%	0,080	0,936	17	19,3%	8,1%	2,154	0,031**

*) 10% significance level
**) 5% significance level
***) 2% significance level
a) percentage unit change

Table A:9 Ranks and test statistics of Kruskal-Wallis test

Testing whether there is any significant difference in post-buyout performance depending on pre-buyout CEO type, we used CEO type as Grouping Variable in a Kruskal-Wallis test. Mean ranks show the magnitude of changes in the relevant variable for each group.

Ranks	CEO Type	N	Mean Rank	Chi-2	df	Asymp. Sig.
Revenue growth -1 to 3	Professional CEO	15	12,47			
	Founder CEO	8	15			
	Descendant CEO	2	9			
	Total	25		1,260	2	0,533
Revenue growth -1 to 2	Professional CEO	20	20,2			
	Founder CEO	12	20,58			
	Descendant CEO	6	15			
	Total	38		1,177	2	0,555
Revenue growth -1 to 1	Professional CEO	26	28,19			
	Founder CEO	16	24,75			
	Descendant CEO	9	21,89			
	Total	51		1,367	2	0,505
ΔEBITDA margin -1 to 3	Professional CEO	15	14,07			
	Founder CEO	8	10,38			
	Descendant CEO	2	15,5			
	Total	25		1,564	2	0,458
ΔEBITDA margin -1 to 2	Professional CEO	20	21,45			
	Founder CEO	12	17,08			
	Descendant CEO	6	17,83			
	Total	38		1,318	2	0,517
ΔEBITDA margin -1 to 3	Professional CEO	26	26,92			
	Founder CEO	16	22,69			
	Descendant CEO	9	29,22			
	Total	51		1,317	2	0,518
ΔNWC/Revenues -1 to 3	Professional CEO	12	13,42			
	Founder CEO	7	8,71			
	Descendant CEO	2	4,5			
	Total	21		4,965	2	0,084*
ΔNWC/Revenues -1 to 2	Professional CEO	17	19,71			
	Founder CEO	11	15,73			
	Descendant CEO	6	14,5			
	Total	34		1,727	2	0,422
ΔNWC/Revenues -1 to 1	Professional CEO	22	25,27			
	Founder CEO	15	25,93			
	Descendant CEO	9	15,11			
	Total	46		4,392	2	0,111
ΔROIC -1 to 3	Professional CEO	12	12,17			
	Founder CEO	7	9,57			
	Descendant CEO	2	9			
	Total	21		1,003	2	0,606
ΔROIC -1 to 2	Professional CEO	17	21			
	Founder CEO	12	14,83			
	Descendant CEO	6	15,83			
	Total	35		2,871	2	0,238
ΔROIC -1 to 1	Professional CEO	22	26,36			
	Founder CEO	17	20,24			
	Descendant CEO	9	28			
	Total	48		2,530	2	0,282

* 10% significance level

Table A:10 Regression statistics on CEO data

Model summary, regression coefficients, betas and significance. The regressions performed do not clearly indicate any relationship between pre-buyout CEO type and post-buyout performance. Regressions were made using performance variables of matching peers as controlling variable and two CEO types as dummy variables. S denotes sample firms and P denotes matching peer firms. The intercept (Constant) corresponds to Descendant CEO in the model.

Model	R Square	Adjusted R Square	Std. Error of the Estimate	n
ΔEBITDA -1 to 1	0.100	0.043	15.939	50
ΔRevenues -1 to 1	0.023	-0.039	0.643	50
ΔROIC -1 to 1	0.066	0.002	0.193	47
Δ(NWC/Revenues) -1 to 1	0.065	-0.002	0.278	45

ΔEBITDA -1 to 1					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	3,369	5,316		0,634	0,529
Founder CEO (S)	-9,265	6,647	-0,266	-1,394	0,170
Professional CEO (S)	-6,868	6,164	-0,213	-1,114	0,271
ΔEBITDA (P) -1 to 1	-0,717	0,387	-0,256	-1,850	0,071

Dependent Variable: ΔEBITDA (S) -1 to 1

ΔRevenues -1 to 1					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	0,143	0,257		0,556	0,581
Founder CEO (S)	0,220	0,292	0,164	0,756	0,453
Professional CEO (S)	0,272	0,272	0,218	1,001	0,322
ΔRevenues (P) -1 to 1	0,019	0,176	0,017	0,108	0,915

Dependent Variable: ΔRevenues (S) -1 to 1

ΔROIC -1 to 1					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-0,018	0,064		-0,273	0,786
Founder CEO (S)	-0,117	0,080	-0,293	-1,458	0,152
Professional CEO (S)	-0,042	0,077	-0,109	-0,542	0,590
ΔROIC (P) -1 to 1	0,158	0,138	0,176	1,148	0,257

Dependent Variable: ΔROIC (S) -1 to 1

Δ(NWC/Revenues) -1 to 1					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-0,100	0,093		-1,075	0,288
Founder CEO (S)	0,195	0,117	0,333	1,662	0,104
Professional CEO (S)	0,150	0,110	0,273	1,363	0,180
Δ(NWC/Revenues) (P) -1 to 1	-0,021	0,262	-0,012	-0,081	0,936

Dependent Variable: Δ(NWC/Revenues) (S) -1 to 1

Table A:11 Excerpts from press releases related to buyouts of sample firms

Firm	Seller (Family/CEO) opinion on new owner	New owner (PE Firm) view
ADR-Haanpää	• Will enable us to take an active, growth-oriented role in the ongoing consolidation process. • In line with our ambition to list the Group in three to five years' time	• EQT aims at further strengthening ADR-Haanpää as the best-managed Nordic transportation company
Appelberg Publishing Group	• We can now live up to our clients' needs of integrating communication, internally as well as externally, with a broader combined offer.	n.a.
Brandtex Group	• [We wanted] to find a buyer who can take the company forward and especially further develop the Brandtex Group's business. • We are convinced that EQT is the right owner for Brandtex Group and our employees	• [Brandtex Group is a] high quality [company] with substantial growth and development potential. • We… look forward to working closely with Brandtex Group's management and dedicated personnel to realize the Brandtex Group's full potential
Duni AB	• We are very pleased to see EQT's continued strong commitment to Duni. • We believe that their active ownership and strong industrial network will be an important contributor in our ambitions to build a world-class company	• We believe there are substantial opportunities for further growth
EDT AS	n.a.	• As owner Nordic Capital wants to add a solid financial base to EDT and complementary industrial competency that will contribute to a solid platform for future growth and strengthened market positions.
EET Nordic	• We have made the divestment as a first step towards a possible public listing. • As group we want to achieve advantages of scale and achieve better contracts with our supplier.	n.a.
Finn Power Lillbacka	• I am glad to hand over responsibility for the business I founded some 30 years ago to EQT. • I am assured that the company will benefit from EQT's competence, resources, and significant experience in developing companies.	• The company fits very well into EQT's strategy of acquiring high quality companies with significant growth potential. • The company's leading market position, strong global network and the well-recognized brand are additional investment attractions
Ilva AS	n.a.	• Advent International acquired ILVA with the intention of driving ILVA's European expansion.
Kultajousi	• The retail jewellery industry is highly fragmented, which offers us good opportunities for consolidating the industry firstly in Finland and later in other Nordic countries and the Baltics	• We will focus on improved comprehensive service • We aim to expand our network of stores in large cities and regional growth centers
Metallfabriken Ljunghäll	• We are very pleased to have CapMan as our new reliable business partner. • As a result of CapMan's investment, Ljunghäll will gain a partner with an international contact network, a strong financial position and thorough know-how of business development. • Together, these assets form a solid platform for Ljunghäll's future growth	• The company has an experienced management team, strong technical competence and high quality awareness • We are confident about the company's future development
Novasol	• Novasol's aim is to within 5 years become the first choice of partner for European owners of holiday residences. • We intend to reach this goal through internal growth, mergers and acquisitions.	• We are convinced that the company and its management are the right people to be frontrunners when it comes to consolidation of this part of the travel business
Plantasjen	• With the support of EQT, we believe that we can further develop the unique Plantasjen concept and drive the roll-out in the Nordic region	• Plantasjen, with its impressive track-record of profitable growth and its unique concept, fits well in EQT's strategy to invest in high-quality companies with significant growth and development potential
Terje Hoili	• The brands 'Europris' and 'Max 20' have experienced strong growth in the past and currently hold unique positions in the Norwegian market	• We believe that 'Europris' has the long term potential to increase the number of outlets to 200 and 'Max 20' to 100
Tornum	• For many years, the company was successfully run by previous owners Rune Grönberg, Mats Grönberg and Uno Broberg. When the time came for a generation change they decided to sell the company	• Under Volati's ownership, Tornum has established subsidiaries in Finland and Poland.
Tradex	• We are very pleased to have the support of EQT at this time in our development. • Given EQT's very successful engagement in this industry, we are confident that Tradex, under EQT's ownership, will strengthen its market position and opportunities as we continue to expand	• Tradex, with its impressive market position and superior solutions, has considerable development prospects. • EQT intends to invest in and build the Company's product offering and manufacturing capabilities further, with the aspiration to strengthen Tradex' market position.
Wiking Gulve	n.a.	• The capacity of the business will be expanded and new products are on their way.
Panorama AS	• I consider this to be an ideal and highly stimulating solution. • We will team up with a strong financial partner with significant retail and wholesale experience and an industrial approach	• We are impressed by the development in Panorama and are confident in the company's ability to continue its profitable growth. • We can assist in bringing Panorama to an even greater level of success including preparing the company for a Nordic expansion
Point International AB	• The company has a strong market position, which makes Point the leading supplier of electronical payment services on the nordic and baltic markets	• Nordic Capital will as owner add a solid financial base and complementary industrial knowledge, which gives Point a good platform for future growth.