

CARE TO SPECIALISE?

**A SWEDISH STUDY ON THE EFFECTS OF PRIVATE EQUITY
OWNERSHIP AND PRIVATE EQUITY SPECIALISATION
STRATEGIES ON COMPANY OPERATING PERFORMANCE**

MARTIN ARESKOUG ERIKSSON

NICK LARSSON

Bachelor Thesis

Stockholm School of Economics

2020



Care to Specialise? : A Swedish Study on the Effects of PE Ownership and PE Specialisation Strategies on Company Operating Performance

Abstract:

This thesis examines whether PE-backed companies experience a superior development in operating performance compared to non-PE-backed companies and how a relatively strong investment focus amongst PE firms, with respect to a particular industry or the buyout investment stage, affects investee operating performance. To conduct the analysis, we use a data sample of 122 Swedish PE investments over the period 2008–2015 and an equally large matched sample of non-PE-backed companies. We find that PE-backed companies grow faster than non-PE-backed companies, although they do not show signs of superior development in operating profitability. And while we find that buyout-stage specialisation amongst PE firms has a positive impact on operational efficiency in investees, we find no indications that a relatively strong industry focus can provide PE firms with a competitive advantage over their peers.

Keywords:

Buyouts, Private equity, Operating performance, Specialisation

Authors:

Martin Areskoug Eriksson (23921)

Nick Larsson (23969)

Tutors:

Ran Guo, Visiting Teacher, Department of Finance

Examiner:

Adrien d'Avernas, Assistant Professor, Department of Finance

Bachelor Thesis

Bachelor Program in Business and Economics

Stockholm School of Economics

© Martin Areskoug Eriksson and Nick Larsson, 2020

1. Introduction

The effects of private equity (henceforth PE) ownership on company operating performance have been an area of interest for finance scholars since the latter half of the 1980's. Jensen (1986) famously theorised that the substantial amounts of debt typically associated with PE buyouts may have a positive effect on the operating performance of investees, and a few years later Kaplan (1989b) became the first to demonstrate that companies acquired by PE firms in public-to-private deals experience improvements in operating performance. Since then, private equity has continuously been the subject of new research which in turn has helped further our understanding of the PE asset class and its effects. For instance, many have followed in the wake of Jensen and Kaplan by suggesting additional advantages of the PE organisational form such as knowledge sharing and agency benefits, and by empirically testing its effects on company performance (e.g. Harris, Siegel and Wright, 2005; Lichtenberg and Siegel, 1990; Muscarella and Vetsuypens, 1990; Palepu, 1990). When Kaplan and Strömberg (2009) summarised the research which had been published in the PE field up until that time, they could confirm the view that PE investments are associated with improvements in operating performance and productivity.

However, there is significant heterogeneity amongst PE firms, for instance in terms of resource endowments as evidenced by Castellaneta and Gottschalg (2016). Such heterogeneity can translate into differences in investment strategies, in turn impacting the target-selection process of PE firms and possibly the performance of their investees. To date, only a limited number of studies have sought to examine the effects of such heterogeneity on the operating performance of investees. Notable examples are Cressy, Munari and Malipiero (2007) and Le Nadant, Perdreau and Bruining (2018) who—inter alia—examine the potential ‘advantages-to-specialisation’ amongst PE firms by analysing the operating performance of companies acquired by PE firms with a *relatively* strong investment focus in their particular industry or in the buyout investment stage.

In this paper, we test the hypothesis that PE-backed companies ought to outperform comparable non-PE-backed companies post investment. Additionally, we examine focused investment strategies pertaining to relative industry and buyout-stage specialisation and hypothesise that post-investment operating performance will be improved by such specialisation strategies.

The corporate organisational form of private equity has evolved from its initial strategies from the 1980's of financial engineering, extensive cost-cutting and strategic clarity to gradually increasing involvement in the management of the acquired companies and, eventually, a transformation of their businesses (HBR, 2016). This shift in differentiated value creation can further be seen in the changing PE hiring practice. The industry traditionally used to hire people with expertise in financial engineering, such as people with backgrounds in investment banking or corporate development, but has over time increased hiring from management consulting and other professions with operational industry expertise (A.T. Kearney, 2014; Brigl et al., 2012; Kaplan and Strömberg, 2009).

In light of the above, we suspect that operational knowledge and expertise may play a more important role than before when PE firms seek to add value as financial sponsors, and that such knowledge and expertise often can be specific to a particular industry or investment stage. While Cressy, Munari and Malipiero (2007) and Le Nadant, Perdreau and Bruining (2018) have empirically tested the effects of industry and buyout-stage specialisation on the British and French markets respectively, their datasets do not reflect the new phase of private equity with vintages not stretching further than until 2007. Thus, we seek to contribute on this topic by analysing PE investments that took place over the period 2008–2015.

Additionally, we extend the study to the Swedish market. The Nordics in general, and Sweden in particular, demonstrate mature PE markets with some of the highest levels of PE investments as percentage of GDP in Europe today (SVCA¹, 2019). Between 2007–2015, Sweden ranked 2nd in PE investments as percentage of GDP in Europe (Invest Europe², 2016), illustrating how intertwined the private equity industry is with the Swedish economy.

Although Sweden is in the forefront of business-friendly legislation (Forbes, 2018), the country is also home to strong workers' unions, and overall (Unionen³, 2019), its public environment differs from those of the U.S. and the U.K. whose PE markets are the focal point for much of the previously published research in the field. The type of 1980's 'corporate raiders', stripping out assets and cutting costs, would most likely face more public scrutiny in Sweden. In theory, the Swedish business climate could therefore lend itself more susceptible to establishing operational enhancements by expertise and knowledge, making the region interesting to examine with respect to the value creation strategies of PE firms and the operating performance of PE-backed companies.

We test our hypotheses on a dataset of 122 investments (from 59 different PE firms) that take place in Sweden over the period 2008–2015, matched with a sampled control group of 122 non-PE-backed companies used to isolate PE firms' true impact on operating performance while controlling for factors such as market timing with respect to industry choice.

We run a series of regressions on the dataset for empirical analysis. We first use the full sample of PE-backed and non-PE-backed companies while including a PE dummy variable, which we find to have a significant positive impact on turnover growth. However, the effects of the PE dummy variable on operating profitability are mixed and lack significance in general. We run separate regressions to test the effects of *relative* industry and buyout-stage specialisation using dummy variables corresponding to the investment focuses of PE firms. In contrast to previous research (Cressy, Munari and Malipiero, 2007; Le Nadant, Perdreau and Bruining, 2018) we find no significant relationship between operating performance metrics and relative industry specialisation. On the other hand, unlike previous papers such as Cressy, Munari and Malipiero (2007), we find that specialisation in the buyout stage has a positive impact on the operating profitability of investees.

2. Theoretical and empirical foundation

Now follows a short review of the theoretical and empirical research which has been published on the topics of value creation in PE-backed companies and specialised investment strategies amongst PE firms.

¹ 'SVCA—The Swedish Private Equity and Venture Capital Association is the industry association for the private equity industry in Sweden'; <https://www.svca.se/>

² 'Invest Europe, formerly known as EVCA, is the association representing Europe's private equity, venture capital and infrastructure investment firms, as well as their investors'; <https://www.investeurope.eu/>

³ 'Unionen—Sweden's largest trade union on the private labour market and the largest white-collar trade union in the world'; <https://www.unionen.se/>

2.1. The ambition of PE firms

Academic research shows that PE firms are highly incentivised to increase the value of investees as their payoffs depend on their returns on investment, both directly and through the ability to raise subsequent funds (Chung et al., 2012; Metrick and Yasuda, 2010).

In accordance with this view, Gompers, Kaplan and Mukharlyamov (2016) find that PE investors themselves say that they place a heavy emphasis on adding value to their portfolio companies. In the same study, the preferred methods amongst PE firms for achieving this goal, in order of importance, were reported to be: increasing revenue, improving incentives and governance, facilitating a high-value exit or sale, making additional acquisitions, replacing management and reducing costs. The fact that increasing revenue was reported to be more important than reducing costs provides support to the view that the PE industry to some extent has shifted its focus away from the cost-cutting and financial-engineering strategies of the 1980's.

2.2. Value creation through financial engineering

Value creation through financial engineering is largely thought to stem from what Jensen (1986) describes as the 'control hypothesis' for debt creation; the theory states that free cash flows cause misalignment between the incentives of shareholders and the incentives of managers because the latter will opt to pursue negative NPV projects once all positive NPV projects have been carried out, in order to increase their own power. The large portion of debt typically incurred in buyouts is thought to reduce such agency costs of free cash flows by forcing managers to prioritise their most profitable projects and work harder to reduce the probability of bankruptcy. The 'control hypothesis' implies that companies with large free cash flows and low growth prospects ought to benefit the most from adding debt to their capital structures and vice versa.

Debt is also associated with other benefits, such as the tax deductibility of interest payments, as well as agency costs, such as the potential costs of bankruptcy, which implies that companies face a trade-off when determining their debt-to-equity ratio (Myers, 1977). Reduction of agency costs, such as the ones related to free cash flows, has no direct effect on the operating performance of companies but can facilitate and foster operational improvements (Berg and Gottschalg, 2005). The idea of increased leverage as a source of value creation in buyouts has received support from subsequent studies such as Gompers, Kaplan and Mukharlyamov (2016) and Kaplan (1989a).

2.3. Value creation through governance engineering

With regard to governance engineering, PE firms seek to align the incentives of managers with their own by providing them with significant equity stakes (Acharya et al., 2013; Gompers, Kaplan and Mukharlyamov, 2016; Kaplan, 1989b; Kaplan and Strömberg, 2009). For instance, when surveying 79 PE investors about their practices and methods, Gompers, Kaplan and Mukharlyamov (2016) find that PE investors allocate on average 17 per cent of company equity to management and employees. However, providing management with large equity stakes may also lead to risk aversion amongst managers since they keep a large fraction of their own wealth invested in the company (Holthausen and Larcker, 1996).

PE firms can also incentivise management to increase firm value through equity stakes and earn-outs based on their performance and the achievement of certain milestones (Jensen,

1989). When doing so, PE firms may also introduce stricter performance controls such as regular performance reports (Cressy, Munari and Malipiero, 2007).

Another practice regularly used by PE firms is to replace top management and structure smaller boards of directors (Gompers, Kaplan and Mukharlyamov, 2016). Guo et al. (2011) find that increases in operating cash flows in PE-backed companies are greater when the CEO is replaced soon after, or at the time of, the completion of the deal.

2.4. Value creation through operational engineering

Operational engineering can serve to foster growth, increase operational efficiency or both. The methods which PE firms have been found to employ in order to foster organic growth include: identification of new sales channels, development and launching of new products and international expansion (Acharya et al., 2013; Gadiesh and MacArthur, 2008). PE firms are also known to spur growth by supplying investees with add-on acquisitions (Kaplan and Strömberg, 2009).

To increase the operational efficiency of investees, PE firms can for instance initiate restructurings, increase capital productivity and cut costs (Berg and Gottschalg, 2005; Gompers, Kaplan and Mukharlyamov, 2016).

A large body of research has found that investees under PE ownership achieve higher growth, profitability and operational efficiency than comparable non-PE-backed companies. For instance, Scellato and Ughetto (2013) and Muscarella and Vetsuypens (1990) find that PE-backed companies exhibit higher growth rates than comparable non-PE-backed companies while Acharya et al. (2013), Bergström et al. (2007), Cressy, Munari and Malipiero (2007) and Smith (1990) find that PE ownership has a significant positive effect on operational efficiency.

Nevertheless, a few studies fail to find any significant positive effects of PE ownership on the operating profitability of investees (e.g. Desbrières and Schatt, 2002; Scellato and Ughetto, 2013; Vinten, 2007). One notable example is Vinten (2007) who, when using a dataset of Danish PE buyouts over the period 1991–2004, finds that PE ownership has a negative impact on the operational efficiency of investees. Another example is Desbrières and Schatt (2002) who find that French companies acquired in buyouts over the period 1988–1994, became less profitable compared to industry peers post buyout. Interestingly, Vinten (2007) and Desbrières and Schatt (2002) both suggest that their inability to find any positive effects of PE ownership on investee operating performance could be due to relatively high levels of pre-buyout ownership concentration in their respective datasets (for instance due to a large presence of family-owned firms).

2.5. Specialised investment strategies

PE firms differ in size, resources, capabilities, experience, reputation and other attributes (Acharya et al., 2013; Scellato and Ughetto, 2013). Investment focus is no exception to this rule. A PE firm can narrow its investment focus in several different dimensions, for instance by focusing on certain industries, geographies or stages of investment (Cressy, Munari and Malipiero, 2007; Amit et al., 1998; De Clerq et al., 2001). Recent industry reports also show the prevalence of such specialisation (EVCA⁴, 2013).

⁴ ‘Invest Europe, formerly known as EVCA, is the association representing Europe’s private equity, venture capital and infrastructure investment firms, as well as their investors’; <https://www.investeurope.eu/>

Researchers theorise that PE firms with a clear investment focus in a particular industry or stage are more likely to find investment opportunities in that industry or stage, and that when opportunities are identified, specialised PE firms can leverage their expertise and experience to better evaluate them and understand whether and how it would be possible for them to add value (Gompers, Kaplan and Mukharlyamov, 2016; Le Nadant, Perdreau and Bruining, 2018; Meuleman et al., 2009).

The empirical data analysis performed by Cressy, Munari and Malipiero (2007) shows that investees of industry-specialised PE firms exhibit higher levels of operating profitability than other PE-backed companies. Le Nadant, Perdreau and Bruining (2018) second those findings, and add to the discussion that the advantages to industry specialisation are strengthened in situations where value creation is especially difficult to reach, e.g. in companies that are low- or high-performing prior to the buyout. On the other hand, Cressy, Munari and Malipiero (2007) are unable to find evidence supporting the theory that companies backed by PE firms specialised in the buyout stage of investing exhibit superior operating performance compared to other PE-backed companies.

Additional advantages to specialisation mainly pertain to how PE firms can leverage an in-depth understanding of the complexities of a particular industry, investment stage or other area in order to reduce uncertainty and information asymmetries; a prime example being how industry- or investment stage-specific information can be used to better determine a company's 'private' probability of success (Amit et al., 1998; De Clerq et al., 2001; Eisenhardt, 1989).

As is evident from portfolio theory, the potential 'advantages-to-specialisation' for PE firms must be measured against the loss of risk-reducing effects from portfolio diversification (Markowitz, 1952; Sharpe, 1963; Sharpe, 1964).

2.6. Screening versus monitoring

None of the previously-mentioned studies which find that PE ownership has a positive impact on the operating performance of investees have—to our knowledge—sought to identify the extent to which such results are due to: (a) an ability of PE firms to identify companies which will enter into a phase of above-average operating performance, even without a PE owner, or (b) the PE firms' ability to design and implement value-adding initiatives post buyout.

Acharya et al. (2013) argue for a causal impact of PE ownership on operating performance, the reason being that PE firms would require a systematic informational advantage to be able to systematically identify companies en route to abnormal operating performance, something they regard as unlikely in a competitive buyout market.

On the other hand, Cressy, Munari and Malipiero (2007) and Le Nadant, Perdreau and Bruining (2018) find that skill in investment selection still is likely to play a role in the development of operating performance in PE-backed companies. However, their results also indicate that when seeking to understand the effects of heterogeneity amongst PE firms on investees, any attempts at a selection-versus-value-add dichotomy may be misleading or irrelevant. The reason being that such heterogeneity is likely to affect both the ability of PE firms to identify and evaluate targets and their ability to add value to portfolio companies after investment.

When addressing this question in a VC (venture capital) context, Chemmanur et al. (2011) find evidence of both a screening and a monitoring role for VC firms in improving firm efficiency.

3. Hypotheses

Based on the theoretical and empirical foundation provided in the previous section, we present a set of hypotheses relating to the *relative* specialisation of PE firms as investment strategies and the PE organisational form itself.

3.1. Operating performance of PE-backed companies

When taking into account the clear-cut incentives of PE firms, the largely positive empirical results and the strong theoretical foundation presented in the previous section, we find it probable that the development in operating performance of PE-backed companies is superior to that of comparable non-PE-backed companies.

In this paper, we test this hypothesis by comparing the development in operating performance—measured by comparing the performance three years after the investment to the performance one year prior to the investment—of PE-backed companies to that of a matched sample of non-PE-backed companies. Hence, we present our first hypothesis:

Hypothesis 1: The development in operating performance of PE-backed companies is superior to that of comparable non-PE-backed companies

3.2. Impact of relative specialisation on operating performance

We also seek to study the effects of relative specialisation—in different industries and in the buyout investment stage—amongst PE firms on the operating performance of their portfolio companies. Where syndicated deals are concerned, we focus on the relative specialisation of the lead PE firm, which tends to manage the investment and exert the greatest amount of influence according to previous research (Wright and Lockett, 2003).

Considering the suggested ability of PE firms to provide value-adding initiatives and monitoring capabilities, and to find and evaluate investment opportunities related to a particular industry or investment stage (Gompers, Kaplan and Mukharlyamov, 2016), we find it probable that the development in operating performance of companies backed by a relatively specialised PE firm is superior to that of companies backed by a non-specialised PE firm. Thus, we formulate two additional hypotheses:

Hypothesis 2a: The development in operating performance of companies backed by relatively industry-specialised PE firms is superior to that of companies backed by non-industry-specialised PE firms

Hypothesis 2b: The development in operating performance of companies backed by relatively buyout-specialised PE firms is superior to that of companies backed by non-buyout-specialised PE firms

4. Methodology

4.1. Data collection

In order to test the research hypotheses, we assemble an original dataset of PE-backed investments completed in Sweden over the period 2008–2015, as well as a matched sample of non-PE-backed control companies over the same time period. 2015 is the most recent year included in the dataset as each company requires three years of post-investment accounting information and the annual report from 2018 is, at present moment, usually the most recently published amongst Swedish companies. A similar time frame is used in several previous buyout studies such as Cressy, Munari and Malipiero (2007) and Le Nadant, Perdreau and Bruining (2018).

4.1.1. Dataset of PE-backed companies

We compile a list of PE-backed companies by cross-checking the databases of Mergermarket⁵ and Eikon⁶—both offering detailed records of the Swedish buyout market. Initially, we include all recorded investments made by PE firms in Swedish companies over the chosen time period. While it is possible that not all investments are covered by the databases, we have no reason to believe that there is any systematic exclusion.

We then make the following adjustments and modifications to improve the quality and coherency of the dataset: (1) we remove companies whose published financial reports do not fully cover the time span needed to calculate the operating metrics used in this study, (2) we exclude any minority-stake investments as an investor's ability to influence the operational and financial strategies of an investee can be significantly limited when it only holds a minority stake, (3) we remove secondary buyouts in order to exclude any abnormal performance effects from previously supporting PE firms, (4) we exclude companies that were divested in the first three years after the investment since the operating metrics we use measure the performance three years after investment, and we want to exclude any performance effects from subsequent owners for comparability, (5) we remove companies operating primarily within the financial sector as their operating performance cannot be meaningfully evaluated based on conventional accounting metrics and (6) we identify the lead investor of syndicated investments as either (a) the PE firm that at the date of the investment was explicitly mentioned as the lead investor, or (b) the firm that held the largest equity stake in the buyout. After making the above-mentioned adjustments, we are left with a final sample of 122 investments backed by 59 different PE firms.

We finally collect the required accounting data for each company from its financial statements, made available through the Retriever database⁷. Additionally, we make the adjustments necessary to ensure that all figures for turnover and operating profit correspond to an appropriate twelve-month period, thereby avoiding the possibly distortive effects on operating metrics arising when a company temporarily extends or shortens its fiscal year.

⁵ Mergermarket is a specialist in M&A intelligence, <https://www.mergermarket.com/>

⁶ Eikon is a digital tool for monitoring and analysis of financial information, <https://eikon.thomsonreuters.com/index.html>

⁷ Retriever is a database containing comprehensive information on Swedish companies, <https://www.retriever.se/>

4.1.2. Matched sample

To compare the operating performance of PE-backed companies to that of non-PE-backed companies, while controlling for factors such as market timing with respect to industry choice, we assemble a matched sample to use as a control group. In line with previous studies (e.g. Cressy, Munari and Malipiero, 2007), we construct the control group by matching each PE-backed company in the dataset with a corresponding non-PE-backed company. We use the following criteria to screen for suitable control companies:

1. The company is based in Sweden
2. The company has never been owned by a PE firm prior to the investment, nor has it been acquired by such an investor in the first three years following the investment
3. The company has the same SNI code⁸ as its corresponding PE-backed company
4. Accounting data for the company is available from (t-1) to (t+3), with (t+0) being the year when the corresponding PE-backed company is acquired by a PE firm

Amongst the companies satisfying the aforementioned criteria, we then choose the one which most closely resembles the PE-backed company in terms of turnover level in the investment year.

When using the SNI code to determine the main industry of a company in the dataset, we are at times required to use the code of its main operating subsidiary instead. We do this to account for the fact that some of the companies in the dataset primarily serve as holding companies and are therefore given SNI codes corresponding to ‘Activities performed by headquarters’ or ‘Holding activities’, when they are in fact representing a company, or a group of companies, operating in a distinct industry. This approach is similar to the one taken by Bergström et al. (2007) who encounter a similar issue.

While Barber and Lyon (1996) argue that control companies should also be matched by pre-investment performance to reduce the potential effects of mean reversion, we follow the reasoning of Bergström et al. (2007) which states that using a large sample should be enough to neutralise such effects.

As for the PE-backed companies, we collect the accounting data for the control companies manually from their financial statements which we access through the Retriever database.

⁸ Svensk Näringslivsindelning (SNI) is the Swedish classification system under the European framework for ‘Statistical classification of economic activities in the European Community’, known as Nomenclature Générale des Activités Économiques dans l’Union Européenne (NACE). The Retriever database reports the SNI codes of companies included in the database

4.2. Variables

A list of the variables used in the empirical analysis, along with their definitions, is provided in Table 1 below. Explanations for the chosen variables then follow.

Table 1
Definitions of variables used in the empirical analysis

Dependent variables

Turnover growth. Geometric mean growth of sales from (t-1) to (t+3).

Change in EBITDA margin. Calculated as the difference between EBITDA margin at (t+3) and EBITDA margin at (t-1).

Change in EBIT margin. Calculated as the difference between EBIT margin at (t+3) and EBIT margin at (t-1).

Change in ROA. Calculated as the difference between ROA at (t+3) and ROA at (t-1).

Theoretical independent variables

Private equity. A dummy variable taking the value 1 for PE-backed companies and 0 elsewhere.

PE industry-specialised. A dummy variable taking the value 1 for companies acquired by a PE firm specialised in their industry and 0 elsewhere.

PE buyout-specialised. A dummy variable taking the value 1 when the PE firm is specialised in the buyout stage and 0 elsewhere.

Control variables

(log) Total assets (t-1). A measure of initial company size given by the logarithmic of the value of total assets at (t-1).

EBITDA margin (t-1). A measure of initial company profitability given by the EBITDA margin at (t-1).

ROA (t-1). A measure of initial company profitability given by the ROA at (t-1).

Gearing. The company's debt-to-equity ratio defined as (Long-term liabilities + Short-term loans)/Shareholders' funds in the buyout year.

Company age. The age of the company in the year of the buyout.

PE independent. A dummy variable taking the value 1 when the PE firm is independent and 0 elsewhere.

Syndicated. A dummy variable taking the value 1 for syndicated deals and 0 elsewhere.

PE experience. Total number of investments (number of companies) of the PE firm until the end of 2015.

(log) PE size. The logarithmic of the value of the PE firm's total funds active in the period 2008–2015.

(log) Total PE investments. The logarithmic of the total value of PE investments in Sweden in the year of the investment.

Crisis. A dummy variable taking the value 1 for investments occurring in 2008 or 2009 and 0 elsewhere.

4.2.1. Dependent variables

In order to facilitate comparisons between our results and previous research we use the same metrics for measuring operating performance as some of the most cited papers published in the field of PE buyouts (e.g. Barber and Lyon, 1996; Bergström et al., 2007; Kaplan, 1989b; Wright et al., 1996). In accordance with previous research, we therefore measure the growth of a company by its annually compounded turnover growth rate (CAGR) and its development in operational efficiency by the change in EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortisation) and EBIT (Earnings Before Interest and Taxes) margins, as well as the change in ROA (Return on Assets), which it achieves over a given period. Adding further credibility to the use of these metrics, is the fact that they reflect the most important sources of value creation as reported by PE investors (Gompers, Kaplan and Mukharlyamov, 2016). As noted by e.g. Kaplan (1989b), the practice of scaling a company's operating profit by its

turnover or asset base ensures that the metrics for operational efficiency are not distorted by mergers and acquisitions.

In line with previous papers such as Kaplan (1989b) and Scellato and Ughetto (2013), we adopt an event window stretching from one year prior to the investment (t-1) to the third year after the investment (t+3) when measuring a company's growth rate and operational efficiency. Formulaic definitions of the operating metrics are presented in the appendix.

4.2.2. Theoretical independent variables

In order to isolate the effects of the PE organisational form on company operating performance we create a PE dummy variable which takes the value 1 for PE-backed companies and 0 elsewhere.

We calculate the degree of specialisation of a PE firm—by industry or by stage—using the same Index of Competitive Advantage (ICA) as Cressy, Munari and Malipiero (2007), who in turn adapted it from the literature on international trade and technological specialisation (Archibugi and Pianta, 1994). We define the Index of Competitive Advantage as:

$$ICA_{ij} = (C_{ij} / C_j) / (C_i / C_{..})$$

Where a dot indicates summation over the relevant subscript and:

- C_{ij} is the number of portfolio companies of PE firm i in industry or stage j
- C_j is the total number of companies invested in, in industry or stage j by all PE firms
- C_i is the total number of portfolio companies of PE firm i
- $C_{..}$ is the total number of companies invested in by all PE firms

The numerator (C_{ij} / C_j) represents PE firm i 's share of all investments in industry or stage j , and the denominator ($C_i / C_{..}$) represents PE firm i 's share of all investments made by the PE firms in the dataset. The ICA_{ij} therefore measures PE firm i 's investment focus in industry or stage j *relative to that of its PE competitors* (Cressy, Munari and Malipiero, 2007). Thus, an ICA_{ij} greater than one indicates that PE firm i is relatively specialised in industry or stage j and vice versa.

In order to calculate the ICA's of the PE firms represented in the dataset, we reconstruct their portfolios to include but all companies held at some point over the period 2008–2015. Consequently, we exclude companies acquired after the ending of the time period from the portfolios, as well as companies divested prior to the beginning of said time period, for the purpose of reflecting the investment focuses of the PE firms *during* the period.

To compile an exhaustive list of all of the PE firms' investments matching the above-mentioned time frame, we cross-check the Mergermarket and Eikon databases as well as the PE firms' websites.

We then divide all companies in the reconstructed portfolios—as well as the companies in the original dataset—into different industries. We do this using the industry classifications given to each company in the Mergermarket database. However, as Mergermarket employs an industry-classification system which we consider to be too nuanced for our purposes we merge certain industry categories which in practice are highly related, and between which skills and knowledge accumulated in one category are likely to be applicable in the other. In the event that a company is missing from the Mergermarket database, we manually assign it to the

Mergermarket industry, or industries, which we find most suitable.⁹ A list of the industry categories used, as well as the original Mergermarket categories, is presented in the appendix.

In a similar fashion, we classify each investment in the reconstructed portfolios according to its investment stage. By analysing deal structure and deal characteristics we divide investments into three different investment-stage categories which we label: Venture capital, Growth stage and Buyout stage.¹⁰ The Buyout stage category corresponds to typical buyout deal structures and is the category for which we seek to study the effects of a relatively strong investment focus. A description of the investment-stage categories and their corresponding deal characteristics is included in the appendix.

With the portfolios reconstructed, we compute the ICA of each PE firm in the dataset—with respect to each industry and each investment stage—which we then use to generate two dummy variables: for each company in the dataset, the PE industry-specialised variable takes the value of 1 when the company was acquired by a PE firm specialised in its industry (i.e. with an ICA equal to, or greater than, 1 for that industry), and 0 in all other cases. Similarly, the PE buyout-specialised variable takes the value 1 when the company was acquired by a PE firm specialised in the buyout stage and 0 elsewhere.

4.2.3. Control variables

We derive control variables from the PE literature. Following the example of Cressy, Munari and Malipiero (2007), we control for the profitability of companies at (t-1) since initial values can be important predictors of future developments in profitability, thereby highlighting the potential importance of skill in investment selection.

Similarly, we control for the size of companies at (t-1). Previous research shows that differences in company size entail differences in the governance and financial structure of buyouts (Gompers, Kaplan and Mukharlyamov, 2016; Wright et al., 1994). Also, smaller companies may be more receptive to structural changes and be able to respond faster to disruptive innovation compared to larger companies due to less formalisation and organisational inertia (Turner, 1983). Therefore, PE firms may be more successful in implementing key strategic changes in smaller companies. Additionally, Gompers, Kaplan and Mukharlyamov (2016) suggest that smaller investees may offer more room for increasing revenues.

We include a company's debt-to-equity ratio as a control variable to account for the 'control hypothesis' of debt, first noted by Jensen (1986). The hypothesis states that debt imposes significant financial discipline on company management, thereby becoming an important driver for efficiency gains.

We also include company age as a control variable as younger investee companies tend to grow faster than older ones while they are also more prone to fail (Cressy, Munari and Malipiero, 2007). We calculate company age as the difference between the year of investment and the year of company incorporation presented in the Retriever database.

The degree of focus on maximising returns can differ between PE firms. For instance, PE firms under the control of public-sector organisations may pursue non-wealth-maximising

⁹ In practice, this is not a complex task as the vast majority of companies in the dataset and in the reconstructed PE portfolios are represented in Mergermarket, and when they are not we can oftentimes see what classifications Mergermarket has given to comparable competitors in the database

¹⁰ To classify investments, we apply the methodology used by Invest Europe, formerly known as EVCA, in their annual Private Equity publications, e.g. 'European Private Equity Activity', 2018

goals such as employment growth or territorial development (Cumming and Macintosh, 2006; Lerner, 1999). Additionally, PE affiliates of financial institutions face less pressure to maximise returns than independent PE firms since they do not need to raise funding from third parties (Abbot and Hay, 1995). To control for such differences in objectives, we include a dummy variable which takes the value 1 when a PE firm is independent and 0 elsewhere.

Kaplan and Schoar (2005) find a positive relationship between fund size and fund performance, suggesting that larger PE firms may benefit from economies of scale by being able to raise larger funds. We therefore include a control variable representing the logarithmic of the total value of funds of each PE firm in the dataset that was active in the period 2008–2015.¹¹ We gather the necessary fund data using the Palico private equity marketplace and the websites of the PE firms.¹²

As Kaplan and Schoar (2005) also find a positive relationship between fund performance and the amount of previous experience of PE firms, we acknowledge that differences in the amount of prior experience amongst PE firms may in turn lead to differences in their ability to select and add value to companies. We therefore include a control variable which represents the total number of investments (number of companies) of a PE firm until the end of 2015, following the example of Cressy, Munari and Malipiero (2007). We count the number of investments of each PE firm in the dataset by cross-checking the Mergermarket and Eikon databases with the websites of the PE firms.

Lerner (1994) suggests that syndication in VC investments improves the investment-selection ability of the investors, and Brander et al. (2002) find that syndicated VC investments on average generate higher rates of return than non-syndicated VC investments. Therefore, to control for any potential effects of syndication on the operating performance of PE-backed companies in our dataset, we introduce a dummy variable taking the value 1 for syndicated investments and 0 elsewhere.

To account for the ‘money-chasing-deals’ phenomenon (Gompers and Lerner, 2000), whereby inflows of capital into PE funds increase competition for a limited number of investment opportunities—in turn influencing their returns—we include the logarithmic of the total value of PE investments in Sweden in the investment year as a control variable. For this we use data provided by Invest Europe.¹³

Lastly, we include a dummy variable taking the value 1 for investments occurring in 2008 or 2009 and 0 elsewhere to capture any effects of the financial crisis on the operating performance of companies in the dataset.

¹¹ In the event that an investor does not use a fund structure we use the value of total assets under management at the end of the period (2015).

¹² Palico is a digital marketplace for secondary and fundraising trading, <https://www.palico.com/>

¹³ See publication ‘European Private Equity Activity Data 2007-2016’ by Invest Europe, formerly known as EVCA. Data accessed through the Statista database: <https://www-statista-com.ez.hhs.se/statistics/428144/total-investment-private-equity-markets-sweden/>

5. Analyses and results

5.1. Descriptive statistics

Table 2

Descriptive statistics for PE-backed and non-PE-backed companies

Variable	PE-backed companies						Control companies					
	Observations	Mean	Median	St. dev	Min	Max	Observations	Mean	Median	St. dev	Min	Max
Turnover growth	122	10.427	7.756	15.487	-29.066	72.304	122	6.605	5.558	9.139	-11.736	48.921
Change in EBITDA margin	122	1.077	-0.001	12.546	-29.418	72.261	122	-0.351	0.130	9.156	-74.791	26.721
Change in EBIT margin	122	-3.013	-2.253	14.834	-67.163	57.053	122	0.165	-0.531	9.601	-51.237	50.136
Change in ROA	122	-7.087	-8.589	23.720	-65.078	134.052	122	1.341	-0.843	18.963	-52.002	96.174
Private equity	122	1.000	1.000	0.000	1.000	1.000	122	0.000	0.000	0.000	0.000	0.000
PE industry-specialised	122	0.590	1.000	0.494	0.000	1.000	122	0.000	0.000	0.000	0.000	0.000
PE buyout-specialised	122	0.639	1.000	0.482	0.000	1.000	122	0.000	0.000	0.000	0.000	0.000
(log) Total assets (t-1)	122	5.018	4.989	0.539	3.363	6.500	122	4.862	4.815	0.473	3.513	6.149
EBITDA margin (t-1)	122	10.419	10.061	12.576	-33.717	70.529	122	8.098	6.791	10.091	-28.170	64.161
ROA (t-1)	122	16.264	15.687	19.561	-67.593	63.045	122	11.455	11.190	17.406	-93.475	71.236
Gearing	122	101.189	10.935	220.888	-41.257	1 108.538	122	171.625	0.716	1 092.978	-185.993	11 952.191
Company age	122	25.607	20.500	18.037	4.000	92.000	122	29.123	23.000	20.864	3.000	118.000
PE independent	122	0.951	1.000	0.217	0.000	1.000	122	0.000	0.000	0.000	0.000	0.000
Syndicated	122	0.066	0.000	0.249	0.000	1.000	122	0.000	0.000	0.000	0.000	0.000
PE experience	122	48.648	27.500	67.325	2.000	482.000	122	0.000	0.000	0.000	0.000	0.000
(log) PE size	122	3.757	3.842	0.773	1.477	5.367	122	0.000	0.000	0.000	0.000	0.000
(log) Total PE investments	122	3.332	3.300	0.112	3.124	3.525	122	3.332	3.300	0.112	3.124	3.525
Crisis	122	0.197	0.000	0.399	0.000	1.000	122	0.197	0.000	0.399	0.000	1.000

The table presents descriptive statistics for 122 PE-backed companies and 122 matched non-PE-backed companies with financial data over the period 2008-2015.

Table 2 presents descriptive statistics for the samples of PE-backed and non-PE-backed companies respectively. The PE-backed companies in the dataset experience an average annual turnover growth of 10.43% compared to 6.61% for the non-PE-backed companies. Similarly, the PE-backed companies on average achieve a positive change in EBITDA margin of 1.08 percentage points while the control companies experience a slight decrease of 0.35 percentage points. On the other hand, the non-PE-backed companies on average experience a change in EBIT margin and ROA of 0.17 and 1.34 percentage points respectively, whereas the corresponding changes for PE-backed companies amount to -3.01 and -7.09 percentage points.

The PE-backed companies are on average slightly larger than their non-PE-backed counterparts at (t-1), as is evident from their average logarithmic asset values of 5.02 and 4.86 respectively. The PE-backed companies also demonstrate slightly higher levels of profitability at (t-1) with the average EBITDA margin and ROA being 10.42% and 16.26% respectively, compared to 8.10% and 11.46% for the matched sample. Meanwhile, the non-PE-backed companies are on average somewhat older than the PE-backed companies with an average age of 29 years in the investment year versus 26 years for the PE-backed companies.

Examining the sample of the PE-backed companies, we note that 59% were acquired by a PE firm with a relatively strong investment focus in their particular industry and 64% were acquired by a PE firm relatively specialised in the buyout stage. Amongst the PE-backed companies, 95% were acquired by an independent (i.e. non-affiliated) PE firm.

Table 3

Descriptive statistics for PE-backed companies divided into subgroups based on the investment focus of the PE firm

Subgroup	Variable	Observations	Mean	Median	St. dev	Min	Max
(1) PE firm specialised in company industry and buyout stage	Turnover growth	50	11.122	8.730	13.237	-29.066	45.539
	Change in EBITDA margin	50	2.349	1.113	12.792	-29.418	72.261
	Change in EBIT margin	50	-1.542	-2.775	12.001	-44.406	40.889
	Change in ROA	50	-6.482	-5.830	17.116	-43.388	28.881
(2) PE firm specialised in buyout stage but not company industry	Turnover growth	28	9.304	7.245	15.058	-18.400	40.657
	Change in EBITDA margin	28	1.545	0.965	13.348	-21.983	59.354
	Change in EBIT margin	28	-1.142	-0.134	12.754	-37.873	24.357
	Change in ROA	28	-0.341	-6.066	30.649	-48.908	134.052
(3) PE firm specialised in company industry but not buyout stage	Turnover growth	22	13.510	7.746	20.761	-10.802	72.304
	Change in EBITDA margin	22	-0.896	-1.576	12.408	-21.442	28.286
	Change in EBIT margin	22	-4.652	-3.633	14.245	-29.615	25.720
	Change in ROA	22	-11.310	-9.096	21.041	-65.078	24.396
(4) PE firm specialised in neither company industry nor buyout stage	Turnover growth	22	7.195	6.955	15.061	-28.700	52.501
	Change in EBITDA margin	22	-0.433	-1.060	11.469	-14.910	27.704
	Change in EBIT margin	22	-7.098	-6.459	22.126	-67.163	57.053
	Change in ROA	22	-12.827	-16.334	28.162	-59.075	74.265

The table presents descriptive statistics for 122 PE-backed companies divided into four subgroups with financial data over the period 2008-2015.

Table 3 presents operating performance statistics for the sample of PE-backed companies divided into four subgroups based on whether the acquiring PE firm is relatively specialised in the industry of the company and in the buyout stage. In total, 50 (41%) of the PE-backed companies were acquired by a PE firm with a relatively strong investment focus in their particular industry as well as in the buyout stage (subgroup 1). In comparison, 28 (23%) of the PE-backed companies were acquired by a PE firm which is relatively specialised in the buyout stage but not in its particular industry (subgroup 2). The number of companies acquired by PE firms specialised in their particular industry but not in the buyout stage, and the number of companies acquired by PE firms specialised in neither the buyout stage nor the company industry, is 22 (18%) in both cases (subgroups 3 and 4).

The results in Table 3 indicate that companies backed by PE firms which are neither specialised in the buyout stage nor in their particular industry, in general, perform worse than the other subgroups as the results of the former are unambiguously worse with respect to turnover growth, change in EBIT margin and change in ROA. We also note that companies acquired by PE firms which are relatively specialised in the buyout stage appear to experience relatively favourable developments in operating profitability, judging from the fact that the profitability metrics of subgroups 1 and 2 are superior to those of subgroups 3 and 4. Similarly, Table 3 indicates that companies acquired by PE firms which are relatively specialised in their particular industry in general experience relatively high levels of turnover growth as subgroups 1 and 3 exhibit higher average and median levels of turnover growth than subgroups 2 and 4.

5.2. Bivariate comparisons

Table 4

Post-investment performance of PE-backed companies versus non-PE-backed companies

	PE-backed	Non-PE-backed	<i>T</i> -test	<i>p</i> -value (one tail)
Turnover growth (%)	10.427	6.605	2.766	<0.01
Change in EBITDA margin (p.p.)	1.077	-0.351	1.017	>0.1
Change in EBIT margin (p.p.)	-3.013	0.165	-2.080	<0.05
Change in ROA (p.p.)	-7.087	1.341	-3.167	<0.01

Mean values by group. We use a *T*-test to compare the mean values in turnover growth and operating profitability of the PE-backed companies and non-PE-backed companies in the dataset. The sample size is 122 for both groups across all metrics above.

To compare the development in operating performance of the PE-backed companies to that of the non-PE-backed companies (Hypothesis 1) we apply a *t*-test to compare the means of the two samples across operating performance metrics (Table 4).

With respect to turnover growth, we find a significant difference (at the 1% level) between the mean values of the groups, the average growth rate for the PE-backed companies being 10.43% compared to 6.61% for the non-PE-backed companies. Similarly, the PE-backed companies demonstrate a higher average change in EBITDA margin than the non-PE-backed-companies (1.08 percentage points versus -0.351 percentage points), although this difference is not statistically significant. However, the differences in average values for change in EBIT margin and change in ROA between the two groups are significant at the 5% and 1% levels respectively. While the PE-backed companies on average experience a decrease in their EBIT margins of 3.01 percentage points, the corresponding average increase for the non-PE-backed companies is 0.17 percentage points. And while the PE-backed companies on average demonstrate a negative change in ROA of 7.09 percentage points, the average increase in ROA for the non-PE-backed companies is 1.34 percentage points.

The results regarding turnover growth and change in EBITDA margin are consistent with Hypothesis 1. Hence, they are also in line with previously-published theoretical and empirical research which suggests that the PE organisational form has positive effects on operating performance (although the results regarding change in EBITDA margin are not statistically significant). However, the results regarding change in EBIT margin and change in ROA starkly contrast Hypothesis 1 as they indicate that PE-backed companies experience a less favourable development with respect to these metrics compared to non-PE-backed companies.

Table 5

Comparison of post-investment performance between non-PE-backed companies and companies backed by specialised PE firms and non-specialised PE firms

Panel A: Specialisation by industry	Backed by specialised PE firm	Backed by non-specialised PE firm	Non-PE-backed	F-test
Turnover growth (%)	11.852	8.376	6.605	3.877**
Change in EBITDA margin (p.p.)	1.357	0.674	-0.351	0.571
Change in EBIT margin (p.p.)	-2.492	-3.762	0.165	2.120
Change in ROA (p.p.)	-7.957	-5.835	1.341	4.829***
Panel B: Specialisation in the buyout stage	Backed by specialised PE firm	Backed by non-specialised PE firm	Non-PE-backed	F-test
Turnover growth (%)	10.470	10.353	6.605	2.745*
Change in EBITDA margin (p.p.)	2.060	-0.665	-0.351	1.386
Change in EBIT margin (p.p.)	-1.398	-5.875	0.165	3.821**
Change in ROA (p.p.)	-4.278	-12.068	1.341	8.040***

Mean values by group. We compare the average values for turnover growth and operating profitability across groups using ANOVA. In panel A we compare companies backed by specialised and non-specialised PE firms in terms of industry, as well as non-PE-backed companies. In panel B we compare companies backed by buyout-specialised PE firms and non-buyout-specialised PE firms, as well as non-PE backed companies. The sample size for companies backed by specialised PE firms is 72 in panel A and 78 in panel B. The sample size for companies backed by non-specialised PE firms is 50 in panel A and 44 in panel B. The sample of non-PE-backed companies includes 122 companies in both panel A and panel B. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In order to test hypotheses 2a and 2b we divide the PE-backed companies according to whether they are backed by a relatively specialised or non-specialised PE firm and use ANOVA to compare the average values across the groups (Table 5). The F -test derived from the ANOVA is used to detect significant differences in the vectors of the means.

In Panel A (Table 5), we find that companies backed by industry-specialised PE firms on average grow faster than those backed by non-industry-specialised PE firms, which in turn grow faster than non-PE-backed firms, the three groups exhibiting average turnover growth rates of 11.85%, 8.38% and 6.61% respectively with differences being significant at the 5% level (Table 5, panel A). This is consistent with hypotheses 1 and 2a.

Similarly, companies backed by industry-specialised PE firms demonstrate a greater average improvement in EBITDA margin, and a less severe average decrease in EBIT margin, than companies backed by non-industry-specialised PE firms, though differences are not statistically significant.

In contrast, we also find that companies backed by industry-specialised PE firms experience a considerable decrease in ROA of 7.96 percentage points while companies backed

by non-industry-specialised PE firms experience a slightly less severe decrease of 5.84 percentage points. In comparison, the non-PE-backed companies on average achieve an improvement in ROA of 1.34 percentage points, the differences being significant at the 1% level. These results regarding change in ROA are neither consistent with Hypothesis 1 nor Hypothesis 2a.

In Panel B (Table 5), we find that companies backed by a PE firm which is relatively specialised in the buyout stage achieve an average turnover growth rate of 10.47% compared to 10.35% for companies backed by non-specialised PE firms and 6.61% for non-PE-backed companies, the differences being significant at the 10% level. These results are in line with Hypothesis 1 but not with Hypothesis 2b.

We also find that companies backed by a buyout-specialised PE firm on average experience an improvement in EBITDA margin of 2.06 percentage points, the corresponding change for companies backed by a non-specialised PE firm is a decrease of 0.67 percentage points. Non-PE backed companies on average experience an EBITDA-margin decrease of 0.35 percentage points, though differences between the groups are not statistically significant.

Regarding change in EBIT margin, we find that companies backed by buyout-specialised and non-specialised PE firms experience average decreases of 1.40 and 5.88 percentage points respectively, compared to the average improvement of 0.17 percentage points demonstrated by the non-PE-backed companies. The differences between the groups are significant at the 5% level and in line with Hypothesis 2b but not with Hypothesis 1.

Also in accordance with Hypothesis 2b, we find that companies backed by buyout-specialised PE firms on average experience a decrease in ROA of 4.28 percentage points, whereas companies backed by non-specialised PE firms experience an average decrease of 12.07 percentage points. The non-PE-backed companies on average achieve an improvement in ROA of 1.34 percentage points, the differences in average values between the groups being significant at the 1% level.

5.3. Regressions

5.3.1. Regression models

In order to test our hypotheses, we run a series of robust regressions. The regressions have the following specifications:

Regression model 1

$$\Delta OP = \alpha + \beta_1 * Private\ equity + \beta_2 * (\log) Total\ assets\ (t-1) + \beta_3 * EBITDA\ margin\ (t-1) + \beta_4 * ROA\ (t-1) + \beta_5 * Gearing + \beta_6 * Company\ age + \beta_7 * Crisis + \varepsilon$$

Regression model 2

$$\Delta OP = \alpha + \beta_1 * PE\ industry-specialised + \beta_2 * PE\ independent + \beta_3 * Syndicated + \beta_4 * PE\ experience + \beta_5 * (\log) PE\ size + \beta_6 * Company\ age + \beta_7 * (\log) Total\ assets\ (t-1) + \beta_8 * EBITDA\ margin\ (t-1) + \beta_9 * ROA\ (t-1) + \beta_{10} * Gearing + \beta_{11} * Crisis + \beta_{12} * (\log) Total\ PE\ investments + \varepsilon$$

Regression model 3

$$\Delta OP = \alpha + \beta_1 * PE \text{ buyout-specialised} + \beta_2 * PE \text{ independent} + \beta_3 * Syndicated + \beta_4 * PE \text{ experience} + \beta_5 * (\log) PE \text{ size} + \beta_6 * Company \text{ age} + \beta_7 * (\log) Total \text{ assets } (t-1) + \beta_8 * EBITDA \text{ margin } (t-1) + \beta_9 * ROA (t-1) + \beta_{10} * Gearing + \beta_{11} * Crisis + \beta_{12} * (\log) Total PE \text{ investments} + \varepsilon$$

Regression model 4

$$\Delta OP = \alpha + \beta_1 * PE \text{ industry-specialised} + \beta_2 * PE \text{ buyout-specialised} + \beta_3 * PE \text{ independent} + \beta_4 * Syndicated + \beta_5 * PE \text{ experience} + \beta_6 * (\log) PE \text{ size} + \beta_7 * Company \text{ age} + \beta_8 * (\log) Total \text{ assets } (t-1) + \beta_9 * EBITDA \text{ margin } (t-1) + \beta_{10} * ROA (t-1) + \beta_{11} * Gearing + \beta_{12} * Crisis + \beta_{13} * (\log) Total PE \text{ investments} + \varepsilon$$

Regression model 5

$$\Delta OP = \alpha + \beta_1 * Private \text{ equity} + \beta_2 * PE \text{ industry-specialised} + \beta_3 * PE \text{ buyout-specialised} + \beta_4 * (\log) Total \text{ assets } (t-1) + \beta_5 * EBITDA \text{ margin } (t-1) + \beta_6 * ROA (t-1) + \beta_7 * Gearing + \beta_8 * Company \text{ age} + \beta_9 * Crisis + \varepsilon$$

We use Regression model 1 to test the effects of the PE organisational form on investee operating performance (Hypothesis 1). For this specification we use the full dataset of PE-backed and non-PE-backed companies including the Private equity variable as an explanatory variable.

For Regression models 2, 3 and 4 we use the subsample of PE-backed companies to test the effects of relative specialisation, with respect to company industry and the buyout stage, on investee operating performance. The second specification includes the PE industry-specialised variable as an explanatory variable, the third specification includes the PE buyout-specialised variable as an explanatory variable and the fourth specification includes both the PE industry-specialised variable and the PE buyout-specialised variable as explanatory variables.

In Regression model 5, we use the full sample of companies to study the effects of PE ownership, as well as relative specialisation amongst PE firms, on investee operating performance against our benchmark of non-PE-backed companies.

5.3.2. Regression results

Table 6

Results from Regression model 1

VARIABLES	Turnover growth	Change in EBITDA margin	Change in EBIT margin	Change ROA
Private equity	4.104** (1.743)	1.796 (1.369)	-1.508 (1.478)	-5.235* (2.764)
(log) Total assets (t-1)	-4.667*** (1.609)	1.193 (1.430)	0.668 (1.672)	-1.368 (2.644)
EBITDA margin (t-1)	0.0203 (0.120)	-0.411** (0.205)	-0.492** (0.205)	-0.0693 (0.121)
ROA (t-1)	-0.000692 (0.0781)	0.0874 (0.0958)	-0.106 (0.106)	-0.589*** (0.107)
Gearing	0.00110* (0.000564)	0.000393 (0.000456)	-0.000165 (0.000513)	-0.000714 (0.000540)
Company age	-0.137*** (0.0381)	-0.00199 (0.0341)	0.0382 (0.0316)	0.0103 (0.0533)
Crisis	-6.657*** (1.808)	0.846 (1.692)	1.430 (1.609)	-0.302 (2.336)
Constant	34.24*** (8.281)	-4.002 (7.066)	0.753 (8.314)	15.19 (13.02)
Observations	244	244	244	244
R-squared	0.155	0.124	0.334	0.305

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In Table 6 we find that the Private equity variable is statistically significant at the 5% level when testing for its effect on turnover growth. In this respect, the positive coefficient of the Private equity variable indicates that PE-backed companies on average achieve a turnover growth rate which is 4.10% higher than that of non-PE-backed companies when controlling for what we believe to be the most critical control variables. When we test for its effect on EBITDA margin development, the coefficient of the Private equity variable is also positive, but fails to show significance. In contrast, the coefficient of the Private equity variable is negative when we test for its effect on change in EBIT margin and change in ROA. Although not statistically significant with respect to EBIT margin development, the coefficient of the Private equity variable is, in fact, statistically significant at the 10% level when testing for its effect on change in ROA. We thus conclude that the results regarding turnover growth in PE-backed companies are consistent with Hypothesis 1, but that the results regarding change in operating profitability are generally not.

The positive effect of PE ownership on turnover growth is in line with results from previous empirical studies such as Scellato and Ughetto (2013) and Muscarella and Vetsuypens (1990). This result is also in accordance with Gompers, Kaplan and Mukharlyamov's (2016) findings, according to which increasing revenue is the most important source of value creation for PE firms. We believe that several practices commonly used by PE firms, as indicated by the PE literature, serve to foster growth; such practices include the identification of new sales channels and product development (Acharya et al., 2013; Gadiesh and MacArthur, 2008) as well as providing portfolio companies with add-on acquisitions and other strategic growth initiatives, as suggested by Kaplan and Strömberg (2009). The question of 'screening versus monitoring' is highly relevant when seeking to understand the effect of the Private equity variable on turnover growth and the operating performance of investees. We believe it is likely that the effect is of a causal nature, following the reasoning of Acharya et al. (2013). However, we cannot fully disregard the possibility that PE firms may have a superior ability to identify companies with above-average potential for abnormal growth, similar to the 'screening role' which Chemmanur et al. (2011) found to be present amongst VC firms.

The results concerning the effect of the PE organisational form on the operating profitability of investees (or lack thereof) contrast some previously-published studies within the field (e.g. Acharya et al., 2013; Bergström et al., 2007; Cressy, Munari and Malipiero, 2007; Smith, 1990). Instead, these results are more in line with the findings of e.g. Vinten (2007) and Desbrières and Schatt (2002), who find that PE ownership has a significantly negative impact on operational efficiency.

Vinten (2007) suggests that the PE organisational form may not be as suitable in regions where corporate ownership is relatively concentrated—such as the Nordics—as in other regions. Vinten (2007) argues that concentrated ownership generally has a positive effect on a operating performance since owners will have greater opportunity to align the company's activities with their own interests, i.e. increasing firm value. In accordance with the reasoning of Vinten (2007), Desbrières and Schatt (2002) find a connection between family ownership and post-buyout operating underperformance. Since pre-buyout ownership concentration in Swedish companies tends to be relatively high, there may be (relatively) little room for PE firms to further concentrate ownership in Swedish companies post buyout. Additionally, if PE firms allow sellers to stay on as co-owners post buyout, ownership may become less concentrated than before, leading to a reversal of the aforementioned effect on operating performance (Vinten, 2007).

Another possible explanation for why our results concerning the relative operating profitability of PE-backed firms differ from some previous papers, could be that the buyout landscape has undergone significant changes in the time between those studies and the period

we choose to examine. For instance, Guo et al. (2011) find that value creation is substantially lower in more recent buyouts.

Additionally, we believe that the negative effect of the Private equity variable on change in ROA partly can be due to revaluations of assets taking place in PE-backed companies in conjunction with the investment.

Considering the overall results regarding the effects of PE ownership on operating performance, we find it plausible that—when targeting Swedish companies—PE firms focus more on fostering growth than on improving operational efficiency in the first three years post investment.

In Table 6 we also find that the variables for initial company size (measured by total assets) and company age have highly significant negative relationships to turnover growth. This indicates that smaller companies on average grow faster than larger companies, and that younger companies on average grow faster than older ones.

Although not significant with respect to operating profitability, we find that gearing has a marginally significant effect on turnover growth. Thus, at most leverage seems to generate faster growth while having no systematic effect on profitability. These results stand in contrast to Jensen's (1986) 'control hypothesis' which suggests that low-growth companies with high free cash flows will gain the most from additional leverage since it will incentivise managers to focus on the most profitable projects—driving a positive development in operating profitability.

Additionally, we find that initial profitability levels (in terms of EBITDA margin and ROA) play an important role in determining future developments in profitability, thereby highlighting the potential importance of investment-selection skill amongst PE firms. We also find the Crisis variable to have a highly significant negative effect on turnover growth, demonstrating the considerable effects of the financial crisis on the operating performance of Swedish companies.

Table 7
Results from regression models 2, 3 & 4

VARIABLES	Turnover growth			Change in EBITDA margin			Change in EBIT margin			Change in ROA		
<i>Regression model</i>	(2)	(3)	(4)	(2)	(3)	(4)	(2)	(3)	(4)	(2)	(3)	(4)
PE industry-specialised	3.703 (2.656)	- -	3.704 (2.683)	0.645 (2.479)	- -	0.318 (2.405)	1.422 (2.794)	- -	1.035 (2.554)	-2.664 (4.398)	- -	-3.407 (4.133)
PE buyout-specialised	- -	0.260 (3.636)	-0.0313 (3.582)	- -	6.417* (3.343)	6.392* (3.324)	- -	7.625** (3.446)	7.543** (3.346)	- -	14.23*** (5.092)	14.50*** (5.190)
PE independent	12.48*** (4.327)	12.42** (5.136)	12.49** (5.125)	10.61** (4.956)	7.313 (5.561)	7.319 (5.618)	9.685* (5.759)	5.787 (6.295)	5.807 (6.372)	12.85 (10.22)	5.461 (10.15)	5.395 (9.979)
Syndicated	1.306 (2.962)	0.529 (3.389)	1.299 (3.056)	0.101 (3.482)	1.475 (3.372)	1.541 (3.344)	4.413 (3.908)	5.897 (3.856)	6.112 (3.936)	11.51* (6.475)	15.49** (6.344)	14.78** (6.395)
PE experience	0.0153 (0.0194)	0.0155 (0.0227)	0.0152 (0.0228)	0.0256 (0.0198)	0.0392* (0.0202)	0.0392* (0.0202)	0.0253* (0.0134)	0.0413** (0.0171)	0.0412** (0.0171)	0.0202 (0.0199)	0.0507** (0.0225)	0.0509** (0.0216)
(log) PE size	4.798** (1.904)	4.625** (1.962)	4.806** (2.019)	-4.099** (1.749)	-5.787*** (1.896)	-5.772*** (1.915)	0.358 (2.104)	-1.666 (2.056)	-1.616 (2.084)	-1.673 (2.816)	-5.300* (2.896)	-5.466* (2.826)
Company age	-0.177*** (0.0638)	-0.173*** (0.0655)	-0.177*** (0.0640)	-0.106* (0.0537)	-0.108** (0.0490)	-0.108** (0.0492)	-0.00192 (0.0610)	-0.00412 (0.0539)	-0.00518 (0.0536)	-0.0484 (0.106)	-0.0581 (0.0867)	-0.0547 (0.0890)
(log) Total assets (t-1)	-11.53*** (3.377)	-10.99*** (3.054)	-11.52*** (3.276)	3.925 (2.378)	3.238 (2.281)	3.193 (2.186)	0.645 (3.029)	-0.0708 (2.883)	-0.220 (2.920)	-1.943 (4.588)	-4.094 (4.827)	-3.604 (4.514)
EBITDA margin (t-1)	-0.0176 (0.184)	-0.00974 (0.202)	-0.0175 (0.194)	-0.214 (0.164)	-0.246 (0.175)	-0.247 (0.177)	-0.419 (0.282)	-0.456 (0.280)	-0.458 (0.280)	0.122 (0.194)	0.0404 (0.180)	0.0475 (0.188)
ROA (t-1)	-0.0355 (0.137)	-0.0388 (0.141)	-0.0355 (0.136)	-0.0224 (0.113)	-0.0269 (0.111)	-0.0267 (0.113)	-0.181 (0.160)	-0.187 (0.160)	-0.186 (0.162)	-0.707*** (0.131)	-0.713*** (0.133)	-0.716*** (0.132)
Gearing	0.00676 (0.0107)	0.00719 (0.0109)	0.00677 (0.0110)	-0.00646 (0.00425)	-0.00790* (0.00449)	-0.00794* (0.00458)	-0.00784 (0.00663)	-0.00946 (0.00699)	-0.00958 (0.00705)	-0.00595 (0.00772)	-0.00969 (0.00820)	-0.00930 (0.00805)
Crisis	-9.815*** (3.472)	-10.46*** (3.560)	-9.822*** (3.696)	2.964 (4.201)	4.382 (4.414)	4.437 (4.597)	3.682 (2.898)	5.242* (3.097)	5.421* (3.217)	0.141 (4.243)	4.071 (3.956)	3.482 (4.301)
(log) Total PE investments	-17.94 (12.49)	-19.02 (12.52)	-17.92 (12.91)	-10.76 (15.17)	-15.80 (16.35)	-15.71 (16.02)	2.058 (9.261)	-4.091 (9.220)	-3.782 (9.003)	20.01 (16.86)	9.807 (15.39)	8.791 (14.83)
Constant	101.7** (43.91)	105.3** (43.62)	101.6** (44.62)	26.29 (44.96)	51.88 (51.07)	51.56 (50.11)	-18.59 (35.19)	12.28 (35.11)	11.22 (34.63)	-58.08 (51.79)	-4.239 (46.60)	-0.782 (45.28)
Observations	122	122	122	122	122	122	122	122	122	122	122	122
R-squared	0.317	0.304	0.317	0.157	0.195	0.195	0.321	0.357	0.358	0.296	0.346	0.350

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In Table 7 we fail to verify Hypothesis 2a as the coefficients of the PE industry-specialised variable—although predominantly positive—lack statistical significance at the conventional levels. These results stand in contrast to the findings of Cressy, Munari and Malipiero (2007) and Le Nadant, Perdreau and Bruining (2018); the former finding a significant positive relationship between industry specialisation and operating profitability, and the latter finding significant positive relationships between industry specialisation and operating profitability as well as industry specialisation and turnover growth.

Our results regarding the effects of industry specialisation suggest that the financial and governance engineering attributes of the PE organisational form play a relatively important role in value creation compared to company-specific initiatives which may require a higher degree of operational knowledge and expertise in a given sector—defined as operational engineering.

When studying the effects of buyout-stage specialisation and controlling for the most critical control variables, we find clear indications that companies backed by buyout-specialised PE firms experience a more favourable development in operating profitability than companies backed by non-buyout-specialised PE firms, in line with Hypothesis 2b. The coefficients of the PE buyout-specialised variable with respect to changes in EBITDA margin, EBIT margin and ROA are all positive and quantitatively significant, as well as statistically significant at the 10%, 5% and 1% levels respectively. Although the coefficient of the PE buyout-specialised variable with respect to turnover growth is positive, it is not statistically significant. These results contrast the findings of Cressy, Munari and Malipiero (2007) which show no clear relationship between buyout-stage specialisation and operating profitability, but instead indicate that companies backed by buyout-specialised PE firms experience higher growth than companies backed by non-buyout-specialised PE firms.

We believe that the positive effects of buyout-stage specialisation on operational efficiency may be due to an ability amongst buyout-specialised PE firms to accumulate, and in turn use, previous buyout experience to better identify companies with high potential for profitability improvements, to develop more effective cost-management programmes or to better design and implement other profitability-enhancing initiatives.

We find that—unlike the variables for relative specialisation—the PE independent variable has a significant or highly significant positive impact on turnover growth in all specifications presented in Table 7. The PE independent variable also has a marginally positive significant impact on change in EBITDA margin and change in EBIT margin in specification 2. These findings are in line with the results of Cressy, Munari and Malipiero (2007) and suggest that the differences in incentives and goals between independent and non-independent PE firms may indeed have an effect on the operating performance of their portfolio companies.

We also find a positive relationship between operating performance and deal syndication, although only significant with respect to change in ROA. This suggests that there may be some substance to the proposed benefits of deal syndication, such as improved investment selection.

Furthermore, we also find positive relationships, with varying degrees of significance, between PE experience and developments in operating profitability. For instance, in specifications 3 and 4, the PE experience variable has a positive effect on change in EBIT margin and change in ROA as well as a marginally significant positive effect on change in EBITDA margin. These results imply that PE firms in general may be able to draw on lessons learned from previous experiences when seeking to add value to new portfolio companies.

In Table 7 we find a significant positive relationship between the size of PE firms—measured by the size of total funds—and turnover growth. In contrast, we also find a highly significant negative relationship between PE size and change in EBITDA margin as well as a marginally significant negative relationship between PE size and change in ROA.

Similar to Regression model 1 (presented in Table 6), the specifications in Table 7 demonstrate a statistically significant inverse relationship between turnover growth and the variables for company age and company size. These results are in line with the suggested tendency of younger companies to grow faster than older ones (Cressy, Munari and Malipiero 2007). We also find a significant inverse relationship between a company's age and its change in EBITDA margin suggesting that younger companies may not only grow faster but also experience a more favourable development in profitability.

In Table 7 we again find little support for Jensen's (1986) 'control hypothesis' for debt creation. The variable for leverage shows, at most, a marginally significant negative relationship with change in EBITDA margin.

Additionally, we once again see the highly significant negative effect of the financial crisis on turnover growth. However, we also find a marginally significant positive coefficient for the Crisis variable with respect to change in EBIT margin (and mostly positive but non-significant coefficients regarding the other two metrics for operating profitability). We believe the reason for this to be that profitability levels plummeted during the financial crisis, and that the reversion back to more normal levels of profitability thereafter makes it appear as if companies invested in during the crisis years improved their operating profitability tremendously.

Table 8
Results from Regression model 5

VARIABLES	(1) Turnover growth	(2) Change in EBITDA margin	(3) Change in EBIT margin	(4) Change in ROA
Private equity	1.037 (2.852)	-0.594 (2.464)	-5.204 (3.202)	-8.384* (4.558)
PE industry-specialised	3.783 (2.683)	0.501 (2.390)	0.370 (2.432)	-4.750 (4.257)
PE buyout-specialised	1.457 (2.931)	3.480 (2.441)	5.769** (2.603)	9.767** (4.467)
(log) Total assets (t-1)	-5.256*** (1.553)	0.526 (1.338)	-0.398 (1.604)	-2.707 (2.775)
EBITDA margin (t-1)	0.0173 (0.114)	-0.414** (0.205)	-0.498** (0.199)	-0.0762 (0.123)
ROA (t-1)	-0.00106 (0.0745)	0.0838 (0.0952)	-0.112 (0.105)	-0.601*** (0.108)
Gearing	0.00108* (0.000563)	0.000391 (0.000453)	-0.000166 (0.000514)	-0.000685 (0.000555)
Company age	-0.137*** (0.0378)	-0.00163 (0.0336)	0.0389 (0.0301)	0.0122 (0.0504)
Crisis	-6.130*** (1.845)	1.164 (1.847)	1.906 (1.730)	-0.0900 (2.508)
Constant	37.05*** (7.887)	-0.762 (6.616)	5.937 (7.960)	21.79 (13.81)
Observations	244	244	244	244
R-squared	0.168	0.135	0.357	0.330

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In Table 8 we see the results of including the dummy variable for PE-backing and those for relative investment specialisation in the same regression while studying the whole sample of both PE-backed and non-PE-backed companies. The results show a positive effect of PE ownership on turnover growth, albeit not as strong as indicated by Regression model 1 and not statistically significant. The positive coefficients of the variables for relative specialisation would imply the ‘additional’ positive effects of relative investment specialisation on turnover growth—however, these coefficients lack statistical significance.

The coefficient of the Private equity variable is negative with respect to all metrics for operating profitability. Meanwhile, the PE industry-specialised variable demonstrates positive coefficients with respect to change in EBITDA margin and change in EBIT margin, but since the quantitative impacts of these coefficients are lower than those of the Private equity variable, the results suggest that the ‘net effect’ of backing by an industry-specialised PE firm with respect to these two metrics is negative.

In comparison, the PE buyout-specialised variable demonstrates positive coefficients with respect to change in EBITDA margin and change in EBIT margin that ‘outweigh’ the corresponding negative coefficients of the Private equity variable. This implies that companies backed by buyout-specialised PE firms perform better with respect to these two metrics than non-PE-backed companies. Although it must be pointed out that the coefficient of the PE buyout-specialised variable with respect to change in EBIT margin is the only one showing statistical significance.

The Private equity variable demonstrates a marginally significant negative coefficient with respect to change in ROA. The PE industry-specialised variable adds an ‘additional’ negative effect, although its coefficient lacks statistical significance. Meanwhile, the PE buyout-specialised variable demonstrates a statistically significant coefficient whose quantitative magnitude is greater than that of the Private equity variable, indicating that companies backed by buyout-specialised PE firms experience a superior development in ROA to that of non-PE-backed companies.

5.4. Robustness tests and limitations of the thesis

The dataset contains a number of outliers with regard to our chosen metrics for operating performance. However, we choose not to exclude any observation solely based on it being too extreme, as we are confident that the data in the dataset is correct and we additionally believe that outliers can carry meaning.

Correlations between the independent variables in the regression models are moderate overall, and when we test for multicollinearity by performing variance inflation factor analyses (VIF) we find that no variable has a VIF over 4, commonly thought of as the point at which one might begin to suspect that there is a problem with multicollinearity amongst variables (O’Brien, 2007). A correlation matrix and the results from the VIF analyses are included in the appendix.

When we test for autocorrelation using the Durbin-Watson statistic we find no evidence of serial correlation in the dataset. Nevertheless, we do find some indications of heteroscedasticity in the data when we perform the Breusch-Pagan test. To account for any potential impact of such heteroscedasticity we run robust regressions.

We acknowledge that this study might be subject to certain bias issues regarding the accounting data and sample selection. In the data-collection process, described in section 4.1., we exclude PE-backed companies that lack the accounting data necessary to calculate all the metrics and variables used in this study. If this procedure were to lead to a disproportionate exclusion of companies with certain characteristics, it would create distortions in the dataset.

Also limiting this study, is the fact that the investment horizon of PE firms typically stretches from 3 to 5 years, whereas the metrics we use to measure operating performance are only applied to the first three years after the investment year, possibly excluding important changes in operating performance occurring later on in the holding period.

Additionally, there is the fact that we examine only four different metrics for operating performance, while there are many more which one could look at. For instance, some studies within the buyout field measure a company's operating performance using metrics which are adjusted for the average performance within that company's particular industry. Also worth noting is the fact that we collect, compile and clean the accounting data manually, meaning that the risk for human error cannot be fully disregarded.

Lastly, as we first note in section 1., the Swedish PE industry is very mature by global standards which gives reason to question the generalisability of our results to other countries, especially to those with less mature PE markets.

6. Conclusions and directions for future research

In this thesis we investigate the effects of PE ownership on the operating performance of Swedish companies. Additionally, we examine how these effects differ between portfolio companies as a result of relative industry and buyout-stage specialisation amongst PE firms. Initially, we hypothesise that: the development in operating performance of PE-backed companies is superior to that of comparable non-PE-backed companies (H1) and that the development in operating performance of companies backed by PE firms specialised in their particular industry (H2a), or in the buyout stage (H2b), is superior to that of companies backed by non-specialised PE firms.

To test the first hypothesis, we construct a dataset containing 122 Swedish PE investments over the period 2008–2015, along with a matched sample of non-PE backed companies. We then use a PE dummy variable to discriminate between the two groups of companies. To test the two following hypotheses we calculate a measure of investment specialisation, with respect to industry and investment stage, for each PE firm in the dataset. We then identify the companies acquired by a PE firm with a relatively strong investment focus in their particular industry or in the buyout stage. Finally, we run regressions using dummy variables that correspond to the specialisation strategy of each PE firm, using the same sample of PE-backed companies as we use to test the first hypothesis.

When controlling for a number of factors we find that: (1) PE-backed companies experience significantly higher turnover growth than non-PE-backed companies, although they may also experience a development in operating profitability which is worse than that of non-PE-backed-companies; (2) a relatively strong investment focus in the industry of an investee has no significant effect on its operating performance; (3) buyout-stage specialisation amongst PE firms has a positive impact on the operational efficiency of investees, although specialisation in the buyout stage seems to have little effect on turnover growth.

We also find that independence amongst PE firms (i.e. non-affiliation) has a positive impact on turnover growth. Additionally, we find that pre-investment profitability levels may be important for subsequent developments in operating profitability, suggesting that skill in investment selection may be linked to improvements in investee operating performance.

A suggestion for future research is to conduct a similar study outside of Sweden. As mentioned in section 1., the Swedish PE industry is relatively mature which raises concerns about the generalisability of our results to other countries, in particular to countries with less mature PE markets. Another suggestion is to examine the proposed relationship between post-

buyout operating performance and ownership concentration, especially considering the Swedish buyout market, which we believe could help explain our results.

References

- Abbot, S., Hay, M.G., 1995, Investing for the future: new firm funding in Germany, Japan, the UK, and the USA (Financial Times/Pitman, London).
- Acharya, V., Gottschalg, O., Hahn, M., & Kehoe, C., 2013, Corporate Governance and Value Creation: Evidence from Private Equity, *The Review of Financial Studies* 26(2), 368–402.
- Amit, R., Brander, J., Zott, C., 1998, Why do Venture Capital Firms Exist? Theory and Canadian Evidence, *Journal of Business Venturing* 13(8), 441–466.
- Archibugi, D., Pianta, M., 1994, Aggregate convergence and sectoral specialization in innovations, *Journal of Evolutionary Economics* 4, 17–33.
- Barber, B.M., Lyon, J.D., 1996, Detecting abnormal operating performance: The empirical power and specification of test statistics, *Journal of Financial Economics* 41, 359–399.
- Berg, O., Gottschalg, O., 2005, Understanding Value Generation in Buyouts, Working paper, INSEAD.
- Bergström, C., Grubb, M., and Jonsson, S., 2007, The Operating Impact of Buyouts in Sweden: A Study of Value Creation, *The Journal of Private Equity* 11, 22–39.
- Brander, J.A., Amit, R., Antweiler, W., 2002, Venture-Capital Syndication: Improved Venture Selection vs. the Value-Added Hypothesis, *Journal of Economics and Management Strategy* 11(3), 423–452.
- Brigl, M., Nowotnik, P., Pelisari, K., Rose, J. and Zwillenberg, P., 2012 Private Equity: Engaging for Growth, Boston Consulting Group Ltd.
- Castellaneta, F., and O. Gottschalg. 2016, Does Ownership Matter in Private Equity? The Sources of Variance in Buyouts' Performance, *Strategic Management Journal* 37(2), 330–348.
- Chemmanur, T.J., Krishnan, K., Nandy, D.K., 2011, How does Venture Capital Financing Improve Efficiency in Private Firms? A Look Beneath the Surface, *The Review of Financial Studies* 24(12), 4037–4090.
- Chung, J., Sensoy, B., Stern, L., Weisbach, M., 2012, Pay for performance from future fund flows: the case of private equity, *Review of Financial Studies* 25, 3259–3304.
- Cressy, R., F. Munari, and A. Malipiero, 2007, Playing to Their Strengths? Evidence That Specialization in the Private Equity Industry Confers Competitive Advantage, *Journal of Corporate Finance* 13, 647–669.
- Cumming, D., Macintosh, J.G., 2006, Crowding out private equity: Canadian evidence. *Journal of Business Venturing* 21(5), 569–609.

- De Clerq, D., Goulet, P.K., Kumpulainen, M., and Makela, M., 2001, Portfolio investment strategies in the Finnish venture capital industry: A longitudinal study, *Venture Capital : An International Journal of Entrepreneurial Finance* 3(1), 41–62.
- Desbrières, P., Schatt, A., 2002, The impacts of LBOs on the performance of acquired firms: The French case, *Journal of Business Finance and Accounting* 29(5–6), 696–729.
- Eisenhardt, K. M., 1989, Agency theory: an assessment and review, *Academy of Management Review*, 14, 195–223.
- European Private Equity and Venture Capital Association (now: Invest Europe), 2014, 2013 Pan-European Private Equity Performance Benchmarks study, European Private Equity and Venture Capital Association.
- Forbes, 2018, Best Countries for Business, <https://www.forbes.com/best-countries-for-business/list/#tab:overall>
- Gadiesh, O., MacArthur, H., 2008, *Lessons From Private Equity Any Company Can Use* (Harvard Business School Press, Boston).
- Gompers, P.A., Kaplan, S.N., Mukharlyamov, V., 2016, What do private equity firms say they do?, *Journal of Financial Economics* 121(3), 449–476.
- Gompers, P.A., Lerner, J., 2000, Money chasing deals? The impact of fund inflows on private equity valuations, *Journal of Financial Economics* 55(2), 281–325.
- Guo, S., Hotchkiss, E.S., Song, W., 2011, Do Buyouts (Still) Create Value?, *Journal of Finance* 66(2), 479–517.
- Haas, R., and Fumo, A., 2014, *How PE Operations Teams Create Value*, A.T. Kearney, Inc., <https://www.kearney.com/private-equity/article/?/a/how-pe-operations-teams-create-value>
- Harris R., Siegel, D. S., Wright, M., 2005, Assessing the impact of management buyouts on economic efficiency: plant-level evidence from the United Kingdom, *The Review of Economics and Statistics* 87(1), 148–153.
- Holthausen, R.W., Larcker, D.F., 1996, The Financial Performance of Reverse Leveraged Buyouts, *Journal of Financial Economics* 42(3), 293–332.
- Invest Europe, 2016, *Invest Europe Yearbook - 2015 European Private Equity Activity*, Invest Europe.
- Jensen, M., 1986, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, *The American Economic Review* 76(2), 323–329.
- Jensen, M., 1989, Eclipse of the public corporation, *Harvard Business Review* 5, 61–74.
- Kaplan, S. N., 1989a, Management Buyouts: Evidence on Taxes as a Source of Value, *Journal of Finance* 44(3), 611–632.

- Kaplan, S. N., 1989b, The effects of management buyouts on operating performance and value, *Journal of Financial Economics* 24(2), 217–254.
- Kaplan, S.N., Schoar, A., 2005, Private Equity Performance: Returns, Persistence and Capital Flows, *Journal of Finance* 60(4), 1791–1823.
- Kaplan, S. N., and Strömberg, P., 2009, Leveraged Buyouts and Private Equity, *The Journal of Economic Perspectives* 23(1), 121–146.
- Le Nadant, A-L., Perdreau, F., Bruining, H., 2018, Industry specialization of private equity firms: a source of buy-out performance heterogeneity, *Venture Capital* 20(3), 237–259.
- Lerner, J., 1999, The Government as venture capitalist: the long-run impact of the SBIR program, *Journal of Business* 72(3), 285–318.
- Lerner, J., 1994, The Syndication of Venture Capital Investments, *Financial Management* 23(3), 16–27.
- Lichtenberg, F., Siegel, D., 1990, The effects of leveraged buyouts on productivity and related aspects of firm behavior, *Journal of Financial Economics* 27(1), 165–194.
- Markowitz, H., 1952, Portfolio Selection, *The Journal of Finance* 7(1), 77–91.
- Metrick, A. , Yasuda, A., 2010, The economics of private equity funds, *Review of Financial Studies* 23, 2303–2341.
- Meuleman, M., K. Amess, M. Wright, and L. Scholes, 2009, Agency, Strategic Entrepreneurship, and the Performance of Private Equity-Backed Buyouts, *Entrepreneurship Theory and Practice* 33(1), 213–239.
- Muscarella, C. J., Vetsuypens, M. R., 1990, Efficiency and organizational structure: a study of Reverse LBOs, *The Journal of Finance* 45(5), 1389–1413.
- Myers, S., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 145–175.
- O’Brien, R.M, 2007, A caution regarding rules of thumb for variance inflation factors, *Quality and Quantity* 41(5), 673–690.
- Palepu, K. G., 1990, Consequences of leveraged buyouts. *Journal of Financial Economics* 27(1), 247–262.
- Scellato, G., Ughetto, E., 2013, Real effects of private equity investments: Evidence from European buyouts, *Journal of Business Research* 66(12), 2642–2649.
- Sharpe, W. F., 1963, A Simplified Model for Portfolio Analysis, *Management Science* (Pre-1986) 9(2), 277–293.
- Sharpe, W. F., 1964, Capital asset prices: a theory of market equilibrium under conditions of risk, *Journal of Finance* 19, 425–442.

Smith, A.J., 1990, Corporate ownership structure and performance: The case of management buyouts, *Journal of Financial Economics* 27(1), 143–164.

Swedish Private Equity & Venture Capital Association, 2019, SVCA yearbook – 2018 Swedish Private Equity Activity, Swedish Private Equity & Venture Capital Association.

Turner, J.A., 1983, Organisational Performance, Size, and the Use of Data Processing Resources, Working paper, New York University.

Ulrich, D., Allen J., 2016, Private Equity's New Phase, *Harvard Business Review*, <https://hbr.org/2016/08/private-equitys-new-phase>, Aug 09

Unionen, 2019, This is how the Swedish labour market works, <https://www.unionen.se/in-english/how-swedish-labour-market-works?fbclid=IwAR0K6mH8COrb1seWKFLGLGNchlJKF6MFvJvxvnfpFGT2KrkypwqVxOZgoB8>

Vinten, F., 2007, The Performance of Private Equity Buyout Fund Owned Firms, working paper, Centre for Economic and Business Research, Copenhagen Business School.

Wang, Y., 2012, Secondary buyouts: Why buy and at what price?, *Journal of Corporate Finance*, 18(5), 1306–1325.

Wright, M., Lockett, A., 2003, The structure and management of alliances: syndication in the venture capital industry 40(8), 2073–2102.

Wright, M., Robbie, K., Thompson, S. and Starkey, K., 1994, Longevity and the Life-Cycle of Management Buy-Outs, *Strategic Management Journal* 15(3), 215–227.

Wright, M., Wilson, N., Robbie, K., 1996, The Longer-Term Effects of Management-Led Buy-Outs, *Journal of Entrepreneurial and Small Business Finance* 5(3), 213–234.

Appendices

Table A1

Formulaic definitions of the dependent variables:

$$Sales\ CAGR = \left(\frac{Sales_{t+3}}{Sales_{t-1}} \right)^{\frac{1}{4}} - 1$$

$$\Delta\ EBITDA\ margin = \left(\frac{EBITDA_{t+3}}{Sales_{t+3}} \right) - \left(\frac{EBITDA_{t-1}}{Sales_{t-1}} \right)$$

$$\Delta\ EBIT\ margin = \left(\frac{EBIT_{t+3}}{Sales_{t+3}} \right) - \left(\frac{EBIT_{t-1}}{Sales_{t-1}} \right)$$

$$\Delta\ ROA = \left(\frac{EBIT_{t+3}}{Average\ total\ assets_{t+3}} \right) - \left(\frac{EBIT_{t-1}}{Average\ total\ assets_{t-1}} \right)$$

Table A2

Simple correlations for PE-backed firms

	PE industry- specialised	PE buyout- specialised	(log) Total assets (t-1)	EBITDA margin (t-1)	ROA (t-1)	PE in- dependent	(log) PE size	Company age	Syndicated	PE experience	(log) Total PE invest- ments	Crisis	Gearing
PE industry-specialised	1												
PE buyout-specialised	0.138	1											
(log) Total assets (t-1)	0.175	0.333	1										
EBITDA margin (t-1)	-0.002	0.088	-0.047	1									
ROA (t-1)	-0.076	0.006	-0.288	0.666	1								
PE independent	0.042	0.303	0.109	-0.015	0.033	1							
(log) PE size	0.039	0.351	0.489	0.064	-0.088	0.095	1						
Company age	0.081	0.100	0.327	-0.062	-0.107	-0.030	0.106	1					
Syndicated	-0.116	-0.215	-0.006	0.068	0.017	-0.399	-0.049	0.126	1				
PE experience	0.013	-0.039	0.178	0.054	-0.055	0.088	0.489	-0.054	-0.103	1			
(log) Total PE investments	-0.073	0.158	0.033	-0.099	-0.015	0.098	-0.056	0.021	-0.027	-0.065	1		
Crisis	-0.175	-0.101	-0.019	0.117	0.162	0.113	0.092	-0.083	0.036	0.058	0.189	1	
Gearing	0.076	0.090	0.156	-0.144	-0.175	0.003	0.033	-0.085	-0.089	0.129	0.049	0.051	1

The table exhibits simple correlations between the variables in the subsample of PE-backed companies. Values close to 1 (-1) indicate a highly positive (negative) correlation between the variables. Values close to 0 indicate low correlation.

Table A3

VIF table for Regression model 1

Variable	VIF	1/VIF
ROA (t-1)	1.99	0.50
EBITDA margin (t-1)	1.84	0.54
(log) Total assets (t-1)	1.24	0.81
Company age	1.12	0.89
Private equity	1.07	0.93
Gearing	1.07	0.93
Crisis	1.05	0.95
Mean	1.34	

The table presents the variation inflation factor (VIF) for Regression model 1, performed to test for multicollinearity. A lower value in the VIF column indicates a lower probability of multicollinearity and vice versa.

Table A4

VIF table for Regression model 2

Variable	VIF	1/VIF
ROA (t-1)	2.11	0.47
EBITDA margin (t-1)	1.96	0.51
(log) PE size	1.74	0.58
(log) Total assets (t-1)	1.73	0.58
PE experience	1.38	0.73
Syndicated	1.26	0.80
PE independent	1.25	0.80
Company age	1.19	0.84
Crisis	1.14	0.88
Gearing	1.11	0.90
PE industry-specialised	1.09	0.92
(log) Total PE investments	1.08	0.93
Mean	1.42	

The table presents the variation inflation factor (VIF) for Regression model 2, performed to test for multicollinearity. A lower value in the VIF column indicates a lower probability of multicollinearity and vice versa.

Table A5

VIF table for Regression model 3

Variable	VIF	1/VIF
ROA (t-1)	2.11	0.47
(log) PE size	2.01	0.50
EBITDA margin (t-1)	1.98	0.50
(log) Total assets (t-1)	1.73	0.58
PE buyout-specialised	1.59	0.63
PE experience	1.52	0.66
PE independent	1.34	0.75
Syndicated	1.27	0.79
Company age	1.19	0.84
Crisis	1.18	0.85
Gearing	1.13	0.89
(log) Total PE investments	1.13	0.89
Mean	1.51	

The table presents the variation inflation factor (VIF) for Regression model 3, performed to test for multicollinearity. A lower value in the VIF column indicates a lower probability of multicollinearity and vice versa.

Table A6

VIF table for Regression model 4

Variable	VIF	1/VIF
ROA (t-1)	2.11	0.47
(log) PE size	2.02	0.49
EBITDA margin (t-1)	1.98	0.50
(log) Total assets (t-1)	1.76	0.57
PE buyout-specialised	1.60	0.63
PE experience	1.52	0.66
PE independent	1.34	0.75
Syndicated	1.28	0.78
Crisis	1.20	0.83
Company age	1.19	0.84
(log) Total PE investments	1.13	0.88
Gearing	1.13	0.89
PE industry-specialised	1.09	0.91
Mean	1.49	

The table presents the variation inflation factor (VIF) for Regression model 4, performed to test for multicollinearity. A lower value in the VIF column indicates a lower probability of multicollinearity and vice versa.

Table A7

VIF table for Regression model 5

Variable	VIF	1/VIF
Private equity	2.50	0.40
PE buyout-specialised	2.06	0.49
ROA (t-1)	1.99	0.50
EBITDA margin (t-1)	1.85	0.54
PE industry-specialised	1.80	0.56
(log) Total assets (t-1)	1.33	0.75
Company age	1.12	0.89
Crisis	1.07	0.93
Gearing	1.07	0.93
Mean	1.64	

The table presents the variation inflation factor (VIF) for Regression model 5, performed to test for multicollinearity. A lower value in the VIF column indicates a lower probability of multicollinearity and vice versa.

Table A8**Investment stage classification**

	Description / criteria
Venture capital	• Earlier stage investment characterised by many investors in each round of financing • Financing only through equity stakes • Investors often include VC firms and angel investors • Typically unprofitable business at the time of investment (before break-even)
Growth stage	• Expansion capital typically through (larger) minority investment to relatively mature companies by PE / later-stage VC firm • Financing (typically) only through equity stakes
Buyout stage	• Typically buyout through majority stake investment by PE firm • Financing in the form of equity and significant amount of borrowed capital (debt) • Profitable business (unless turnaround / distressed capital investment) • All public-to-private transactions

Table A9

Mergermarket industry categories and industry categories
used in the empirical analysis

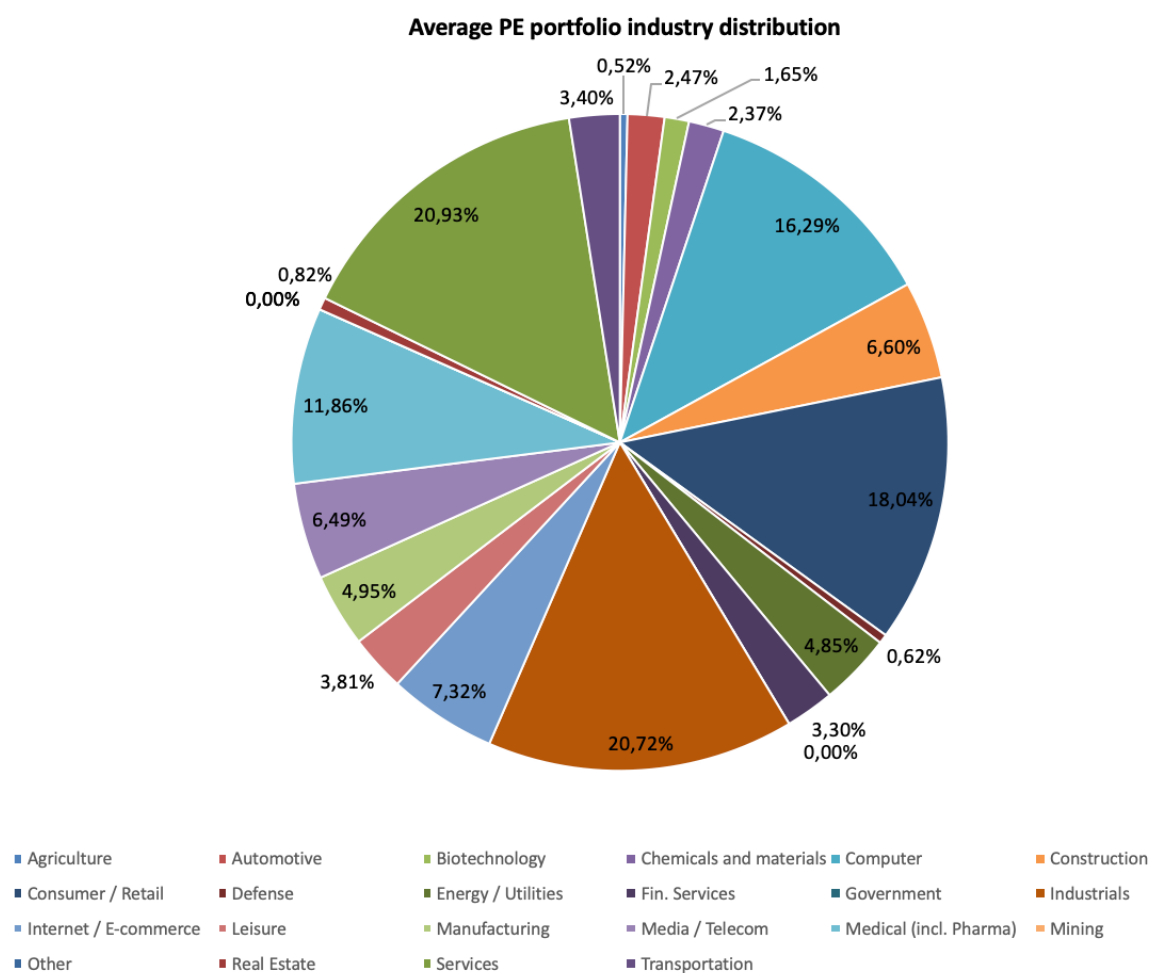
Mergermarket category	Industry category
Agriculture	Agriculture
Automotive	Automotive
Biotechnology	Biotechnology
Chemicals and materials	Chemicals and materials
Computer services	Computer
Computer software	Computer
Computer: Hardware	Computer
Computer: Semiconductors	Computer
Construction	Construction
Consumer: Foods	Consumer / retail
Consumer: Other	Consumer / retail
Consumer: Retail	Consumer / retail
Defence	Defence
Energy	Energy / utilities
Financial services	Financial services
Government	Government
Industrial automation	Industrials
Industrial products and services	Industrials
Industrial: Electronics	Industrials
Internet / E-commerce	Internet / E-commerce
Leisure	Leisure
Manufacturing (other)	Manufacturing
Media	Media / telecom
Medical	Medical (incl. pharma)
Medical: Pharmaceuticals	Medical (incl. pharma)
Mining	Mining
Other	Other
Real estate	Real estate
Services (other)	Services
Telecommunications: Carriers	Media / telecom
Telecommunications: Hardware	Media / telecom
Transportation	Transportation
Utilities (other)	Energy / utilities

Table A10**Summary statistics of reconstructed PE portfolios**

Number of portfolio companies	
Total	970
Average	15.4
Median	13
Max	62
Min	1

Pie chart A1

Average reconstructed PE portfolio industry distribution



Pie Chart A2

Average reconstructed PE Portfolio investment stage distribution

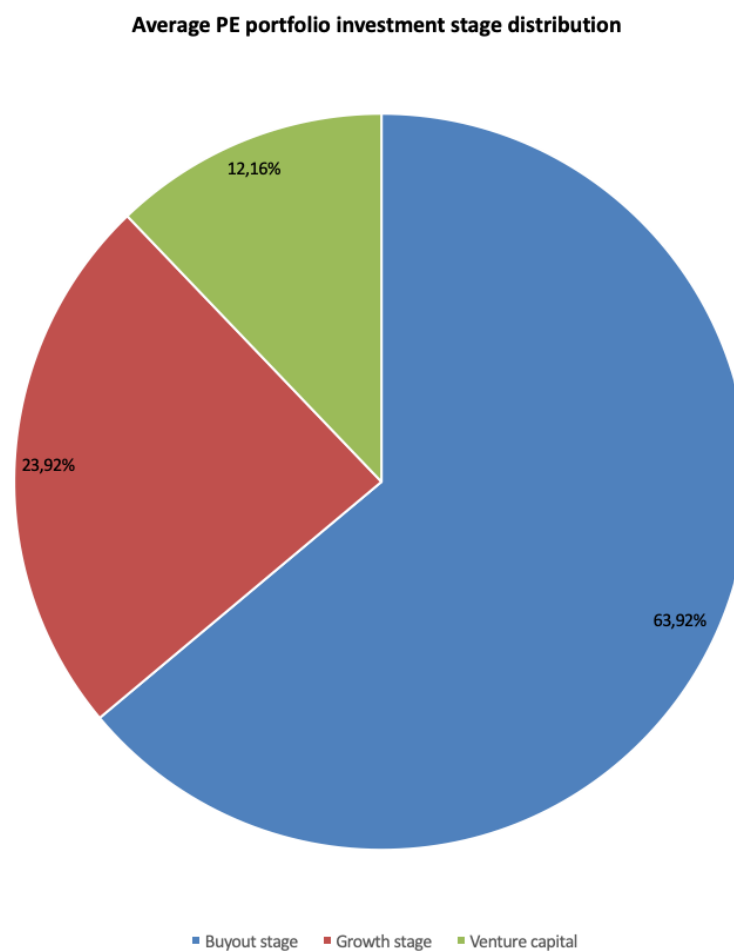


Table A11

Complete list of PE investments included in the dataset

Target company	PE firm	Entry year	Industry	PE industry- specialised	PE buyout- specialised
Vinga Hiss AB	Accent Equity Partners AB	2013	Industrials	YES	YES
Hööks Hästsport AB	Accent Equity Partners AB	2011	Consumer / Retail	NO	YES
Hoist Group AB	Accent Equity Partners AB	2011	Internet / E-commerce; Leisure; Media / Telecom; Services	YES	YES
Hissgruppen AB	Accent Equity Partners AB	2013	Industrials	YES	YES
Corvara Industri & Skadeservice	Accent Equity Partners AB	2011	Industrials; Services	YES	YES
Bergteamet AB	Accent Equity Partners AB	2009	Services	NO	YES
Autotube AB	Accent Equity Partners AB	2011	Automotive	YES	YES
Troax Group AB	Accent Equity Partners AB	2010	Industrials	YES	YES
Logent AB	Adelis Equity Partners AB	2013	Services; Transportation	NO	NO
Powerbox International AB	Alder AB	2013	Industrials	YES	NO
Jernförsen Energi System AB	Alder AB	2011	Construction	NO	NO
Netel AB	Axcel Management A/S	2013	Media / Telecom	NO	YES
Jeeves Information Systems AB	Battery Ventures LP	2012	Computer	YES	NO
Olofssons Hyvleri AB	BrA Invest	2008	Agriculture Computer; Services; Transportation	NO	YES
Memnon Networks AB	Bridgepoint Advisers Limited	2012	Transportation	YES	YES
Scanacon AB	Capilon AB	2010	Industrials	YES	NO
Swereco Rehab AB	CapMan Plc	2009	Medical (incl. Pharma)	NO	NO
MPT Sweden Aktiebolag	CapMan Plc	2009	Industrials Automotive; Industrials; Services	NO	NO
Malte Månson AB	CapMan Plc	2014	Services	NO	NO
Globex Transport AB	CapMan Plc	2008	Transportation	YES	NO
Samsa AB	CapMan Plc	2009	Medical (incl. Pharma); Services	NO	NO
Cederroth International AB	CapMan Plc	2008	Chemicals and materials; Consumer / Retail	YES	NO
Kronfågel Group	CapVest Partners LLP	2013	Consumer / Retail	YES	YES
Persson Innovation AB	Connecting Capital	2012	Manufacturing	YES	YES
Royal Design Group AB	eEquity AB	2012	Consumer / Retail; Internet / E-commerce	YES	NO
Titanx Engine Cooling Holding	EQT Partners AB	2008	Automotive	NO	YES
Swedegas AB	EQT Partners AB	2009	Energy / Utilities	YES	YES
IP-Only AB	EQT Partners AB	2013	Computer; Internet / E- commerce; Media / Telecom	YES	YES
Hector Rail AB	EQT Partners AB	2014	Transportation	YES	YES
Granngården AB	EQT Partners AB	2008	Consumer / Retail	NO	YES
Bilvision AB	Eterna Invest AB	2011	Internet / E-commerce; Services	YES	NO
JG Ventilation AB	Evolver Investment Group Ltd.	2012	Industrials	YES	NO
Yrkesakademien AB	Fagerberg & Dellby AB	2010	Services	NO	YES
BIG BAG Group AB	Fagerberg & Dellby AB	2011	Industrials	YES	YES
Bellbox AB	Fidelio Capital AB	2010	Consumer / Retail	NO	YES
Osstell AB	Fouriertransform AB	2014	Medical (incl. Pharma)	NO	NO
CeDe Group AB	Fouriertransform AB	2012	Automotive; Industrials	YES	NO
Tactel AB	FSN Capital Partners AS	2009	Computer; Services	YES	YES
Klimatrör AB	FSN Capital Partners AS	2014	Industrials	NO	YES
Kjell & Co Elektronik AB	FSN Capital Partners AS	2014	Consumer / Retail	YES	YES
CTEK Sweden AB	FSN Capital Partners AS	2008	Industrials	NO	YES

Robust AB	Garden Growth Capital LLC	2008	Construction; Industrials	YES	YES
Didriksons Regnkläder AB	Herkules Capital AS	2014	Consumer / Retail; Internet / E-commerce	YES	YES
EPiServer AB	IK Investment Partners Ltd.	2010	Computer; Internet / E-commerce	NO	YES
Scandinavian Air Ambulance	Industrifonden	2009	Transportation	NO	NO
Polarica AB	Intera Partners Oy	2010	Consumer / Retail	NO	YES
Wermland Mechanics Group AB	Karnell	2012	Industrials	YES	YES
Silva Sweden AB	Karnell	2011	Consumer / Retail	NO	YES
Kasthall HQ Kinna	Karnell	2010	Consumer / Retail	NO	YES
Iris Invest AB	Karnell	2010	Medical (incl. Pharma)	NO	YES
Backarydsgruppen AB	Karnell	2011	Automotive	YES	YES
Noas Snickeri AB	Kattegatt Partners AB	2012	Manufacturing	NO	YES
Sveba Dahlen Group AB	Litorina Capital Advisors AB	2011	Consumer / Retail; Industrials	YES	YES
OCA Y Sverige AB	Litorina Capital Advisors AB	2012	Consumer / Retail	YES	YES
Eton Fashion AB	Litorina Capital Advisors AB	2012	Consumer / Retail	YES	YES
Eco-Boråstapeter AB	Litorina Capital Advisors AB	2010	Consumer / Retail	YES	YES
Coromatic Group AB	Litorina Capital Advisors AB	2008	Computer; Services	NO	YES
Byredo AB	Manzanita Capital Limited	2013	Chemicals and materials	NO	NO
Permascand AB	Mittkapital i Jämtland och Västernorrland AB	2012	Industrials	YES	NO
SMP Parts AB	MVI Group	2014	Industrials	YES	NO
Xlent Consulting Group	Neqst Partner AB	2009	Computer	YES	NO
Gina Tricot AB	Nordic Capital	2014	Consumer / Retail	YES	YES
Ellos AB	Nordic Capital	2013	Consumer / Retail; Internet / E-commerce; Services	YES	YES
Bambora Group AB	Nordic Capital	2014	Computer; Internet / E-commerce; Services	YES	YES
Llentab AB	Nordstjernan AB	2012	Construction	YES	YES
Bygghemma Sverige AB	Nordstjernan AB	2014	Consumer / Retail; Internet / E-commerce	NO	YES
World Class Seagull International AB	Norgesinvestor AS	2010	Leisure	NO	YES
Dundret Sweden AB	Norrskenet AB	2013	Leisure	YES	NO
SORTERA Skandinavien AB	Norvestor Equity AS	2012	Industrials; Services	YES	YES
Nomor Holding AB	Norvestor Equity AS	2014	Services	YES	YES
Aptilo Networks AB	Norvestor Equity AS	2011	Computer	YES	YES
APSIS International AB	Norvestor Equity AS	2010	Computer	YES	YES
RCO Security AB	Novax AB	2012	Industrials	NO	NO
Breas Medical AB	PBM Capital Group, LLC	2014	Medical (incl. Pharma)	YES	NO
Samres AB	PEQ AB	2010	Medical (incl. Pharma); Services; Transportation	NO	NO
Maskinflisning AB	PEQ AB	2011	Energy / Utilities	NO	NO
Inläsningstjänst AB	PEQ AB	2012	Consumer / Retail	NO	NO
SEM AB	Perusa GmbH	2012	Industrials; Services	YES	YES
Skånska Byggarvaror AB	Polaris Private Equity	2012	Consumer / Retail	YES	YES
Scandinavian Track Group AB	Polaris Private Equity	2011	Services; Transportation	YES	YES
HTC Sweden AB	Polaris Private Equity	2013	Industrials	YES	YES
Unisport Scandinavia AB	Priveq Investment	2008	Construction; Manufacturing	YES	NO
Scanmast AB	Priveq Investment	2013	Industrials; Media / Telecom	NO	NO
San Sac AB	Priveq Investment	2008	Industrials; Services	NO	NO
Kung Markatta AB	Priveq Investment	2013	Consumer / Retail	NO	NO
El-Björn AB	Priveq Investment	2011	Industrials	NO	NO
Pierce AB	Procuritas AB	2014	Automotive; Internet / E-commerce	NO	YES
Osby Glas AB	Procuritas AB	2012	Construction	NO	YES

Däckia Corporation	Procuritas AB	2009	Automotive	NO	YES
Scandumin AB	Profura AB	2014	Consumer / Retail	YES	YES
Motala Train AB	Qeep Ventures AB	2010	Industrials	YES	NO
KVD Kvarndammen AB	Ratos AB	2010	Computer; Consumer / Retail; Internet / E-commerce	YES	YES
HL Display AB	Ratos AB	2010	Consumer / Retail	NO	YES
Biolin Scientific AB	Ratos AB	2010	Biotechnology; Medical (incl. Pharma)	NO	YES
Pocketstället AB	Scope Capital Advisory AB	2008	Consumer / Retail	NO	NO
Klättermusen AB	Scope Capital Advisory AB	2013	Consumer / Retail; Manufacturing	YES	NO
Temperature Sensitive Solutions Systems Sweden AB	SEB Private Equity	2011	Industrials	NO	NO
Spectra Collection AB	SEB Private Equity	2014	Construction; Services	NO	NO
Scan Coin AB	Segulah Advisor AB	2010	Industrials; Services	YES	YES
Lokaltidningen Mitt i AB	Segulah Advisor AB	2014	Media / Telecom	NO	YES
Gunnebo Industrier Holding AB	Segulah Advisor AB	2008	Construction; Industrials	YES	YES
DOCU Nordic	Segulah Advisor AB	2014	Media / Telecom; Services	NO	YES
Almondy Group Holding AB	Segulah Advisor AB	2008	Consumer / Retail	YES	YES
Estate Service Management AB	Sequent Invest AB	2012	Construction; Services	YES	NO
Tengbom Architects AB	Sobro AB	2011	Construction; Services	YES	NO
ByggDialog AB	Sobro AB	2014	Construction	YES	NO
System Edström Bilinredningar	Springlake Invest AB	2012	Automotive	YES	YES
Internationella Engelska Skolan i Sverige Holdings II AB	TA Associates Management, LP.	2012	Services	NO	NO
PPS Power Planning System AB	The Riverside Company	2011	Services	YES	YES
Ovako AB	Triton Partners	2010	Automotive; Industrials	YES	YES
OBH Nordica A/S	Triton Partners	2010	Consumer / Retail; Services	YES	YES
Kahrs Holding AB	Triton Partners	2011	Construction	YES	YES
Perten Instruments Group AB	Valedo Partners	2010	Industrials	NO	YES
Cambio Healthcare Systems AB	Valedo Partners	2012	Computer; Medical (incl. Pharma)	YES	YES
Bindomatic AB	Valedo Partners	2008	Industrials; Manufacturing; Services	NO	YES
Best Transport AB; ASA Transporter AB	Valedo Partners	2014	Transportation	YES	YES
Akademikliniken AB	Valedo Partners	2011	Medical (incl. Pharma)	YES	YES
Mathem i Sverige AB	Verdane Capital Advisors AS	2013	Consumer / Retail; Internet / E-commerce	YES	NO
Mantacore AB	Verdane Capital Advisors AS	2008	Computer	YES	NO
Snow Software AB	Vitruvian Partners LLP	2012	Computer; Services	YES	YES
Benify AB	Vitruvian Partners LLP	2011	Computer; Services	YES	YES
Victor Hasselblad AB	VM Capital Advisors GmbH	2011	Consumer / Retail	NO	NO