Active ownership – a study of Swedish investment companies

Gustaf Petersson[1] and Patrik Jedefors[2]

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Stockholm School of Economics

Abstract

In this thesis on value creation of active owners, publicly traded Swedish investment companies are examined. Their ability to add value to their portfolio companies is tested against a matched sample of peer companies. According to the principal agent theory, investment companies have incentives to control or align top management in companies they own. Previous research on ownership related to firm performance has shown a complex relationship where both ownership concentration and ownership identity, as well as interactions of these effects, affect observed performance. These findings form the basis of four hypotheses on value creation tested in the thesis using data on 45 portfolio companies and their peers. No significant difference in performance is found between the companies. However, there is weak evidence that large ownership by one or two investment companies decreases performance of the portfolio company.

Keywords: Investment company, closed-end fund, active ownership, matched sample

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[1] 21044@student.hhs.se
[2] 21292@student.hhs.se

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1 Introduction

"We want to create shareholder value by developing the companies we already own – not by selling" – Jacob Wallenberg, chairman of Investor AB[3]

Swedish investment companies are unique in the sense that most of them are publicly traded holding companies with the explicit purpose of actively developing publicly traded companies. Once created to save commercial banks from high risk shares, some of the Swedish investment companies have been around for about 80 years. Impressive as it may seem, this is not without controversy. Business journalists, as well as investors, question their ability to create value on a public marketplace (Cervenka, 2011). Publically traded investment companies often trade with a market capitalization substantially lower than their net asset value[4]. This discount is used by business journalists as an index of the public esteem of top management performance, since poor management performance is assumed to lower the investor's valuation of the investment company's portfolio and the way it is managed. In combination with considerable salaries and bonus programs for top management, this often spurs a debate about the validity of the business model, the skills of top management and to what extent private investors benefit from an investment in investment companies (Larsson & Cervenka, 2011).

Investment companies have also drawn attention in academia, where the focus of research has been on explaining the discount and understanding the value creation of investment companies towards their investors (e.g. Thompson, 1978; Hjelström, 2007). However, this research has put little focus on the portfolio companies[5] and investment companies' ability to add value to them. Because portfolio companies are the main assets of investment companies, the value adding potential of investment companies is important to consider. Hence, the purpose of this thesis is to address this gap in previous literature by examining whether investment companies' ownership adds value to their portfolio companies. This is done by answering the research question: "*Do public investment companies add value in their publicly traded portfolio companies?"*

[3] Translated by the authors from Almgren (2011): "Vi vill skapa aktieägarvärde genom att utveckla de bolag vi redan äger - inte genom att sälja"

[4] Net asset value is the market value of the investment companies' assets less liabilities, i.e. book value of equity if assets and liabilities are accounted for at fair value.

[5] Companies owned by investment companies are referred to as portfolio companies in this study

Besides adding to the research regarding investment companies, this research question is also interesting because it addresses the more general issue regarding corporate governance and its effect on firm performance. This field of research is extensive but results are not conclusive (Dalton et al., 2003). The investment company can be considered as a special type of owner and this study sheds light on how that type of owner can affect firm performance.

1.1 Demarcation

To answer the research question and test the different hypotheses in this thesis, some demarcations have been made with regard to the study objects. First of all, the study is limited to public Swedish investment companies and public portfolio companies. Second of all, the dataset contains data for years 2005-2010. The starting period is set to year 2005 because the problem of missing data in Orbis[6] was considerable for earlier years. In order to avoid the risk of bias due to missing data, we chose this limit. The reason for using year 2010 is that not all firms had published their annual reports for 2011 when the data was being collected.

1.2 Investment companies in Sweden

Public investment companies are well-known in the Swedish society. Two of the most familiar ones, Investor and Industrivärden, were formed by Swedish commercial banks in the first half of the 20th century (Schön, 2000, p. 345; Investor AB, 2012). The purpose of these companies was to manage financially distressed companies, as regulation during the 1930's no longer allowed banks to hold shares (Schön, 2000, p. 345). As a consequence, investment companies were formed to manage and sell off such companies. Interestingly, these companies are two of the three largest investment companies on the Swedish stock market as of 2010 (Affärsvärlden, 2010).

Today, Swedish investment companies show plenty of variation in their structure. There are publically traded investment companies that only own publically traded companies, like Industrivärden; that own a mixture of public and private companies, such as Investor; and that own only private companies, like Ratos (SOU 2012:14). Although publicly traded, most investment companies have families as their largest owners[7].

[6] Orbis is the database mainly used for the study
[7] See Appendix 4 where the largest shareholder for each investment company is presented.

Investment companies in Sweden benefit from special taxation rules to encourage long-term development of Swedish companies (SOU 2012:14). In brief, they do not pay taxes on capital gains and cannot deduct capital losses from taxable income. Taxes are paid on the opening balance of its assets amounting to 1.5 % (SFS 1999:1229, chapter 39 §14). The Swedish tax authority provides a legal definition of companies eligible to apply these rules:

"An investment company is a Swedish stock corporation or a Swedish incorporated association which

- *exclusively or almost exclusively manages securities or similar personal property,*
- *whose main purpose is to offer the shareholders risk diversification through a well diversified portfolio of securities, and*
- *in which a large number of individual investors own shares"*

(SFS 1999:1229, chapter 39 §15) [8]

Hjelström (2007, pp. 126-127) notes that half of the market value has to be attributable to quoted securities in order for the portfolio to be well diversified, and that listing on the Stockholm Stock exchange requires a well-diversified owner base. If these criteria are met, the investment company is entitled to the specific rules of taxation.

1.3 Outline of the thesis

Using a matched sample method, the operating performance of portfolio companies are compared against peer groups. The tests performed measure whether investment company ownership adds value compared to peer companies without such owners. The empirical results cannot prove that portfolio companies differ in performance compared to their peers. A regression of the observed performance differences on investment company ownership concentration shows weak evidence that large ownership share and ownership by two investment companies has a negative effect on the difference.

The study proceeds with a review of previous literature in chapter 2. This part also presents the theoretical framework used to generate the hypotheses presented in chapter 3. Chapter 4 presents the research design, statistical models and variables used, while chapter 5 continues with the presentation of the dataset and estimation of variables. The empirical results are presented and

[8] As translated by Hjelström (2007, pp. 126-127)

analyzed in chapter 6 and 7 respectively. Finally, chapter 8 contains the conclusions and discussion of our results.

2 Previous research

Value creation in investment companies can be seen from two perspectives, as depicted in Figure 1: 1) Value-creation towards investors and 2) Value-creation in portfolio companies. The first describes return on investment to the company's shareholders whereas the second process describes the investment company's ability to add value to its portfolio companies. Since this study focuses on the second perspective, this will also be the focus of this section. However, to get an overview of the research field the first perspective is briefly reviewed before moving into the second perspective.

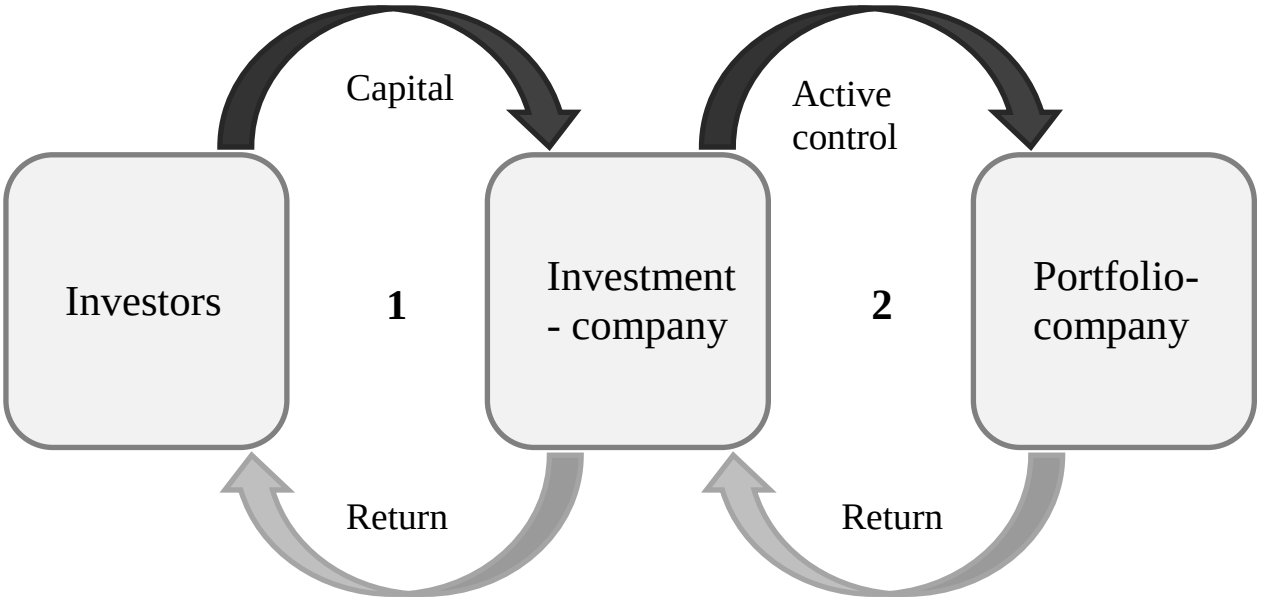

Figure 1: The value creation processes in investment companies

2.1 Value creation towards investors

Public investment companies in Sweden are closed-end funds (CEFs) with a fixed number of shares, implying that the price of the fund is determined by the supply and demand for its share. The asset side of the company's balance sheet contains financial instruments at fair value. CEFs

are often traded at a premium or discount, meaning that their market capitalization is higher or lower than the net asset value (NAV) of the company.[9]

Empirically, CEF discounts have been related to unrealized appreciation, restricted stock, increase in stock-price levels, diversification, controlling power and administrative expenses in the form of agency costs. Premiums or reductions of discounts were associated with large payout of capital gains, investments in foreign securities, falling stock prices, increasing past performance, future expected performance of unquoted securities, other administrative expenses and low asset risk (Malkiel, 1977; Hjelström, 2007). In a mathematical model, the discount is shown to be driven by the tradeoff between managerial ability and fees to managers, where managerial ability adds value to the fund whereas fees subtract value (Berk and Stanton, 2007).

Research has also been done on the relationship between CEF discount/premium and the total return to investors in the CEF's stock. Roenfeldt and Tuttle (1973) find a significant relationship between risk-adjusted performance below the market, using NAV, and CEF discounts. When performance is measured against market prices, the below market return is eliminated. Hence, the discounts are used in the market to adjust the CEF return. Other studies have shown that CEF's traded at a discount have abnormal risk-adjusted return (Thompson, 1978; Pontiff, 1995). Pontiff (1995) uses a two-factor asset-pricing model with control variables. The premium is found to be mean-reverting and to have a strong ability to predict future returns.

2.2 Value creation in portfolio companies

The second aspect of value creation in investment companies is the possibility to create value in the portfolio companies. This aspect is considerably less researched. However, the value creation in portfolio companies can be considered to be a part of the more general research field of the effect of ownership structure on firm performance. Therefore, in this part we will frame the issue of value creation in portfolio companies from the research done on the ownership – firm performance relationship.

[9] The premium/discount is calculated as $\frac{(Market\ Value)_{CEF} - NAV_{CEF}}{NAV_{CEF}}$ where premiums are positive and discounts negative (Hjelström, 2007, p. 103)

2.2.1 The ownership – firm performance relationship[10]

The general question of the effect of ownership structure on firm performance has been covered extensively in the literature and was debated already by Berle and Means in 1932 (Demsetz, 1983). The central premise of their research on ownership structure and its effect on firm performance is the separation of management and ownership. These ideas were developed into the agency theory by Jensen and Meckling (1976) and their model of the ownership structure of the firm. Agency theory builds on the concept that the principals/owners and agents/managers have different incentives and objectives in regard to the performance of the company. The agents may be incentivized by factors which do not add value to the company but add utility to the agent. Hence, the conflict of interest between owners and managers can affect firm performance and the ownership structure may be used to mitigate these agency costs. More specifically the literature refers to two ways of mitigating these costs; alignment and control (Dalton et al., 2003). By aligning managers' incentives with the owners', managers will work to maximize firm performance. This could be done by making executives hold equity. Alternatively, owners could control or monitor the work of the managers. The theory in regard to control is that larger owners would find the cost of control lower than the gain of lowering agency cost, thus making high ownership concentration increase firm performance (Dalton et al., 2003).

The empirical tests have given mixed support for the agency theory. In a meta-analysis of research on the relationship between ownership structure and firm performance, Dalton et al. (2003) find no support that there exists such an effect. This result questions the agency theory as an explanatory theory. Instead, Dalton et al. (2003) discuss the possibility of interactive effects and that agency theory is one among other corporate governance theories that would explain the ownership – firm performance relationship. Hence, the theory considers substitution effects in corporate governance.

The mixed findings of the overall question of ownership structure and its effect on firm performance could, thus, be a result of not separating the different factors affecting the relationship. In an overview on the literature, Connelly et al. (2010) provide a framework that separates between different factors of ownership. As can be seen in Figure 2, the authors present

[10] A summary of articles in this part can be found in Appendix 3

three different aspects to ownership as a form of corporate governance, which are interlinked to each other: ownership structure, owner influence and firm outcomes/attributes.

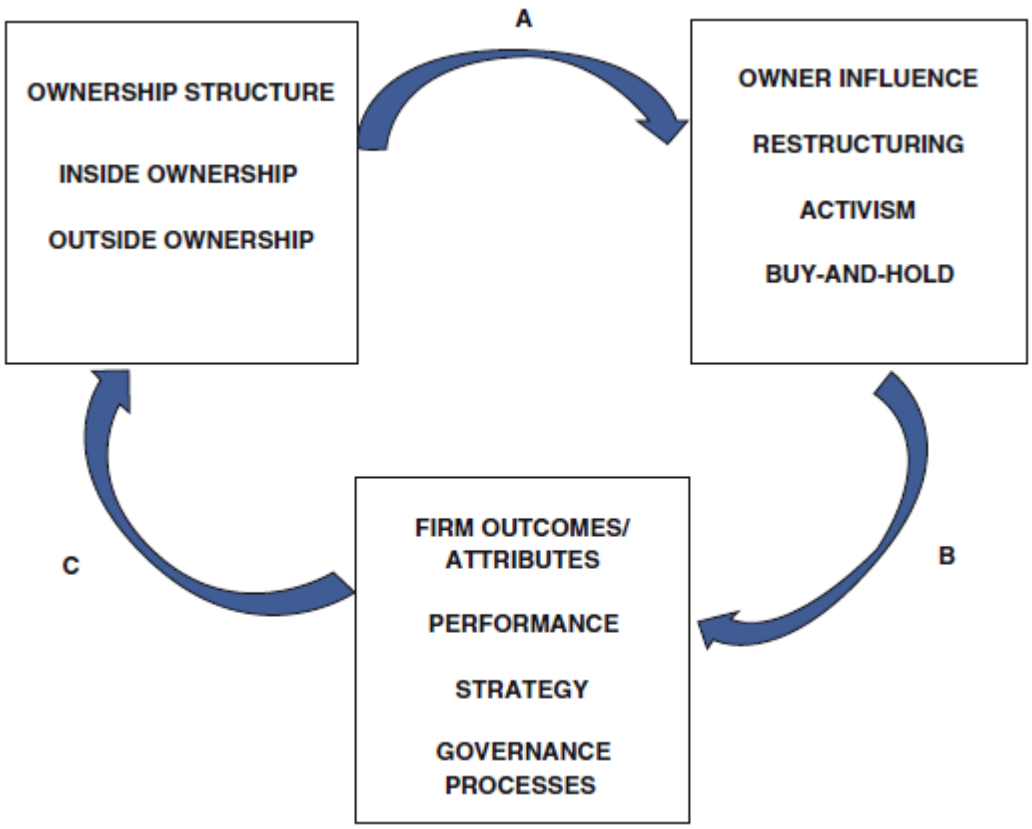

Figure 2: Framework for ownership as a form of corporate governance (Connelly et al., 2010)

The aspect of ownership structure, which refers to the identity and the concentration of the owners, is further divided into inside and outside ownership. Inside ownership is held by executives, board members and other employees. Outside ownership is divided into blockholders, who are investors that hold a large equity stake and are motivated by concentrated control and private benefits; agent owners, who act as representatives of a fractioned underlying ownership; and private equity, who are owners to privately traded firms (Connelly et al., 2010).

Empirical results suggest that the identity of the owner has implications for corporate strategy and performance. Thomsen and Pedersen (2000) find that institutional ownership was associated with higher market-to-book values, while family and government ownership have a negative premium. Furthermore, they find interaction effects between owner identity and ownership concentration and that ownership concentration follows a bell-shaped curve with first an

increasing then a decreasing effect of ownership share on assets returns and market-to-book values.

Concerning inside versus outside ownership, Short and Keasey (1999) finds a non-linear relationship between firm performance and managerial ownership, which is positive for high and low ownership but negative in between. In another study, Nickell et al. (1997) test the effect of market competition, financial market pressure and shareholder control on corporate performance using UK data, finding that owner-controlled firms outperform manager-controlled firms.

Another type of owner identity is private equity companies, which have a similar model of value creation compared with investment companies, albeit with a different time horizon and focus on privately traded companies. Archleitner et al (2010), find that 2/3 of the value created in PE companies comes from operational improvements. Bergström et al (2007), when studying Swedish PE firms, also find that they create value through operational improvements. Furthermore, they propose that value can be created through parenting advantage, reduction of agency cost and direct operational improvements. By parenting advantage, they refer to the advantage of a long-term holding period of the owner, the industry expertise and a network of contacts. The positive effects of long-term holdings also get support by Bushee (2001), who studies the effect of investors with short-term investment horizon and finds that they are associated with underweighting of long-term earnings, which translate into misvaluations.

Ruiz-Mallorqui and Santana-Martin (2011) studies the interactive effect of different owner identities on Spanish companies. They find that increasing control of the company by the second and third largest owners will decrease the possibility of the largest owner to fulfill its objectives. However, if the largest owners have the same identity they will cooperate.

A final aspect suggested by the framework in Connelly et al (2010) is the ownership structure as an endogenous factor. Cho (1998) finds that there is a non-linear relation between ownership structure and investment and that investment affects corporate value. However, when allowing for ownership structure to be an endogenous factor, Cho finds that investment affects corporate value, which in turn affects ownership structure. These findings are further supported by Demsetz and Villalonga (2001) who, when studying US data from 1976-1981, find no support for ownership structures resulting in systematic variations in observed firm performance. Instead,

they mean that the capital market creates suitable ownership structures for firms, removing predictable relationships between ownership structure and firm performance.

2.2.2 The investment company and the ownership – firm performance relationship

Using the framework presented by Connelly et al. (2010), in this section the investment company's possibility to affect firm performance is analyzed. Firstly, concerning the ownership identity, the investment companies are outside owners. They usually have a large share in their portfolio companies and can use it to exercise control and be active owners. Thus, they can be considered as blockholder (Connelly et al., 2010).

Secondly, regarding the owner influence Carlsson (2003), in a qualitative study on the Swedish investment company Investor, finds several important factors how Investor affects its portfolio companies. First of all, as owners they have focused on restructuring industries and making market development initiatives. Second of all, Investor has management competence, by which Carlsson means that Investor is active by choosing people for the executive positions in the portfolio companies. Finally, Investor has always had a long-term focus, with the initial objective to boost Swedish industrialization, and later to foster global leading corporations.

Finally, considering firm outcomes, Carlsson (2003) also relates the above mentioned factors to the success of Investor's portfolio companies. He finds that Investor has a business risk competence, meaning that they have been successful with certain types of industries and strategies. Especially they are successful in R&D intensive and manufacturing industries, and with strategies concerning inorganic growth. Furthermore, Carlsson identifies the possibility to find the right person for the right position (especially the CEO) as a key factor for their active ownership to be successful.

Summarizing these findings, we can adapt the framework by Connelly et al. (2010) and position the investment company within it as shown in Figure 3.

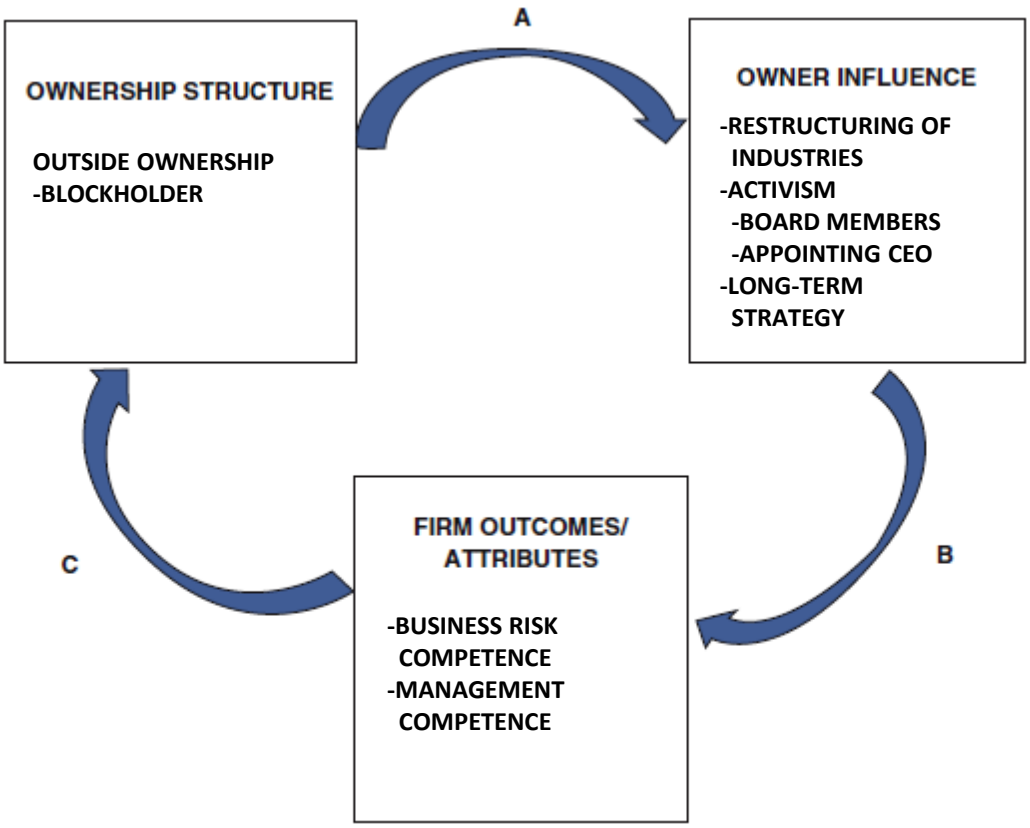

Figure 3: The investment company as an active owner (adapted from framework by Connelly et al. (2010))

3 Hypotheses

In Figure 3 several factors are summarized as potential factors, which can make investment companies add value to their portfolio companies. Based on these factors, the following four hypotheses are proposed to see if investment companies actually add value.

As an initial test we want to see if investment companies overall add value in their portfolio companies, hence the process of both path A and B in Figure 3. As there have been mixed results concerning these types of tests (Carlsson, 2003; Dalton et al., 2003; Connelly et al., 2010) the hypothesis is as follows:

H_1: *A portfolio company differs in operating performance compared to a company which is not owned by an investment company.*

According to theory, there is conflicting evidence that blockholders with a large share of ownership have an effect on firm performance (Dalton et al., 2003; Connelly et al., 2010).

Therefore, we are interested to see if portfolio companies with more concentrated ownership differ in their performance. This leads to the next hypothesis, which can be seen as an interaction between ownership concentration and ownership identity:

H_2: *A portfolio company differs in operating performance compared to a company which is not owned by an investment company, when the investment company has a large owner share*

Another factor, which has been established as important, is that a long-term investment horizon should affect performance (Bergström, et al., 2007; Bushee, 2001). Since the investment companies in our study have a business logic of long-term investment we want to test the portfolio companies that have been owned for a long time and benefited from this long-term horizon. Hence, we test:

H_3: *A portfolio company differs in operating performance compared to a company which is not owned by an investment company, when the investment company has been a long-term owner*

Finally, Dalton et al. (2003) and Connelly et al. (2010) both argue that interactive effects between owners could affect how ownership affects firm performance. Furthermore, Ruiz-Mallorqui and Santana-Martin (2011) find evidence of such interactive effects. We are, therefore, interested to see if combinations of ownership structure and ownership influence explain the difference in operating performance. The hypothesis tested is:

H_4: *Differences in operating performance between peer groups can be explained by interactive effects of ownership structure and influence.*

4 Research design

To test the hypotheses we have chosen to perform a quantitative study where statistical tests are used to compare the companies in a large dataset. A quantitative study based on statistical measures is in general valid if it is correctly specified and variables are correctly defined. In the following section the quantitative method is discussed, as well as the different models applied.

4.1 Matching

The hypotheses are tested with the use of a matched sample study. The advantage with such a study is that unobserved effects that are shared by the matched observations are controlled for. If

the independent variable of interest differs between the matched study objects, then the difference between the matched observations can be tested to find out if the independent variable has any effect on the dependent variable (Wooldridge, 2009, p. 494). For the tests in this study operating performance is the dependent variable and investment company ownership is the independent variable separating the observations within the matched pair. By using portfolio companies as the studied object the method allows for the isolation of value creation in publicly held portfolio companies, since private companies are excluded.

The matched sample is suitable for settings where it is possible to match study objects so they differ in just one variable, for example the return on education measured on twin siblings with identical genes. Hence, ideally the portfolio should be matched with an identical company in every respect except for the ownership (Wooldridge, 2009, pp. 494-495). Finding two companies that match each other perfectly is difficult (if not impossible) as companies develop differently depending on age, size, geography and corporate culture.

In research this problem is mitigated by using so called inexact matching estimators. In these methods matching is done using matching variables to assign scores to control observations (peer companies). These scores are used to measure the distance to the study objects (portfolio companies) and to choose the best match based on the distance to the study object. A common method is nearest neighbor matching, with or without replacement of the neighbors, where a certain number of neighbors are chosen as control observations. The number of neighbors to use is a tradeoff between bias and variance, where adding additional neighbors increases the bias but reduces the variance. Using several neighbors is suitable if there are many cases with close neighbors (Joensen, 2011).

For this study, peers have been chosen based on a number of matching variables and peer companies have been drawn with replacement, i.e. the same company can be used as peer to different portfolio companies. This approach was chosen since certain industries have a small amount of suitable peers. Peers have been assigned by applying the matching variables in order of priority to select three to six peers. Thus, a qualitative assessment of the distance between the portfolio company and the peer companies has been made, rather than using a score system to match observations. The operationalization of this matching process is further discussed in section 5.

Concerning unobserved explanatory variables for firm performance, these are likely to be constant in similar companies, and when differencing between firms, these effects are accounted for. However, unobserved variables might correlate with the variable of investment company ownership (the variable tested), decreasing the validity of the design and causing bias in the results.

4.2 Models

Depending on the hypotheses, different methods are used to test them. To test hypotheses H_1 to H_3, Z-tests or t-tests will be performed. To test hypothesis H_4 a linear regression is performed.

4.2.1 Z-test

To test for the overall effect of investment companies' effect on firm performance, a two-sided Z-test is used to see if the difference, μ, in mean operating performance (OP) between the portfolio companies and peer companies is significantly different from zero. Defining the difference for peer group j as, $X_j = OP_{j,i} - OP_{j,p}$, where the subscript i indicates portfolio companies and p peer company, the population difference, μ, will be estimated as the mean value of X_j, and the standard deviation will be estimated with the sample standard deviation. Thus, the Z-test used will be,

$$Z = \frac{\bar{X} - 0}{s_X/\sqrt{n}}$$

Where $\bar{X}$ is the mean difference for all peer groups over the years, and s_X is the sample standard deviation (Newbold, 1995, pp. 329-339). For this test to give unbiased results, the differences must follow a normal distribution. Since our dataset is large (n>30), the central limit theorem holds and the mean can be assumed to be approximately normally distributed and this specification can be used (Newbold, 1995, p. 337).

When calculating $\bar{X}$, $OP_{j,p}$ uses the median value of the peers in each peer group to reduce the effect of potential outliers in the data compared to using mean values (Newbold, 1995, p. 13). However, when calculating the average ($\bar{X}$) over the years, the mean value is used.

4.2.2 Student's t-test

In the cases where the number of observations is fewer than 30, the central limit theorem does not hold and the Z-test cannot be applied. Given that the population distribution of $\bar{X}$ is normally distributed, the t-test can be used for hypothesis testing (Newbold, 1995, p.353). Therefore, in those cases where n<30 the Shapiro-Wilks test of normality is used on the observed differences to see if they are normally distributed. If that test does not reject normal distribution in the differences, the t-test is applied.

4.2.3 Sign-rank test

As a robustness check of the results from the Z-test, a Wilcoxon sign-rank test will also be performed. This is a non-parametric test, which is less affected by outliers. Furthermore, the distribution does not have to be normal. The Wilcoxon sing- rank test takes into consideration the sign of the difference and the relative sizes of the differences (Newbold, 1995, pp. 391-393).

4.2.4 Linear regression

To understand which variables that could explain the difference in operating performance between peer groups a regression model is used. For the model to be valid and give unbiased results all the explanatory variables explaining the difference in operating performance must be incorporated (Wooldridge, 2009, p. 157). The variables used are those that get support in theory for affecting firm performance. In other words, the different variables tested in hypothesis 2-4. The general form of the model can be written as:

$$\Delta(operating\ performance) = \alpha + \beta_1(concentration) + \beta_2(holding\ period) + \beta_3(multiple\ owners) + \varepsilon$$

Based on the general model, the following two specifications are done, with the only difference between them being a difference in the variables concerning ownership concentration.

$$y_i = \alpha + \widehat{\beta_1} i20_i + \widehat{\beta_2} Dsl_i + \widehat{\beta_3} Dl_i + \widehat{\beta_4} o2002_i + u_i \ (1)$$

$$y_i = \alpha + \widehat{\beta_1} i1040_i + \widehat{\beta_2} i40 + \widehat{\beta_3} Dsl_i + \widehat{\beta_4} Dl_i + \widehat{\beta_5} o2002_i + u_i \ (2)$$

The variables used in the regression are defined in Table 1. How these variables are measured is further elaborated in Section 5.4.

Variable name	Variable description
y	Mean difference in Operating performance for each peer group
i20	Dummy variable, 1=one, and only one, investment company with ownership over 20%; 0=else
i1040	Dummy variable, 1=one, and only one, investment company with ownership between 10% to 40%; 0=else
i40	Dummy variable, 1=one, and only one, investment company with ownership over 40%; 0=else
Dsl	Dummy variable, 1=two investment companies as owners, one with ownership over 10% and one with ownership under 10%; 0=else
Dl	Dummy variable, 1=two investment companies as owners, both with ownership over 10% ; 0=else
o2002	Dummy variable, 1=at least one investment company has been owner since at least 2002; 0=else

Table 1: Variables used in regressions

For these specifications to give unbiased coefficients that can be tested, the specification must follow classical linear model assumptions (Wooldridge, 2009, pp. 157-158). To ensure the validity, robust t-statistics are used to correct for potential heteroskedasticity in the variance and the error terms will be tested for normality to make sure that inferences from hypotheses are valid.

5 Data

In this study, a crucial part has been to create the dataset for the analysis. In this section the process of creating the dataset, and the choices that have been made, are described. The first part describes the dataset in general, followed by a description of the selection of companies. The choice of companies used in the study can be found in Appendix 4. Finally, the estimation of the variables is discussed.

5.1 Dataset

The hypotheses in this thesis are tested with the use of a dataset that has been constructed and compiled by the authors. Because we have chosen to use a matched sample methodology the dataset is structured into matched “pairs”, referred to as peer groups. Each peer group consists of a portfolio company and three to six peer companies, which are not owned by an investment company. For each of the companies within the peer group, operating performance is measured. The structure of the dataset is seen in Table 2.

Peer group, p	Operating performance, portfolio company	Operating performance, peer company	Difference
1	X_1	$Y_{1,1}, Y_{1,2}, Y_{1,3} \ldots$	$X_1 - \tilde{Y}_1$
2	X_2	$Y_{2,1}, Y_{2,2}, Y_{2,3} \ldots$	$X_2 - \tilde{Y}_2$
…p…	X_p	$Y_{p,1}, Y_{p,2}, Y_{p,3} \ldots$	$X_p - \tilde{Y}_p$
45	X_{45}	$Y_{45,1}, Y_{45,2}, Y_{45,3} \ldots$	$X_{45} - \tilde{Y}_{45}$

Table 2: Structure of the dataset.

In total, the dataset contains 45 peer groups with 227 companies with data from 2005-2010. Data has been collected from the database Orbis, the companies' websites, annual reports of the investment companies, portfolio companies and their peers, industry press and stock analysts' reports. The companies are identified by their unique identification numbers in the Orbis database (BvD ID number). For every company, the dataset contains accounting figures used to calculate operating performance, whether the company is publicly or privately traded (a few peer companies are privately traded), the peer group it belongs to, its main NACE industry code from Orbis, the country of registration and a brief description of its business (based on information provided in Orbis or gathered from the company's webpage). In addition, for the portfolio companies the dataset contains information about which investment company is the owner, the investment company's share of capital and votes in its portfolio companies and information about how long the investment company has owned the portfolio company. The specific information for portfolio companies is gathered mainly from annual reports.

The main data source in this study is the Orbis database. All the data in Orbis are processed data. That is, Orbis has a pre-defined structure for their data and they translate data from their source data into this structure. This could cause issues with reliability, and to check this data we have compared the information in Orbis with annual reports for a test sample of firms. For many of the line items, in the accounting data especially, the quality and consistency have been unsatisfactory. There have been many examples where different companies have been treated differently concerning the definitions of interest bearing liabilities, financial revenue and earnings measures. To increase reliability, we have used clear-defined line items that all companies report. The problem with this choice is that it has decreased the validity of the variables to some extent.

5.2 Choice of portfolio companies

The choice of portfolio companies is done in two steps. First of all, the company must be owned by an investment company. Second of all, we need to choose which of those companies to use in our study.

For the purpose of this study, we deviate from the definition of investment companies used for tax purposes, which was presented in Section 1.2. Especially the issue of portfolio diversification is relaxed. In this study, an investment company should:

- Be a CEF traded on the Stockholm Stock exchange
- Hold shares in companies publicly traded in Sweden
- Exist for the whole period 2005-2010
- Actively develop its portfolio companies

The first two criteria are chosen since the aim of the study is to test whether publicly traded investment companies can create value in their public portfolio companies. For this reason, it is not necessary for the company to fulfill the definition by the Swedish tax authority, since value creation is not measured on the investment company's accounts. By using these definitions, we can include two investment companies which do not meet the criteria of the Swedish tax authority in 2010.[11] The third criterion is selected to ensure as many observations as possible of operating performance. The last criterion separates investment companies from other institutional investors which are passive owners.

The Stockholm Stock exchange has been checked for investment companies using trade description and NACE industry codes in Orbis. The operations of potential investment companies were checked on their homepages. This control has been complemented by going through the company list in Hjelström (2007, p. 290). During the period, there were ten investment companies in Sweden which met the above criteria. They are presented in Appendix 4. Two mergers have taken place during or after the time period; Bure merged with Skanditek in 2010 and Latour merged with SäkI in 2011. These have been considered as a merged entity in the study, since their portfolios showed considerable overlap and have been joined in the merger.

[11] L E Lundbergföretagen och Bure

Turning to the choice of portfolio companies, all publicly traded portfolio companies of the chosen investment companies have been included in the study. The reason for this choice is that corporate governance differs significantly between privately and publicly held companies. Since the value creating ability of private equity has recently been tested on Swedish data (Bergström et al., 2007), we wish to focus on value creation on publicly held companies. With the exception of Industrivärden, all investment companies in the study have diversified into the private equity business. We based the selection on the portfolio companies that were held by the investment companies in 2010. The investment companies had a few portfolio companies which were held in the beginning of the sample period but sold off before 2010. These are not part of the dataset as we risk lowering the quality of matching when using the competitive situation of today for the beginning of the sample period.

Upon closer examination of the portfolio companies present in 2010, some portfolio companies had to be excluded due to either conceptual or operational issues. The excluded portfolio companies and the reason for excluding them are shown in Table 3:

Excluded company	**Reason**
Avanza Bank	These companies are banks or financial companies with a different value generating operation. Hence, operating performance from these types of companies cannot be compared with operating performance of non-financial companies
Handelsbanken	
Skandinaviska Enskilda Banken (SEB)	
Switchcore	
Cardo	Unable to find three suitable peers with publicly disclosed financial statements during the whole time period.
eWork Scandinavia	
Hemtex	
HMS Networks	
Loomis	
Nederman	
CDON	Portfolio company for one year only, questionable if investment company's active ownership has had an effect.
Mycronic Mydata	
OEM International	
Industrivärden	Investment company, using their portfolio companies in the study
Duroc	Similar operations as an investment company, difficult to measure their operating performance.

Table 3: List of excluded portfolio companies

To summarize, all portfolio companies with less than three peer companies have been dropped from the study. Banks and financial companies have been excluded due to measurement issues with operating performance. Since neither operating net assets nor EBIT can be determined for these types of companies, it has not been possible to use RONA or operating margin as

performance measure for banks. Due to the vast differences in operations between banks and nonfinancial companies, we decided to exclude banks in order to use consistent measures of operating performance across all portfolio companies. If the exclusion is non-random, the exclusion of these companies could cause problems when testing the hypotheses, since it might distort the normal distribution of the observed differences $\bar{X}$.

5.3 Choice of peer companies

The search for peer companies has been based on *owners' identity, industry, legal form, size and geography* as variables for matching. Industry and size are often used when creating benchmark for operating performance (Barber & Lyon, 1996). Legal form and owner's identity are important characteristics for the portfolio companies in the study, and those factors are therefore important to match against. The search has initially been based on the information provided by the database Orbis. Information from companies' websites, industry press and stock analysts' reports has also been used to verify the suitability of the peers. When evaluating the peers, these five matching variables have been qualitatively assessed to choose the most suitable peer.

5.3.1 Owners' identity

The first important factor to consider is the ownership identity of the peer companies. In order to test our hypotheses, it is necessary that the selected peer companies are not owned by investment companies. To check every major owner for every peer to determine if it is an investment company is an extensive task. To make it manageable we have done a search in Orbis that lists every owner of the companies, their direct and indirect ownership, and Orbis' definition of the owner identity. This search was made on data for 2005 and 2010. The owners that were identified as either financial companies or private equity firms and had an ownership greater than 2% were checked further. Primarily, we checked these companies against their primary NACE code and trade description in Orbis. In the cases where it could not be excluded that the owner engaged in active ownership of its investments, the company's website was checked to determine whether its activities are the same as those of Swedish investment companies. In such cases, the peer(s) owned by the company was excluded if the owner's influence was deemed significant (owner present in the peer company's board of directors or listed as one of the largest shareholders of the peer company). However, it should be noted that many so called investment companies in the United States and other countries do not have a business involving active ownership. Investment

companies in the US typically offer a number of mutual funds or hedge funds for investment, meaning that their main purpose is to offer financial instruments for investing or hedging rather than owning companies for the sake of long-term development or governing power.

5.3.2 Industry

To control for industry the 4-digit NACE primary industry code of the portfolio company has been used as search criteria. However, in some cases the NACE industry code is too general or fails to describe the operations of the portfolio company. Therefore, companies with the same industry code that fulfill the other criteria have been further checked by evaluating the trade description provided in Orbis, or the business description on the company's website.

In several cases, it has not been possible to find companies with the same industry code and similar operations and that fulfill the other criteria. This could be due to the fact that the company is highly horizontally or vertically integrated or because the company is active in a specific industry unfamiliar to both authors. In such cases the portfolio company and its industry/industries have been studied more thoroughly to find suitable peers. This involves reading about the company and its industry from the company's website, business and industry press and analyst reports. Some companies name peers identified as competitors. In such cases, we have examined these companies and oftentimes used them as peers for the company, even though the industry codes have differed (provided that they meet the other criteria).

In the cases where companies are diversified and operate in more than one industry, it has not been possible to find similar peers with the same activities. Instead, the peer group contains companies active within one or more of the industries in which the portfolio company is present in order to replicate the business of the portfolio company.

5.3.3 Legal form

To the farthest extent possible, we have looked for public peer companies because all our portfolio companies are public companies and these types of firms face a different environment with regards to governance, liquidity of stocks, accounting standards and regulations. In certain cases, there have been fewer than three publicly traded companies within the same industry, same geographic scope and of somewhat similar size. These have not been sufficient to make up a peer group. In those cases, the search has been extended to privately held companies of similar size,

operations and geographic scope. Although this is a deviation from matching of publicly traded companies, we think that this deviation is less severe than deviating from the other criteria.

5.3.4 Size

In the general search in Orbis the companies have been listed by book value of total assets 2010. The search for peers has then been done on companies that are of similar size to the portfolio company. In the cases when companies within the same industry and with the same legal form have differed greatly in size, we have relaxed this assumption. In such cases, the limit was drawn at companies within 10 times the size of the portfolio company's assets.

5.3.5 Geography

The geographical scope of the business has been considered to match the macroeconomic and competitive environments of the companies. Certain industries are global in their nature, with production and/or sales in many different countries. This is typical of multinational production industries such as mining equipment and trucks. Other industries, for example construction and retail/sales, act on local markets. Companies in global industries have been matched with suitable peers from any country whereas companies active on a local market have been matched with local peers. The identification of geographical origin has primarily been based on country of registration, but has also been verified by reviewing the companies' description of their markets from their websites.

5.4 Estimating variables

Table 4 lists and describes the variables used in the dataset to test the hypotheses and to divide the dataset into different subsets and peer groups. This section continues to describe how the different variables are measured.

Variable	Measure	Description
Operating performance	$RONA_I$	The value of RONA for portfolio companies
	$RONA_P$	The value of RONA for peer companies
	$RONA_D$	The difference in RONA between portfolio and peer companies
	$Opmarg_I$	The value of operating margin for portfolio companies
	$Opmarg_P$	The value of operating margin for peer companies
	$Opmarg_D$	The difference in operating margin between portfolio and peer companies
Ownership structure	Votes	The investment company's share of votes in its portfolio company (year 2005)
	Over20	Dummy variable, 1= at least one investment company with ownership over 20%; 0=else
	i20	Dummy variable, 1=one, and only one, investment company with ownership over 20%; 0=else
	i1040	Dummy variable, 1=one, and only one, investment company with ownership between 10% to 40%; 0=else
	i40	Dummy variable, 1=one, and only one, investment company with ownership over 40%; 0=else
	Dsl	Dummy variable, 1=two investment companies as owners, one with ownership over 10% and one with ownership under 10%; 0=else
	Dl	Dummy variable, 1=two investment companies as owners, both with ownership over 10% ; 0=else
Ownership period	o2002	Dummy variable, 1=at least one investment company has been owner since at least 2002; 0=else
	o2005	Dummy variable, 1=at least one investment company has been owner since at least 2005; 0=else

Table 4: Variables used in the dataset

5.4.1 Operating performance

To test the hypotheses operational performance has to be measured. We have decided to use return on operating net assets (RONA) and operating margin to measure operational performance.

The rationale for using RONA is that this measure reflects the return generated by the firms operating net assets, thus excluding return on financial assets. This measure is therefore a valid measure of operating performance.

RONA is defined as:

$$RONA = \frac{OI}{(ONA_{CB} + ONA_{OB})/2}$$

(Penman, 2010)

where,

$ONA = (Operating\ Net\ Assets\ ) = (Total\ assets) - (Operating\ liabilities) - (financial\ assets)$

OI = Operating income (EBIT)

The average of opening balances (OB) and closing balances (CB) have been used for ONA. We have used the Orbis database to acquire data for these variables. Unfortunately, Orbis does not report all components of operating liabilities and financial assets for all observations. Even though operating liabilities were reported for many companies the classification made in Orbis was unsatisfactory for companies which we checked. Sometimes balance sheet items that clearly should be a part of financial liabilities were classified as operating liabilities. In order to obtain a consistent definition of ONA, we have chosen to use the most stable components of operating liabilities and financial assets available in Orbis. Hence, the calculation of ONA has been modified to the following:

$ONA = (Total\ assets) - (Accounts\ payables) - \ (Cash\ and\ cash\ equivalents)$

This measure gives a more reliable calculation of RONA, than the definition using all operating liabilities and all financial assets, since most companies report accounts payables and cash. The disadvantage is that other non-interest bearing liabilities and short-term investments are still included in the asset base, which might be overstated. However, since the method used in the thesis just considers differences, the overstatement of assets should not cause bias as long as the effect is the same for both the portfolio and peer company. Since the portfolio and peer company are matched with each other, they should be similar in this regard.

As a second measure of operating performance we have used operating margin defined as the EBIT margin:

$$Operating\ margin = \frac{EBIT}{Operating\ revenue}$$

Besides representing operating performance well, the operating margin is reliably reported in Orbis. After controlling the data gathered in Orbis we concluded that we did not have to make adjustments to the operating margin-measure.

5.4.2 Ownership structure

Ownership concentration has been measured as the investment companies' percentage of votes in the portfolio companies. Measuring the variable as percentage of votes and not capital is logical because the investment companies can assert power through voting at annual general meetings. The percentage of votes is measured at the beginning of the period, 2005, because that year best reflects the possibility of the investment company to influence the portfolio company. Since we are interested in mean differences and our models use the mean differences in the tests, voting percentages of other years are not used. Furthermore, for most portfolio companies the percentage of votes has changed little during the time period studied. Based on this measure different dummy variables have been constructed that reflect different ownership intervals.

Moreover, dummy variables have been constructed for portfolio companies with two investment companies as owners. The percentage of votes has been used to construct variables to describe if there are two small owners[12], two large owners or one large and one small. The definition of small and large owners has been set at 10% since this is the level of ownership at which investors in Sweden have certain legal rights as minority owners (SFS 2005:551)

5.4.3 Ownership period

Ownership period has been controlled by looking up the investment companies' ownership in the portfolio companies at different years. This has been checked against the annual reports, and dummy variables have been created to reflect at what points in time different portfolio companies become owned by an investment company. Of special importance is the variable measured at 2002, since it captures the firms that have had a stable and long-term owner. Even if the difference in operating performance never will be tested in the time period between 2002 and 2005, the use of o2002 is a way to control for potential lag effects between strategy decisions and performance effects.

[12] No portfolio company in the dataset had two small owners, so this variable has been excluded.

6 Results

6.1 Descriptive statistics

To give an overview of the data, descriptive statistics are presented in Table 5 and Table 6. Table 5 shows summary statistics for the difference in operating performance between portfolio and peer companies, including maximum and minimum values. The table contains data for the whole period studied, 2005-2010. As is evident, the median and mean differences are close to zero, with the exception for the mean difference in operating margin. However, the minimum difference in operating margin is extremely low, which could explain the larger negative mean difference in operating margin. Furthermore, the maximum and minimum differences as well as the standard deviation, indicates a large variance in differences between the peer groups.

Operating statistic	Median difference, %	Mean difference, %	Min difference, %	Max difference, %	Std. Deviation, %
RONA	0.15	0.40	-19.84	17.72	7.10
Operating margin	0.46	-1.17	-55.58	8.92	9.72

Table 5: Descriptive statistics of data. For each peer group and year the operating performance of the portfolio company is compared to the median value of the peer companies. The mean of this difference over the years are then calculated for each peer group and these means are used in the table.

To get a better overview of the extreme values, Table 6 presents the five most extreme differences and the name of the associated portfolio company and investment company.

RONA				Operating margin			
Difference, %		Portfolio company	Investment company	Difference, %		Portfolio company	Investment company
17.7		AstraZeneca	Investor	8.9		Atlas Copco	Investor
15.4		Softronic AB	Traction	8.6		SkiStar	Öresund
12.9		Atlas Copco	Investor	7.9		AstraZeneca	Investor
12.9		ABB	Investor	7.0		Vitrolife	Bure
9.0		Sweco	Latour	6.6		Lindab International	Öresund
	-7.5	Saab	Investor		-9.2	Intrum Justitia	Öresund
	-9.0	Metro International S.A.	Kinnevik		-9.7	Tele2	Kinnevik
	-9.2	Partnertech	Bure/Traction		-10.6	Metro International S.A.	Kinnevik
	-16.7	Indutrade	Industrivärden		-14.1	Hufvudstaden	Lundbergföretagen
	-19.8	Black earth farming	Kinnevik		-55.6	Black earth farming	Kinnevik

Table 6: Table with top and bottom five portfolio companies and their investment company

As can be seen from the table, the variance in differences is considerable. Moreover, the difference in operating performance for all ten portfolio companies in relation to their peers is large, considering that the mean difference is close to zero.

6.1.1 Outliers

Considering Table 6, there are some values that can be considered as outliers. For the tests we decided to remove extreme outliers[13] and therefore the peer group including Black Earth Farming was excluded from the sample before testing the hypotheses.

6.2 Tests of hypotheses

Moving on to the analysis of the differences in operating performance, the test results for our four hypotheses are presented below.

H_1: *A portfolio company differs in operating performance compared to a company which is not owned by an investment company.*

Test (N=44)	RONA		Operating margin	
Z-test	$RONA_I – RONA_P = 0$		$Opmarg_I – Opmarg_P = 0$	
Mean difference, %	0.86		0.06	
95% Conf. Interval, %	-1.05	2.77	-1.45	1.58
P-value	0.38		0.93	
Wilcoxon sign-rank test				
Sign test	0.70		0.37	
P-value	0.48		0.71	

Table 7: Z-test and Wilcoxon test for difference in RONA and operating margin.

Table 7 shows a Z-test and sign-ranked test on RONA and operating margin for years 2005-2010 from 44 peer groups. The Z-tests for both variables show positive mean values, meaning that the average values of RONA and operating margin are higher in the portfolio companies than in the peer companies. However, neither of these results are statistically significant on a 10 % significance level, meaning that the null hypothesis of equal operating performance cannot be rejected. Looking at the nonparametric sign-rank test, the Z-value indicates that there is a positive difference when using both RONA and operating margin as measure of operating performance. However, neither of the tests are significant at 10 % level, which means that H_1 cannot be

[13] Extreme outliers are defined as $Q_3 + 3 * (Q_3 - Q_1)$ for the upper limit and $Q_1 - 3 * (Q_3 - Q_1)$ for the lower limit, where Q_1 is the first quartile, Q_3 is the third quartile (Sandberg, 2012).

rejected. Thus, neither the parametric t-test nor the nonparametric sign-rank test give support for a difference in performance between portfolio companies and peer companies.

H_2: *A portfolio company differs in operating performance compared to a company which is not owned by an investment company, when the investment company is a large owner*

Test (N=26)	RONA		Operating margin	
T-test	$RONA_I – RONA_P = 0$		$Opmarg_I – Opmarg_P = 0$	
Mean difference, %	-0.89		-1.20	
95% Conf. Interval, %	-3.33	1.55	-3.26	0.85
P-value	0.46		0.24	
Wilcoxon sign-rank test				
Sign test	-0.55		-1.11	
P-value	0.59		0.27	

Table 8: T-test[14] and Wilcoxon test for difference in RONA and operating margin.

Table 8 shows the t-test and sign-rank test of RONA and operating margin for the peer groups where the investment companies have significant ownership (over 20%) in their portfolio companies. This criterion reduces the sample to 26 peer groups. As in the test of H_1, data for year 2005-2010 is used. Both tests indicate lower values of RONA and operating margin in the portfolio companies, but this difference is not significant on a 10 % significance level. Thus, the null hypothesis of equal operating performance cannot be rejected and there is no support for a difference in performance between portfolio companies with significant investment company ownership and their peer companies.

H_3: *A portfolio company differs in operating performance compared to a company which is not owned by an investment company, when the investment company has been a long-term owner*

To test this hypothesis we limited the sample to peer groups where the portfolio company has been owned at least from 2002-2010. The operating statistics were again measured for the time period 2005-2010. The result of this test is shown in Table 9.

[14] The differences are tested for normality, of which the results can be seen in Appendix 2

Test (N=31)	RONA		Operating margin	
Z-test	$RONA_I$–$RONA_P$=0		$Opmarg_I$–$Opmarg_P$=0	
Mean difference, %	0.76		0.17	
95% Conf. Interval, %	-1.86	3.38	-1.79	2.13
P-value	0.57		0.86	
Wilcoxon sign-rank test				
Sign test	0.43		0.43	
P-value	0.67		0.67	

Table 9: Z-test and Wilcoxon signed rank test on portfolio companies owned from at least 2002

These results do not differ greatly compared to the test using all peer groups. Even though the difference for RONA is positive, the null hypothesis of equal performance cannot be rejected on a 10 % significance level. Furthermore, comparing the different operating performance measures, they are similar to each other.

H_4: *Differences in operating performance between peer groups can be explained by interactive effects of ownership structure and influence.*

Even though the first three hypotheses gave no evidence that investment companies added or destroyed value, the descriptive statistics showed a great variance in differences between the peer groups. The fourth hypothesis captures the effects discussed in the hypotheses 1-3 jointly. To explain the difference, two models were specified:

$$y_i = \alpha + \widehat{\beta_1} i20_i + \widehat{\beta_2} Dsl_i + \widehat{\beta_3} Dl_i + \widehat{\beta_4} o2002_i + u_i \text{ (1)}$$

$$y_i = \alpha + \widehat{\beta_1} i1040_i + \widehat{\beta_2} i40 + \widehat{\beta_3} Dsl_i + \widehat{\beta_4} Dl_i + \widehat{\beta_5} o2002_i + u_i \text{ (2)}$$

The results of the two specifications can be seen in Table 10 and Table 11 respectively.

Variable	Specification 1	
Dependent	RONA	Op marg
Independent		
Constant	0.038 (0.023)	0.010 (0.53)
Individual owner over 20%	-0.042 (0.06)	-0.030 (0.11)
Double owner; 1 small – 1 large	0.001 (0.97)	0.028 (0.07)
Double owner: 2 large	-0.070 (0.05)	-0.006 (0.75)
Owned before 2002	0.003 (0.89)	0.007 (0.64)
R-squared	**0.16**	**0.09**

Table 10: Regression results of the difference in operating performance using specification 1 (the p-values are shown in parenthesis)

The results from this specification using RONA as dependent variable show that portfolio companies with an investment company that owns more than 20% have a significant negative effect on the difference compared to other portfolio companies. Furthermore, if the portfolio company is owned by two large (votes>10%) investment companies, there is also a negative significant effect. Furthermore, the coefficients for both of these variables are economically large, where the difference in RONA is 4.2% lower in a portfolio company with one owner with a voting share of more than 20%, everything else being equal, and the difference in RONA is 7% lower in a portfolio company with two large owners compared to a portfolio company with one small owner. However, these results are not robust when using operating margin as dependent variable. When that variable is used, neither of the variables have statistically significant coefficients. Instead, the coefficient representing one large and one small owner is positive and significant, with a 3% higher operating margin. The explanatory variable for long term ownership is insignificant when estimating the specification using either RONA or operating margin.[15]

The results from specification 1 are similar when changing the specification and adding more levels to the ownership concentration. In Table 11, the results of specification 2 are reported. When using RONA as dependent variable, there is a negative effect on the difference in RONA of having two large investment companies as owners as well as having one owner with votes over 40%. However, in the interval between 10-40% the effect is negative but statistically insignificant. In contrast, all coefficients become insignificant when using operating margin as dependent variable. Again the variable for long-term ownership shows no significant results.

[15] To check whether the residuals where normally distributed, a normality test was performed on the estimated residuals. These tests are shown in Appendix 2 and the results show no evidence that the residuals are not normally distributed.

Variable	Specification 2	
Dependent	RONA	Op marg
Independent		
Constant	0.037 (0.09)	0.013 (0.56)
Individual owner between 10-40%	-0.025 (0.35)	-0.021 (0.35)
Individual owner over 40%	-0.049 (0.09)	-0.052 (0.14)
Double owner; 1 small – 1 large	0.004 (0.88)	0.025 (0.22)
Double owner: 2 large	-0.067 (0.08)	-0.009 (0.71)
Owned before 2002	0.001 (0.97)	0.007 (0.64)
R-squared	**0.12**	**0.11**

Table 11: Regression results of the difference in operating performance using specification 2 (the p-values are shown in parenthesis)

In summary, when testing H_4 we find significant support that large ownership share of one investment company has a negative effect on operating performance in the portfolio company. The same effect can also be seen when two investment companies own shares in the same portfolio company. However, these results are not robust against different measures of operating performance.

7 Analysis

Summarizing the results, none of the three hypotheses testing for a difference in operating performance between portfolio companies and their peer companies can be rejected on a 10 % significance level. Hence, we cannot find support for a difference in performance between portfolio companies and peer companies under the conditions presented above. It should be noted that the failure to reject the null hypotheses does not prove them true; we can only conclude that we fail to reject the hypotheses (Wooldridge, 2009, p. 135).

In contrast, when testing for factors affecting the difference in operating performance, weak evidence can be found that large ownership in portfolio companies actually have a negative effect on the difference. Furthermore, portfolio companies with two large investment companies as owners affect the difference negatively.

However, there are limitations to these results. Firstly, these effects are not robust against using different measures for operating performance. Secondly, the explanatory power of the regression

is limited, with R-squared around 10%, suggesting that other variables are important to explain the variance in differences. Looking at the extreme top and bottom values in Table 6, there actually seems to be certain investment companies that are overrepresented in each part, and the type of portfolio companies seems to differ. According to Carlsson (2003), the business risk competence of Investor was a factor in how they are a successful active owner. Therefore, firm specific factors of investment companies or portfolio companies may help explain the difference in the operating performance.

Still, the result regarding negative effect of two owners are interesting as it sheds light on the potential interactive effects of ownership on firm performance, suggested by Dalton et al. (2003) and described in Connelly et al (2010). The contingency theory suggests that the outcome of the investment company's ownership and board activity would vary with, for instance, the concentration of other owners' stakes in the company. Connelly et al. suggest that two block holders could either cooperate or compete with each other. Moreover, the findings of Ruiz-Mallorqui and Santana-Martin (2011) suggest that with the same owner identity owners would cooperate. However, the results in this thesis would suggest that having more than one investment company as owner would lead to lower operating performance.

8 Conclusion

In this thesis we have studied public investment companies from a less common perspective: their ability to add value as active owners. Using a matched sample methodology, publicly traded portfolio companies are matched to peers in order to measure added value using the difference in operating performance. No evidence has been found that portfolio companies perform better or worse than their peers. This does not necessarily mean that the difference is zero. In fact, the variance in the difference is considerable, suggesting that variations between investment companies could explain why there is an observed difference in some peer groups. By regressing the difference on the number of investment company owners and the size of their ownership, weak evidence is found that large ownership share and ownership by two investment companies increase the negative difference.

This thesis has focused on the relationship between investment companies and their portfolio companies. We argued that one way, but not the only way, to generate value for investors is to

add value in its portfolio companies. However, the tax laws for Swedish investment companies, for instance, could imply that stable earnings and high dividend distribution is the best way to generate value for its shareholders. Hence, the companies may focus on other factors than the operating performance of the portfolio companies. Deepening the understanding of the objectives of the investment company and how that is reflected in their governance of their portfolio companies would, therefore, be interesting.

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Appendix 1: Additional regressions

The combination of hypothesis 2 and 3 was tested to investigate a combined effect on performance. The test used peer groups where the portfolio company has been owned by its investment company since 2002 and the investment company has an owner share of more than 20%. The result can be seen in Table 12. This test limited the sample to 20 peer groups. A bit surprisingly, this test showed little difference compared to the test with the complete sample when considering RONA and operating margin and the null-hypothesis cannot be rejected.

Test (N=20)	RONA		Operating margin	
T-test	$RONA_I$–$RONA_P$=0		$Opmarg_I$–$Opmarg_P$=0	
Mean difference, %	-1.24		-1.34	
95% Conf. Interval, %	-4.39	1.91	-3.96	1.28
P-value	0.42		0.30	
Wilcoxon sign-rank test				
Sign test	-0.60		-0.93	
P-value	0.55		0.35	

Table 12: T-test and Wilcoxon sign rank test for companies where the investment companies are long-term and large owners

Because of N=20, a Shaprio-Wilks test for normality of the differences was done, showing the following results. The P-values are high and the null hypothesis that the variable is normally distributed cannot be rejected.

Shapiro-Wilks test	Observations	Z-score	P-value
Difference RONA	20	-1.22	0.89
Difference Operating margin	20	0.08	0.47

Table 13: Shapiro-Wilks test for normality

Finally, since a large part of our time period is affected by the financial crisis, which is an abnormal event that could affect the test, we test H_1on the period 2005-2007 to control for this. These results are shown in Table 14. The double-sided t-test again shows no statistically significant differences between the portfolio companies and the peer companies, thus the null hypothesis cannot be rejected.

Test (N=37)	RONA		Operating margin	
Z-test	$RONA_I$–$RONA_P$=0		$Opmarg_I$–$Opmarg_P$=0	
Mean difference, %	1.38		0.52	
95% Conf. Interval, %	-0.89	3.66	-1.46	2.49
P-value	0.23		0.61	
Wilcoxon sign-rank test				
Sign test	1.09		1.14	
P-value	0.27		0.25	

Table 14: Z-test and Wilcoxon sign rank test for the period 2005-2007

Appendix 2: Tests for normality

Normality test for hypothesis 2

For the test of hypothesis 2, the number of observations was under 30 and the central limit theorem cannot be used. A Shapiro-Wilks test for normality was done, giving the following results.

Shapiro-Wilks test	Observations	Z-score	P-value
Difference RONA	26	-0.27	0.61
Difference Operating margin	26	0.33	0.37

Table 15: Shapiro-Wilks test for normality

Since the p-values are large the null hypothesis of normal distribution cannot be rejected.

Normality test of residuals for linear regressions

For making inferences regarding multiple linear regressions, the error terms must be normally distributed with a mean of zero. To test this we have predicted the error terms from the regressions and used a Shapiro-Wilks test for normality. Again, with high p-values the null hypothesis of a normal distribution cannot be rejected. The p-values in the table below show high p-values and, thus, gives support for normally distributed error terms.

Shapiro-Wilks test		Observations	Z-score	P-value
Specification 1	Diff Rona	44	0.36	0.36
	Diff Op marg	44	0.76	0.22
Specification 2	Diff Rona	44	0.44	0.33
	Diff Op marg	44	0.78	0.22

Table 16: Normaity test of residuals

Appendix 3: Table of literature

Authors	Year	Findings
Nickell, S., Nicolitsas, D. & Dryden, N.	1997	Owner-controlled firms outperform manager-controlled firms.
Cho, M.-H	1998	Ownership structure is endogenously determined with firm performance.
Short, H. & Keasey, K.	1999	Non-linear relationship between firm performance and managerial ownership.
Thomsen, S. & Pedersen, T.	2000	Ownership concentration follows a bell-shaped curve with diminishing positive effect on firm performance. In addition, ownership identity affects firm performance.
Bushee, B.J.	2001	Short-term investor is associated with underweighting of long-term earnings, which translates into misvaluations.
Demsetz, H. & Villalonga, B.	2001	No support that ownership share affect firm performance; ownership an endogenous factor.
Dalton, D.R., Daily, C.M., Certo, S.T. & Roengpitya, R.	2003	In a meta-analysis they find no support that ownership structure affect firm performance
Bergström, C., Grubb, M. & Jonsson, S.	2007	Private equity firms create value through operational improvements
Achleitner, A.-K., Braun, R., Engel, N., Figge, C. & Tappeiner, F.	2010	2/3 of value created in private equity firms come from operational improvements
Connelly, B.L., Hoskisson, R.E., Tihanyi, L. & Certo, S.T.	2010	In a literature review, they provide a framework which describes three interrelated factors combining ownership and firm performance (see Figure 2).
Ruiz-Mallorqui and Santana-Martin	2011	Finds interactive effects between the largest owners in Spanish companies, where the outcome for the largest owner is dependent on the identity on the second and third largest owner.

Appendix 4: Dataset

Investment companies

Investment company	Strategy	No. of publicly traded portfolio companies	Activity in portfolio company	Largest shareholder 2010, (% of votes)
Bure/Skanditek[16]	Active portfolio management, professional management of the portfolio companies, low financial risk, resource efficiency	3	- As shareholder - Board representation	Tigerschiöld family, (17.2 %)
Hakon Invest	Balanced portfolio build-up, good risk diversification, active and responsible ownership, long-term ownership	1	- Supports development and expansion of portfolio company - Board representation	ICA-handlarnas förbund, (67.4%)
Industrivärden	Active ownership and professional investment operation. Structured process of continuous analysis of existing and potential holdings	9	- Board representation - Nomination process - Dialog with leading representatives	LE Lundbergföretagen, (16.7%)
Investor	Significant ownership, high quality companies, flexibility to act, cost efficient	8	- Board representatives and business teams for each holding	Wallenberg foundations, (48.0%)
Kinnevik	Identifying growth areas, invest early, clear ownership role, operational focus, value creation	7	- Board representatives in almost all companies - Strives to be the largest owner	Stenbeck family (through Verdere S.A.R.L.), (35.1%)
Latour/SäkI[17]	Business concept: Invest in sound companies with substantial development potential and good future prospects	8	- Board representatives - As shareholders	Gustaf Douglas with family, (79.7%)
Lundbergföretagen	Generate return on invested capital exceeding the risk-free rate while maintaining a low risk	7	- Board representatives	Fredrik Lundberg, (89.5%)
Melker Schörling	Create value in existing holdings, financial strength, new investments	8	- Board representatives	Melker Schörling, (86.1%)
Traction	Through active ownership develop and add value of portfolio companies	8	-Board representatives	Stillström family, (92.3%)
Öresund	Invests mainly in Swedish securities, high solvency, low management costs, flexible liquidity policy	10	- Board representatives in major holdings	Sven Hagströmer, (18.2%) Mats Qviberg, (12.6%)

Table 17: Swedish investment companies on NasdaqOMX in 2010

[16] Skanditek merged with Bure in year 2010. All publicly held portfolio companies of the two investment companies remained in Bure (Bure, 2012)

[17] SäkI merged with Latour in 2011. All publicly held portfolio companies of the two investment companies remained in Latour (Latour, 2012)

Portfolio companies

Company	Investment company	Owned 2002	Votes
Vitrolife	Bure	Yes	28,5%
Partnertech	Bure	Yes	37,4%
Ericsson	Industrivärden	Yes	13,3%
Sandvik	Industrivärden	Yes	11,0%
Volvo	Industrivärden	Yes	1,2%
SCA	Industrivärden	Yes	28,8%
SSAB	Industrivärden	Yes	20,4%
Skanska	Industrivärden	Yes	26,9%
Indutrade	Industrivärden	Yes	37,1%
Höganäs	Industrivärden	No	7,7%
Atlas Copco	Investor	Yes	21,0%
ABB	Investor	Yes	8,0%
AstraZeneca	Investor	Yes	3,3%
Ericsson	Investor	Yes	19,4%
Electrolux	Investor	Yes	26,0%
Husqvarna	Investor	No	29,2%
Saab	Investor	Yes	38,0%
Tele2	Kinnevik	Yes	49,8%
MTG	Kinnevik	Yes	47,7%
Black Earth Farming	Kinnevik	No	21,0%
Metro International S.A.	Kinnevik	Yes	36,6%
Transcom	Kinnevik	Yes	34,8%
Millicom International Cellular	Kinnevik	Yes	38,2%
Assa Abloy	Latour	Yes	16,0%
Fagerhult	Latour	Yes	32,0%
Securitas	Latour	No	12,0%
Niscayah	Latour	No	12,0%
Sweco	Latour	Yes	25,0%
Husqvarna	Lundbergföretagen	No	11,4%
Sandvik	Lundbergföretagen	No	0,3%
Indutrade	Lundbergföretagen	No	10,0%
Holmen	Lundbergföretagen	Yes	51,9%
Hufvudstaden	Lundbergföretagen	Yes	88,0%
Assa Abloy	Melker Schörling	Yes	11,4%
Securitas	Melker Schörling	Yes	10,7%
Niscayah	Melker Schörling	No	11,0%
Hexagon	Melker Schörling	Yes	45,1%
AarhusKarlshamn	Melker Schörling	No	23,0%
Hexpol	Melker Schörling	No	47,7%
Bong	Melker Schörling	Yes	24,6%

Partnertech AB	Traction	No	14,0%
Drillcon AB	Traction	No	12,0%
Nordic Camping & Sports AB	Traction	No	23,0%
Hifab Group AB	Traction	No	35,0%
Softronic AB	Traction	Yes	11,0%
Klövern	Öresund	Yes	6,3%
Fabege	Öresund	No	8,6%
Bilia AB	Öresund	No	21,6%
Haldex	Öresund	No	11,1%
SkiStar	Öresund	Yes	7,7%
Intrum Justitia	Öresund	No	3,0%
Lindab International	Öresund	No	1,3%
Nobia	Öresund	Yes	7,8%

Table 18: List of portfolio companies and ownership information

Peer groups

1

Atlas Copco
Hitachi
Komatsu LTD
EBARA CORPORATION
GARDNER DENVER INC

2

ABB
Emerson Electric Co
Eaton corp
Alstom S.A.
Schneider Electric SA
Areva

3

Klövern
KUNGSLEDEN AB
ATRIUM LJUNGBERG AB
Castellum
WALLENSTAM AB
CITYCON OYJ
Fastighets AB Balder

4

AstraZeneca
ROCHE HOLDING AG
Novartis
Sanofi
Abbott laboratories
Glaxosmithkline

5

Ericsson
Nokia Oy
Cisco System
Qualcomm Inc
Alcatel Lucent S.A.
MOTOROLA SOLUTIONS, INC.

6

Electrolux
Jarden Corp
Bosch und Siemens
Whirlpool Corp
Arcelik
Indesit company SPA

7

Husqvarna
BRIGGS & STRATTON CORP
Toro
OFFICINE BIEFFEBI SPA

8

Saab
Israel aerospace
BAE systems
Cobham plc
Lockhead Group
Dassault Aviation
Embraer

9

Sandvik
Tubacex S.A.
Kennametal Inc.
Boart Longyear Ltd.
Astec Industries Inc.
Caterpillar

10

Volvo
Navistar International Corp.
Paccar Inc.
KOC Holding A.S.
Hino Motors Ltd.
MAN SE

11

SCA
Stora Enso
Klabin S.A.
Suzano Holding S.A.
UPM-Kymmene OYJ
Kimberly Clark Corp.
Smurfit Kappa Group Plc.

12

SSAB
United States Steel Corp.
Salzgitter AG

Nisshin Steel Co. Ltd.
JSW Steel Ltd.
Nucor Corp.

13

Skanska
YIT Oyj
Veidekke ASA
KONINKLIJKE BAM GROEP NV
JM AB
Peab AB

14

Indutrade
Hydac Filtertechnik GmbH
Seco Tools
Rollco Holding AB

15

Höganäs
NIPPON TUNGSTEN CO LTD
Pometon SPA
MOLIBDENOS Y METALES S.A.
MPT Sweden AB

16

Holmen
Smurfit Kappa Group Plc.
Norske skogsindustrier
HOKUETSU KISHU PAPER CO., LTD.
AHLSTROM OYJ

17

Fabege
Fastighets AB Balder
WALLENSTAM AB
KUNGSLEDEN AB
CITYCON OYJ
Castellum
ATRIUM LJUNGBERG AB

18

Tele2
Teliasonera
Telenor
TDC A/S
FREENET AG

19

MTG
PROSIEBENSAT1 MEDIA AG
Tv4 AB
SKY DEUTSCHLAND AG
METROPOLE TELEVISION SA
ITV PLC
BRITISH SKY BROADCASTING GROUP PLC

21

Black Earth Farming
PRIMEAG AUSTRALIA LIMITED
LINAS AGRO GROUP AB
TRIGON AGRI A/S
ASTARTA HOLDING N.V.
KTG AGRAR AG

22

Assa Abloy
INGERSOLL RAND SECURITY TECHNOLOGIES LIMITED
KABA HOLDING AG
Dorma
GEMALTO N.V.

23

Fagerhult
ODELIC CO LTD
Glamox ASA
BEGHELLI S.P.A.
GEWISS SPA

24

Hufvudstaden
KUNGSLEDEN AB
ATRIUM LJUNGBERG AB
Castellum
WALLENSTAM AB
CITYCON OYJ
Fastighets AB Balder

25

Securitas
SOHGO SECURITY SERVICES CO LTD
G4S PLC
BRINK'S COMPANY (THE)
ASCENT CAPITAL GROUP, INC.
CORDANT GROUP PLC

26

Niscayah
SOHGO SECURITY SERVICES CO LTD
G4S PLC
BRINK'S COMPANY (THE)
ASCENT CAPITAL GROUP, INC.
CORDANT GROUP PLC

27

Sweco
WSP GROUP PLC
ASSYSTEM
GRONTMIJ NV
Åf AB
POYRY OYJ
REJLERKONCERNEN AB

29

Vitrolife
STERIS CORP
VASCULAR SOLUTIONS INC
LEMAITRE VASCULAR, INC.
Da An Gene Co., Ltd. of Sun Yat-Sen University
SPECTRANETICS CORP

30

Hexagon
Trimble Navigation Ltd.
Faro Technologies
AVEVA Group Plc
Ametek Inc.
Bruker Corporation

31

AarhusKarlshamn
Mewah International Inc.
Nisshin Oillio Group Ltd.
Boso Oil & Fat Co. Ltd.
Dijamant

32

Hexpol
Zeon Corporation
TSRC Corp
Apcotex Industries Ltd.
HRS Co. Ltd.

33

Bong
Intermail A/S
Supremex Inc.
Chee Wah Corporation Bhd.

34

Bilia AB
Mercedes-Benz Sve AB
Kindwalls Bil AB
Volkswagen Group Sverige AB
Andersen & Martini A/S
BMW Sverige AB

35

Haldex
WANXIANG QIANCHAO CO., LTD.
TBK Co. Ltd.
Carraro SPA
Brembo SPA
Dana Holding Corp.

36

SkiStar
Vail Resorts Inc.
Ramundbergets Alpina AB
Romme Alpin AB

37

Metro International S.A.
Associated Newspapers Ltd.
Stampen AB
Ilkka-Yhtyma Oyj
Johnston Press Plc.

38

Intrum Justitia
Svea Ekonomi AB
Prioritet Group AB
Aktiv Kapital ASA
Payex Finance AB

39

Lindab International
SANYO INDUSTRIES LTD
RAUTARUUKKI OYJ
HILL & SMITH HOLDINGS PLC
GIBRALTAR INDUSTRIES, INC.

40

Nobia
AMERICAN WOODMARK CORP
Kvanum Kok AB
HANSSEM CO., LTD.
HOWDEN JOINERY GROUP PLC

41

Transcom
Teletech Holdings Inc.
Amdocs Limited
SYKES ENTERPRISES INC

42

Millicom international cellular
SUDATEL TELECOMMUNICATIONS GROUP
NII Holdings, Inc.
TELKOM SA LIMITED
AMERICA MOVIL S.A.B. DE C.V.
MTN GROUP LIMITED

44

Partnertech AB
Partnertech
Ultra Electronics
Plexus Corp.
Benchmark Electronics Inc.
CTS Corp.

49

Drillcon AB
Ddmc Borrmatning AB
SWICK MINING SERVICES LTD
ENERGOLD DRILLING CORP.

50

Nordic Camping & Sports AB
Kronocamping Oland AB
Destination Apelviken AB
Hafsten Resort AB

51

Hifab Group AB
REJLERKONCERNEN AB
WATERMAN GROUP PLC
Ramboll Sverige AB

52

Softronic AB
Enea AB
SEVEN PRINCIPLES AG
VITEC SOFTWARE GROUP AB