Value Creation Potential of Secondary Buyouts

A Study of the Nordic Private Equity Market

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Abstract

The purpose of the study is to add to the ongoing discussion in academic literature regarding the value creation potential of private equity investments in secondary buyouts. Secondary buyouts have been questioned by previous scholars for lacking potential for operational value creation, being overly expensive, and for relying on favorable debt market conditions and increased leverage to form attractive deal opportunities. Using a sample of 180 buyout transactions of Nordic companies over the period 2010-2017, we test this notion by comparing primary and secondary buyouts in terms of operational improvements, leverage and pricing. Using OLS regression as main statistical method, we determine whether we can establish a statistically significant difference between primary and secondary buyouts, related to five metrics used as proxies to draw conclusions of operational improvements, leverage and pricing. Our findings suggest that secondary buyouts offer inferior value creation potential in terms of EBITDA-margin improvements compared to primary buyouts. Our study cannot support the notion that secondary buyouts are higher priced or more leveraged than primary buyouts, even if there are indications of such in our data and testing. Finally, we find indications, but no statistical evidence, of higher sales growth in secondary buyouts. Our overall conclusion is therefore that our study cannot confirm all basis of criticism towards secondary buyouts.

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1. Introduction

The private equity sector has grown rapidly since the takeoff in the 1980s and continues to outperform both the public market and other asset classes (McKinsey, 2021). A history of high returns has led to increased competition within the private equity industry in the last decades. As the competition for target companies that offer opportunities to capture low hanging fruit has increased, private equity firms have been forced to seek alternative routes to value creation.

A phenomenon that has grown to account for an increasingly large part of the private equity market is the secondary buyout transaction (Kaplan & Strömberg, 2009). This form of private equity deal is a leveraged buyout in which both the buyer and the seller is a private equity fund. The secondary buyout transactions have been subject to both criticism and controversy within the academic literature. While the increase in frequency of transactions suggests that there is value creation potential in the secondary buyout transaction, scholars argue that since the same tools and value driver mechanisms are theoretically available in the primary and the secondary buyout, the potential for further value creation should be vastly deteriorated in the second holding period.

Contradicting results regarding the value generating potential in the two buyout settings can be found in studies by Wang (2012), Achleitner & Figge (2014), Bonini (2015), and Degeorge, Martin & Phalippou (2016). While Achleitner & Figge (2014) find no difference in value creation potential between the primary buyout and the secondary buyout, Bonini (2015) finds that only primary buyouts generate abnormal improvements in operating performance compared to peers. Degeorge et al. (2016) conclude that the extent of operational improvements in the portfolio company depends largely on the setting in which the deal takes place, while Wang (2012) states that "[…] secondary buyouts serve no purpose aside from alleviating the financial needs of private equity firms". We conclude that there is little consensus in previous research regarding whether secondary buyouts exhibit inferior operational performance improvements compared to primary buyouts.

We have collected a sample of 180 buyout transaction involving Nordic target companies within the time period 2010-2017. By performing OLS regression analysis for dependent variables related to the operational improvements, leverage and pricing of secondary buyouts, we seek to determine whether there is a difference between secondary buyouts and primary buyouts with regards to these potential sources of value creation. Our study contributes with findings to support the forming of consensus on the value creation potential of secondary buyouts. Additionally, studying the Nordic region with transactions up until 2017, we add a new geographic perspective and provide an updated time horizon to the discussion.

Our findings suggest that secondary buyouts offer inferior value creation potential in terms of EBITDA-margin improvements compared to primary buyouts. Additionally, our study cannot support the notion that secondary buyouts are higher priced or more leveraged, even if there are indications of such in our data and testing. Finally, we find indications, but no statistical evidence, of higher sales growth in secondary buyouts. Our overall conclusion is therefore that our study cannot confirm all basis of criticism towards secondary buyouts. By contributing to forming consensus in this discussion, we hope that future research can dig deeper into the secondary buyout transaction to develop managerial implications.

1.1 Problem and Motivation

The intuition behind the controversy of secondary buyouts is that the selling firm, i.e., the first private equity owner, would have exhausted all value-adding potential in the first holding period. If the first PE firm has replaced management, trimmed costs, implemented a new strategy, etc., what value-adding potential can the second private equity firm expect?

Based in this notion, three main points of criticism towards secondary buyouts are commonly pointed out in previous literature. The secondary buyouts are questioned because (1) there would be limited value creation potential resulting from the primary financial sponsor having already exhausted all value creation potential in the portfolio company, (2) attractive deals would be primarily dependent on favorable debt capital market conditions and an increase of debt level, and (3) the selling firm would use market timing and negotiation skills to achieve

highest possible exit value, causing deals to be overpriced and limit the potential for multiple expansion. These points of criticism will, hereafter, be referred to as the "Conventional Wisdom" of secondary buyouts.

It is clear that the value that private equity firms create through active ownership, solving agency conflicts and bringing industry and strategic expertise to the portfolio firms, adds significant gains to the economy as a whole (Copenhagen Economics, 2017). This stresses the importance of further research in this field. With regards to secondary buyout transactions, the inconsistency of findings in previous research, as well as the dispersion of research on value drivers in primary and secondary buyouts, motivates further research on this topic. Furthermore, the market for secondary buyouts is growing at a rapid pace which increases the importance of updating previous research and testing samples that include the most recent years. Finally, most research on this topic has been conducted on global, US, or EU markets. The Nordic private equity market is large with numerous actors and large transaction sizes (Copenhagen Economics, 2017), but research that focuses on the Nordic market alone is scarce. This makes the Nordic private equity market a relevant market to study. These aspects motivate conducting a study that seeks to answer the question of value creation and its drivers using an up-to-date sample on the Nordic private equity market.

1.1.1 Research Question

To address the concerns stated above, our research will answer the following research question:

Do secondary buyouts differ from primary buyouts in terms of operational improvements, leverage, and pricing?

1.2 Research Design

We take a quantitative approach to answering the proposed research question. A dataset of 55 secondary and 125 primary buyout transactions has been collected, which forms the basis for

hypothesis testing. Testable hypotheses are developed based on a review of previous research on leveraged buyouts and secondary buyouts specifically. The hypotheses are tested using OLS regression analysis as primary method of statistical testing. We test the value creation potential of primary and secondary buyouts by measuring sales growth and change in EBITDA-margin in the two years following the transaction. Additionally, net debt to EBITDA, net debt to equity, and EV/EBITDA-multiple for target companies in the announcement year are subject to testing. The tests show how secondary buyouts relate to primary buyouts with regards to these measures. Based on the fulfillment of the hypotheses we draw conclusions about whether the conventional wisdom of secondary buyouts holds true.

Finally, the results and interpretations obtained from the tests are used together with previous research and frameworks of Berg & Gottschalg (2003) and Hannus (2015) that map out value creation drivers of leveraged buyouts, to draw conclusions regarding the differences and similarities of value creation drivers in primary and secondary buyouts in the Nordics.

1.2.1 Scope and Delimitations

The scope of the study is to research value creation in secondary buyouts in the Nordic private equity market. In this study, the Nordic is limited to Denmark, Finland, Norway and Sweden. Furthermore, the chosen value drivers are operational improvements, leverage and pricing, as will be further defined in the thesis. The chosen measures to capture these value drivers are not exhaustive and additional factors can drive value in a buyout but are not within the scope of the thesis. Moreover, the definition of a Private Equity firm may sometimes be broad, also including investment companies and venture capital firms. However, in this study, we define and only include private equity firms that have a fund structure. The transaction type Secondary buyout refers to a transaction where both the buyer and seller are private equity firms, as defined above.

The study is limited to value creation in the portfolio companies of private equity firms. This means that we take the secondary buyer's perspective in the study. Furthermore, the research is conducted on portfolio companies that are based in the Nordics; the buying and selling PE

firms' head offices can be located outside the Nordic region. The study is additionally limited to "Buyout acquisitions" which must be labeled accordingly by the statistical database. This means that other investment types, such as add-ons or mergers, are not included in the research. Lastly, our research is limited to externally reported data which can be retrieved from official databases.

1.2.2 Thesis Structure

Following the introduction, the paper is structured as follows: **Chapter 2** will introduce Private Equity and Value creation and give an overview of the Nordic Private Equity market. **Chapter 3** will present previous research of value creation drivers in leveraged buyouts and present the existing literature on secondary buyouts. In **Chapter 4,** hypotheses to guide the testing will be developed based on the literature review. **Chapter 5** will first present the research approach and the statistical methods used to test the hypotheses. The variables used in the models will be defined and motivated. Thereafter, data collection and construction of the sample are presented followed by a discussion of the reliability and validity of the methodology. **Chapter 6** will present the results of the testing and relate testing to previous research in the field in order to provide an economic interpretation of the results. In **Chapter 7** we analyze the results obtained in relation to value driver frameworks. In **Chapter 8**, the conclusion to the study is provided. Lastly in **Chapter 9** there will be a discussion of the research, methods and findings followed by suggestions to further research within the field.

1.3 Definitions and Abbreviations

Several abbreviations and technical terms are used throughout the thesis. A *Private Equity fund* is also called PE fund, PE firm and PE sponsor. *Leverage buyout* are most often written LBO and the same for *primary buyout*, PBO and *secondary buyou*t, SBO. Additionally, buyouts refer to a leverage buyout in general i.e., could be either a primary or secondary buyout. Lastly when addressing the company that the private equity firm acquire, we use target firm and portfolio company.

2. Introduction to Private Equity, Buyout Transactions and the Nordic Private Equity Market

In this chapter, we give an introduction to private equity, buyout transactions and to private equity in the Nordic market. We begin by reviewing private equity and the properties of private equity funds and PE firms. Thereafter, leveraged buyouts are introduced by theoretically reviewing the investment from entry to exit. Finally, we give an introduction to the Nordic private equity market and present historical data for its properties.

2.1 Private Equity as Asset Class

Private equity (PE) refers to investment in privately held companies. Investments are usually made through a private equity fund, into which limited partners, typically pension funds, insurance companies, wealthy individuals etc. (Rosenbaum & Pear, 2013), have committed their capital for investment (Ang, 2014). The business concept of a private equity fund is usually to invest in companies that demonstrate potential for future performance and to help the realization of this potential by providing knowledge, experience, and network to the target company (Copenhagen Economics, 2017). The investment horizon is typically long, up to 10 years (Ang, 2014), and target companies are often small and without access to public capital. During the holding period, the private equity firm seeks to perform actions to increase the equity value of the target, such that the PE firm can exit the investment earning a significant return for investors (Rosenbaum & Pear, 2013). However, as there are multiple private equity types, some of the major being Venture capital, Leveraged Buyouts, Mezzanine Capital, and Distressed debt (Baker, Filbeck & Kiymaz, 2015), the investment model and strategy for achieving return to investors may differ. It should further be stressed that PE firms are not restricted to investments into private companies (Baker et al., 2015) and that PE firms can be either privately or publicly held, such that the asset class can be accessed by small private investors as well.

The decentralized form of a private equity transaction means that PE investments are illiquid. Transactions are characterized by complexity, both contractual and with regards to valuation, which contributes to the high transaction costs of investments. Investments in private equity gives the investor access to an alternative asset class to diversify holdings. Due to, i.a., the uncertainty, long lock-up and illiquidity of the investment, the PE investment has high risk-profile, but with potential to generate high returns (Ang, 2014).

2.2 Private Equity Funds

A private equity firm raises capital for investments commonly through a closed-end fund structure (Kaplan & Strömberg, 2009). The PE firm is usually set up as a partnership or limited liability corporation. The external investors in PE funds are called limited partners (LP). LPs are often pension funds, institutional accounts and wealthy individuals. They commit capital but have limited say in the investment decision. The LP's total liability is limited to the extent of capital invested i.e., they have no personal responsibility for losses and debts (Baker et al., 2015).

General Partners (GP) are the management team in a PE-fund and are investment professionals employed by the PE firm. The GPs raise capital from the limited partners and are responsible for capital allocation (Robertson, 2009). The general partners often put up around 1% of the capital invested. It is also the general partner who select and manage the target firms. The invested capital finances investments in companies as well as compensations to the general partners in the PE-firm, such as an annual management fee. The GP's job is to provide excess return back to the limited partners (Baker et al., 2015).

The PE firm can structure its investments into one or multiple funds. An investor commits capital to a particular fund, which may or may not have a pre-determined profile, such as a specific industry focus. Commonly, capital is committed for a pre-determined number of years, usually 10 years. The portfolio companies must then be sold, and the proceeds distributed (Brealey, Myers & Allen, 2014). The limited partner's money can therefore not be

reinvested by the GPs. However, if the fund is proved successful, the private equity firm can go back to the limited partners and form a new fund.

The capital committed by the limited partners is not invested directly but drawn down and invested over time as the general partner identifies investments. When a target company is identified, a capital call is issued to the limited partners, meaning that a portion of the fund is needed to finance the investment. The vintage year is the name of the first year a drawn down or capital call is made (Kaplan & Strömberg, 2009).

Fee Structure

The PE-firm and its general partners are often compensated in two ways. First, through a management fee. These fees are paid annually to the GPs by the LPs and are often a percentage of the funds' capital, around 1-2% (Robertson, 2009). Second, through incentive or performance fees. The incentive compensation structure may be individual from fund to fund but is usually around 20% of the profits from the exited investment (Jenkinson & Sousa, 2015). Incentive fees are called carried interest or carry. For the GPs to receive an interest in the proceeds of the fund, the investments need to make profit above a certain predetermined hurdle rate. The hurdle rate can be described as the minimum rate of return required by the investment and is often around 8%. From the perspective of the limited partners, this type of incentive in form of the hurdle rate reduces the impact of poor performance from the general partners and gives them incentives to achieve as high returns as possible on the investments (Gilligan & Wright, 2010).

2.3 Leveraged Buyouts

A leveraged buyout is the acquisition of a company financed with a large amount of debt, normally 60 to 90 percent. The remaining part is financed with equity, contributed by a financial sponsor, typically a private equity firm (Loos, 2006). The acquiring firm usually buys the majority of the target company in order to receive control of the company. A leveraged buyout could involve a broad range of businesses, public and private firms as well as subsidiaries or divisions of companies (Rosenbaum and Pearl, 2013). The equity

contributors' goal in a leveraged buyout is to realize an acceptable return on its investment. Historically, the annualized return has been above 20% for an investment exit within five years (Rosenbaum and Pearl, 2013). The high returns achieved are possible due to the ability to leverage the small equity investment compared to the amount of debt. Furthermore, the tax-deductibility of interest expense means that the high level of debt also contributes to tax savings (Loose, 2006).

Companies suitable for a leveraged buyout are often mature and stable. They need to be able to support the proportionally high level of leverage by having stable and predictable cash flow and high asset base. Consequently, high debt is followed by high interest payments thus free cash flow is needed to meet these obligations as well as reduce the principal amount of debt. This means that over the investment horizon the capital structure changes, since the equity portion increases. The financial sponsor should at the same time grow the business, increasing enterprise value and improving financial performance. A successful LBO sponsor must therefore find a balance between meeting the debt obligations as well as using the cash flow to manage and grow the business (Rosenbaum and Pearl, 2013).

The past performance of the PE-firm will affect the access to equity capital. However, the access to debt is mainly dependent on the credit history of the PE firm as well as the local banks credit capacity and liquidity (Spliid, 2013). The debt used in a leveraged buyout often includes different types of debt. These different types of instruments are classified based on their security status and seniority. There is often senior and secured debt included, arranged by a bank or an investment bank. Institutional investors usually purchase a large part of these loans. There is also often a junior, unsecured debt included which is financed by high-yield bonds or mezzanine debt. This debt is subordinated to the senior debt (Kaplan & Strömberg, 2009).

A private equity fund's terms can be extended but eventually the lifetime of a fund will reach the end, the target companies will be divested, and the fund will be dissolved. All the investments that still exist when the fund has reached the end will be liquidated. The returns will be allocated to the limited and general partners. The remaining part of loans arranged when the portfolio companies were acquired will be paid back (Rosenbaum and Pearl, 2013).

2.3.1 The Investment Cycle

2.3.1.1 Entry

According to Sinyard, Dionne & Loch (2020), researchers distinguish between three stages in the investment decision. These stages are Screening, Due Diligence and Negotiations, each of which entails certain decisions and outcomes before moving on to the next phase of the investment cycle (Sinyard et al., 2020).

Screening

The private equity firm can source attractive investment targets both from M&A advisor, intermediaries or within their network, or by contacting or getting contacted by the target firm directly. The target can be either a company, a business division, or other carve-out from a company that will continue under its current governance. The characteristics of a promising investment target may vary depending on the focus of the PE firm, but factors typically include i.a. industry outlook, management, ownership, and the financial profile of the target (Baker et al., 2015).

General for LBOs, where considerable debt is used to finance the transaction, is that a promising target candidate generates a stable and predictable cash flow. Strong cash flow generation implies that a larger proportion of debt can be used since interest payments and amortizations can be secured, and thus that the potential revenues from the investment increase. The business of a potential target firm also preferably infers low capital expenditures requirements since investments constrain cash flow. A strong balance sheet, with tangible assets that can serve as collateral to lenders, is also preferable when a high debt level is desired. In addition, an interesting investment target demonstrates growth opportunities and/or opportunities to improve efficiency, such that there is potential for EBITDA margin expansion during the holding period. This is also dependent on a leading and stable market position, which may have the potential to be expanded. Finally, a strong management team is necessary for operating under the pressure of high debt levels and under restructuring. Therefore, the management team can either make the investment target more promising or

serve as a potential for value creation if replaced under the ownership of the PE firm (Rosenbaum & Pearl, 2013).

Due Diligence and Negotiations

Prior to a potential investment, the PE firm evaluates the potential investment target by performing due diligence, i.e., by learning as much as possible about e.g., financial, and legal aspects of the firm's business. This process typically involves close collaboration with the target firm's management team as well as the engagement of experts (legal, industry etc.), to develop performance predictions and to establish and support assumptions of a purchase price (Rosenbaum & Pearl, 2013). Furthermore, the negotiations phase involves discussions with the target management to establish the final binding offer, i.e., the acquisition price (Sinyard et al., 2020). The purchase price is one of the primary drivers of Internal Rate of Return (IRR), and the buying PE firm will hence want to minimize the price paid to achieve the highest possible multiple at exit (Rosenbaum & Pearl, 2013).

2.3.2.2 Holding Period

During the holding period the PE firm aims to generate value in the portfolio company to achieve the highest return on investment at exit. According to Hannus (2015), the monetary value generated during the holding period can be described by:

$$\textit{Value generation} = \textit{Equity Value (exit)} - \textit{Equity Value (entry)}$$

This formula can be further decomposed to understand the components of value creation (Gottschalg, 2002; Hannus, 2015):

$$\textit{Equity Value} = \textit{Market multiple} * \textit{margin} * \textit{revenues} - \textit{net debt}$$

The components of the formula imply that value generative activities can stem from improvements of company fundamentals, i.e., net debt, revenues or margin, or from higher valuation multiple which can also be affected by external factors such as market conditions.

Value creation drivers

The holding period of investments vary but given that the firm operates under a closed-end fund structure, there is a time pressure for generating added value from the investment and return the capital to investors (Kaplan & Strömberg, 2009). The value-adding activities are typically divided into three types of changes applied by the PE firms, these are referred to as governance engineering, financial engineering, and operational engineering (Kaplan & Strömberg, 2009). The importance and emphasis put on each are likely to vary depending on the PE firm. The first type, Governance engineering, is actions related to governance and monitoring (Gompers, Mukharlyamov & Kaplan, 2015), and these actions are possible for the PE firm to implement since it generally controls the board of the portfolio company as opposed to a publicly traded firm (Kaplan & Strömberg, 2009).

Secondly, Financial engineering refers to issues regarding capital structure and management incentives. The increased debt level following an LBO implies that management is provided with "equity incentives" and is pressured to generate sufficient cash flow to pay interest rates and amortization (Gompers et al., 2015); at the same time, an increase of debt level increases the probability of financial distress which makes the company more vulnerable to changing market conditions (Rosenbaum & Pearl, 2013). These are questions that the PE firm must balance.

Finally, operational engineering refers to the industry and operating expertise that the PE firm can provide to the portfolio company (Gompers et al., 2015). In operational engineering activities, the PE firm actively manages the company to enhance value creation. In other words, these are changes to the portfolio company's operations that seek to improve the operating performance of the portfolio company. From a financial perspective, there are multiple ways in which operating performance can be improved. According to Kaplan (1989), operational improvements in LBOs include all measures that increase cash flow of the target company. These measures would, hence, include sales growth, EBITDA margin expansion as well as improved efficiency of capital expenditures and working capital.

2.3.2.3 Exit

A private equity fund has a limited contractual lifetime, and the target company will eventually be divested. An important aspect of the private equity process to select a value maximizing exit time and strategy, since this will determine the return of the investment (Jenkinson & Sousa, 2015). Potential exit strategies include trade sale (TS), initial public offering (IPO), and secondary buyout (SBO). Which exit route to choose depends on several factors such as macroeconomic circumstances at the time of the deal, industry and company-specific aspects, as well as conditions in debt and equity capital markets (Achleitner and Figge, 2014). Exit strategies that lead to the highest value vary depending on the mentioned factors and the private equity firms take advantage of such "windows of opportunities" (Jenkinson & Sousa, 2015). The exit choice is an important factor to PE-firms since value generation can be increased by choosing the optimal exit route (Berg and Gottschalg, 2003).

Trade Sale

A trade sale is an exit route where a private equity firm's target company is sold to a strategic investor. Trade sales have been, and still are, one of the most common exit strategies (Kaplan and Strömberg, 2009). A strategic buyer is often a company within the same industry as the target firm that wants to vertically- or horizontally integrate (Sousa, 2010). It could be a competitor, industry peer, or business partner and by merging the firms, synergies emerge. Trade sales are often associated with high exit prices since they are restricted to their specific industry and therefore a few targets. Synergy effects are often overestimated, and the auctions often get carried away (Loos, 2006).

IPO

The target company can exit by offering shares to the public in an IPO and become listed on a stock exchange. It has been one of the most common strategies for private equity firms to divest their investments but has decreased significantly over time (Kaplan and Strömberg, 2009). This exit route requires more time than other exit options. IPOs have often been associated with high valuations of the target company and brought good reputations to the PE-firms and exiting through an IPO is often related to favorable market conditions (Cao, 2011).

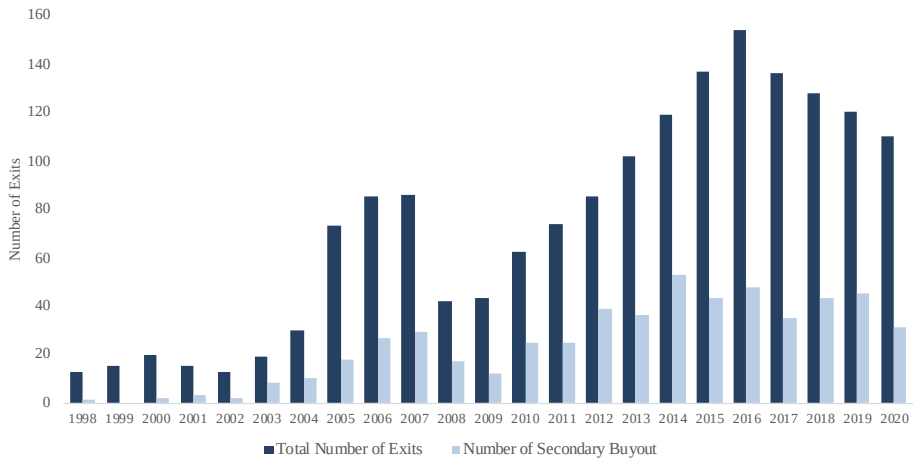
The choice of exiting an LBO through an IPO is often associated with companies having strong operating performance and high profits (Plagborg-Møller & Holm, 2017). These characteristics are indications that the companies have great potential for future performance which results in high IPO valuations of the firms and attractive returns.

Secondary Buyout

A secondary buyout is a leveraged buyout where both the buyer and the seller are private equity sponsors (Wang, 2012). An exit route for a private equity firm could therefore be to sell the target company through a secondary buyout. Historically, SBOs have been restricted to distressed transactions and successful deals would instead exit through an IPO or trade sale (Bonini, 2015). This exit route has increased significantly over time in the Nordic market, in the Nordic countries in line with an increase in LBO transactions overall. According to data from Preqin, it is the second most common exit route in the Nordic.

Figure 1 depicts secondary buyouts related to total number of exits between 1998 and 2020. The figure includes partial exits.

Figure 1: Secondary Buyouts and Total Number of Exits in the Nordic Region by Year, 1998-2020



Own creation. Data: Preqin, 2021

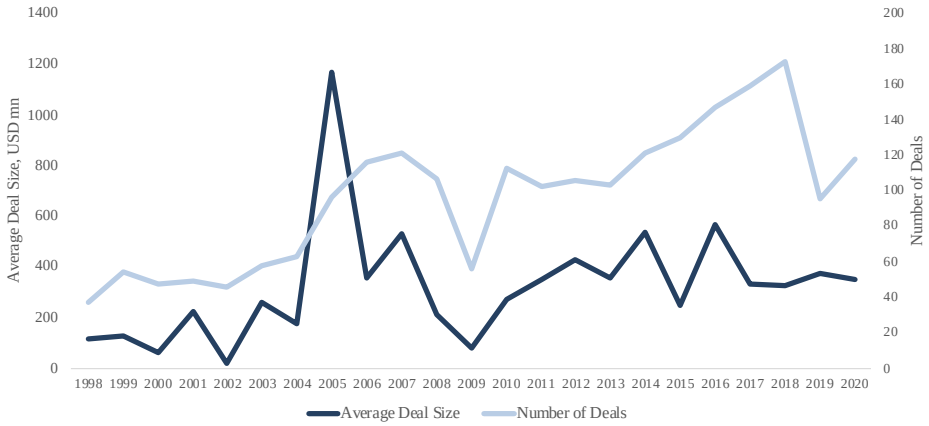
Other exit routes

Other exit routes include bankruptcy or restructuring of the target company. Considering the high level of debt used in leveraged buyout transactions it could be assumed that bankruptcy of LBO-firms is common. However, only around 6 % of leveraged buyouts end in bankruptcy (Kaplan and Strömberg, 2009). A management buyout (MBO) is another possible way to exit an LBO and is when the management team of the company decides to buy the firm from the current PE-owner. A large amount of capital is required for such transactions and therefore an equity partner or a financial sponsor is often involved in the transaction together with the management team. An MBO could be the case if the management team believes they can run the company and create more value than the existing owner (Rosenbaum and Pearl, 2013).

2.4 The Nordic Private Equity Market

The private equity market has its origins in the US during the 1980s. After a decade of highly profitable leverage deals, the junk bond market crashed in 1990s and the activity of the PE market diminished. However, the activity increased again after the crash as the focus was shifted from leverage to also include operational improvements in the target firms. It was during this time the private equity activity took off in the Nordic region (Spliid, 2013). The Nordic PE-market has developed to become one of the most active in Europe and accounts for 7% of PE investments in Europe, looking at the location of the PE-firm (Invest Europe, 2019). Furthermore, considering the location of the portfolio company the Nordics account for 10% of PE investments in Europe. This should imply that the Nordics is an attractive market for investments, implying attractive potential target companies and an environment with growth opportunities (Invest Europe, 2019). Figure 2 depicts the aggregate buyout volume and deal size in the Nordics between 1998 and 2020. The Nordic region is delimited to Sweden, Norway, Denmark and Finland in this study.

Figure 2: Aggregated Number of Buyout Deals and Average Deal Size in the Nordics, 1998-2020



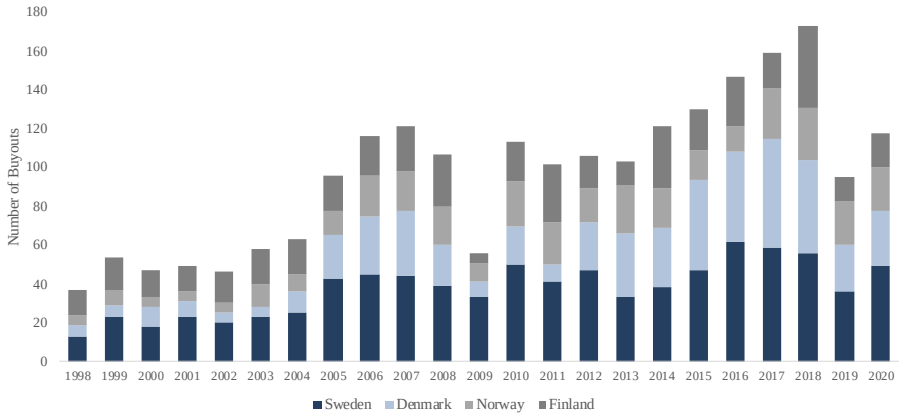
Own creation. Data: Preqin, 2021

Both Swedish and Norwegian buyout investments as a percentage of GDP are above average in the European region when the location of the PE firm is considered. Denmark and Finland are below average in the 9th and 11th place in Europe (Invest Europe, 2019). Consequently, looking at the location of the portfolio company, Swedish, Norwegian and Danish PE investments as percentage of GDP are above the European average. Finland is slightly below, with the European average being 0,553% and Finish PE investments being 0,412% of GDP (Invest Europe, 2019). The five largest fund managers in the Nordic region based on total capital raised over the last 10 years are EQT Partners, Nordic Capital, Altor CapMan Capital Management and Herkules Capital. EQT Partners are also one of the world's ten largest Private Equity firms (Smith, 2021).

Within the Nordics, Sweden has the largest PE-market both considering investments as a share of GDP, capital under management, number and size of PE firms (Preqin, 2017). Swedish PE target investments are also larger compared to the Nordic neighbors. According to Copenhagen Economics (2017), this speaks to the relative success of Swedish PE firms. When PE firms succeed and grow larger, their capacity to raise funds increases and they can invest in larger firms. This will also trigger further growth of the national PE market. Copenhagen Economics (2017) conclude in their report of the Swedish PE-market that during

the last 10 years private equity has invested 150 billion SEK in over 1000 Swedish companies, with over 270 000 employees. These investments are estimated to have increased the Swedish GDP by 6 percent since 2005. Furthermore, every person employed within the PE sector results in 4-5 full-time employees within related sectors (Copenhagen Economics, 2017). Deal volume by country included in the research and by year is depicted in Figure 3. As is evident from the table, deal volume has grown significantly in all markets since the end of the 1990s.

Figure 3: Historical Buyout Deal Volume by Year and Country, 1998-2020



Own creation. Data: Preqin, 2021

Most research conducted on Private Equity is based on data from the American market and the Nordic region is not well covered in the academic literature (Spliid, 2013). Spliid (2013) argues that even though there are similarities between the two markets, the differences are more evident. This implies difficulties to analyze Nordic PE firms with American theories and experiences. The main differences between the markets are that management motivation factors are different, the Nordic market is less developed, and fundraising is more difficult in the Nordics because of fewer credit sources and more dependencies on international investors (Spliid, 2013). The Nordic governments also control private equity activity more compared to the US market which implies fewer tax advantages for the Nordic PE firms (Spliid, 2013).

3. Literature Review

Secondary buyouts are a relatively new phenomenon considering their increase in frequency and popularity during the past 15 years (Achleitner, Bauer, Figge & Lutz, 2012; Preqin, 2021). An SBO can be regarded as a "follow-on" LBO which means that the same value creation mechanisms are theoretically available in a secondary buyout (Wang, 2012). The literature review will therefore first introduce the theoretical background to leveraged buyouts and the value drivers active in LBOs guided by frameworks presented by Berg & Gottschalg (2003) and Hannus (2015). However, there are studies arguing that the theories explaining LBO activity cannot fully be applied to SBOs (Wang, 2012; Bonini, 2010). Therefore, the literature review will continue with a presentation of the research that has been conducted on secondary buyouts and highlight studies that compare PBOs and SBOs. Lastly, the chapter will end with a summary of the findings presented.

3.1. Value Creation in Leveraged Buyouts

3.1.1 Value Drivers in LBOs

Literature on value creation in LBOs typically distinguish between value creation from financial, governance and operational engineering. Early literature focuses primarily on financial and governance engineering and the mitigation of agency conflicts to explain the performance of PE-firms and the value created in portfolio companies (Jensen, 1989; Kaplan, 1989). However, as the market in which PE-firms act has become increasingly competitive, PE-firms have needed to search for other ways to improve operational performance than to solely mitigate agency conflicts. More recent research on the topic therefore focuses increasingly on value creation from operating improvements (Wright, Pruthi & Alperovych, 2019).

However, financial, governance and operational engineering is a broad distinction for explaining all the mechanisms that drive value in LBOs. A number of researchers have therefore sought to provide a comprehensive framework for these value drivers (Berg &

Gottschalg, 2003; Hannus, 2015). Berg & Gottschalg (2003) identify three dimensions of value generative factors and activities in leveraged buyouts. Value generative activities can, according to the framework, be distinguished by phases, causes, and sources of value generation. Phase (acquisition, holding period, divestment) refers to the time that the value generative decision is made alternatively the phase in which additional value is created; cause of valuation creation are activities that cause either an increase in valuation multiple, revenues or margin, or that decrease net debt; finally, sources of value creation can be divided into characteristics of the fund manager or the portfolio company. Hannus (2015) framework builds on Berg and Gottschalg (2003) but provides an updated and more granular structure to map out value generative activities.

Both Berg & Gottschalg (2003) and Hannus (2015) distinguish between indirect and direct drivers, as well as value creation that stem from active improvements or from value capture. The traditional sources of value creation, i.e., financial, governance and operational engineering, are included in the frameworks but are decomposed into previously stated distinctions and complemented with additional value generative mechanisms.

2.3.1.1 Direct Value Drivers

Any increase in value that stems from a change in underlying performance of a portfolio company, i.e., an increase of revenues, margin, or capital requirements reductions, is distinguished as value creation. If this change is caused by an action that has a direct effect on financial performance, it is considered a direct lever of value creation (Berg & Gottschalg, 2003; Hannus, 2015). Direct levers of value creation include financial, operational and strategic drivers.

Financial Drivers

Financial engineering, in the form of alterations of capital structure, is a direct lever of value creation. Financial drivers of value creation are exogenous, meaning that they are dependent on the PE sponsor. The PE firm can contribute with expertise, experience and network in order to optimize the balance sheet and can assist in the strategic decisions and the securing of

financing (Hannus, 2015). This can provide a direct source of value creation in the target firm.

Operational Improvements and Strategic Drivers

Hannus (2015) differs between operational and strategic drivers as direct levers of value creation. In contrast to the financial drivers, these drivers originate from the portfolio firm i.e., they are intrinsic to the company. This means that the value creation does not depend on the characteristics of the equity investor and would have occurred in any buyout context (Berg & Gottschalg, 2003).

Operational engineering implies that PE-firms are active and assist management in strategic questions. Kaplan and Strömberg (2009) explain operational engineering as the operating and industry expertise that PE-firms apply to target companies to add value to the investments. Hannus (2015) presents three main operational drivers: 1) Functional experience and operational expertise which refer to the knowledge transfer of managerial expertise and industry experience to the portfolio firm. 2) Cost structure improvements such as cost savings from reduced employment level and R&D expenses. 3) Capital management and increased asset utilization which increases productivity and efficiency. Additionally, Hannus (2015) claims that changes to the strategic direction of the portfolio companies, e.g., by performing divestment, buy-and-build strategies, or implementing growth strategies, is a direct value driver.

Multiple studies present findings of operational improvements in the portfolio companies of PE firms. Acharya, Gottschalg, Hahn & Kehoe (2013), find that the abnormal performance of deals is positive even when controlling for leverage and sector returns. This means that improvements in sales and operating margin during the private phase lead to higher abnormal performance relative to peers (Acharya et al., 2013). Guo, Hotchkiss & Song (2011) also show that one of the key value creation drivers in private equity activity is operating performance. Puche, Braun & Achleitner (2015) use a sample of over 2000 LBOs from six continents to study value creation. They find that 48% of the increase in value can be explained by operating improvements within the portfolio company. This can be attributed to the skills of the general partners, their control of the operating management but also to

changes within the industry. Puche, Braun & Achleitner (2015) find that increases in EBITDA through increases in both sales and margins, are an important contributor to value creation, which emphasizes the importance of operational involvement in portfolio companies.

2.3.1.2 Indirect Value Drivers

Indirect levers are actions that positively affect a direct lever of value creation (Berg & Gottschalg, 2003; Hannus, 2015). Hence, a secondary lever would affect a primary lever such that value is created from the primary lever. Hannus (2015) distinguishes between governance, cultural and temporal indirect drivers.

Governance Drivers

Related to financial engineering, most researchers agree on the disciplining effect of leverage. Larger interest burden puts pressure on managers not to waste free cash flow and is therefore often put forth as one of the main value drivers in private equity (Kaplan & Strömberg, 2009; Gompers et al., 2015). Rappaport (1989) states that "Borrowing per se creates no value other than tax benefits. Value comes from the operational efficiencies debt inspires". Leslie and Oyer (2008) confirms this statement, claiming that agency problems are addressed in PE firms through three mechanisms: greater debt discipline managers not to waste free cash flow, enhanced governance and increased managerial incentives.

Additionally, activities related to governance engineering can be used to indirectly improve performance. Governance engineering mechanisms refers to increased activity by PE investors in controlling the boards of the portfolio companies to public firms (Kaplan & Strömberg, 2009). This is possible due to the characteristics of the boards of the target companies. Boards are commonly smaller, consist of a mix of insiders, outsiders and PE-investors, and meetings are held more frequently (Gompers et al., 2015). It is more common that poorly performing management are replaced in companies owned by PE-firms compared to other companies (Acharya et al., 2013). According to Gong and Wu (2011), 51% of CEOs are replaced within two years following an LBO.

Early understandings were that managers in publicly traded firms did not maximize shareholder value since they did not own enough equity (Jensen, 1986). LBO-firms overcome this issue with the extensive use of incentives compensation to align the motives of managers and owners in line with agency theory. Managerial incentives such as stock and option-based compensation have become more widely used also in public firms since the 1980's but are still more extensively used in PE-firms (Leslie & Oyer, 2008). Both Acharya et al. (2013) and Kaplan & Strömberg (2009) compare the equity returns to management in leveraged buyouts and public companies. The findings are similar in both studies; management teams in PE-owned firms receive around three times as much equity compared to chief executive officers in public firms.

Kaplan (1989) studies management buyouts and finds that the target companies experience increases in operating income, decreases in capital expenditures, and increases in net cash flow. Kaplan (1989) proclaim increases in operating improvements to managements' requirement to invest in the firm, which means they can face upside as well as downside. Furthermore, equity is illiquid, and the stakes cannot be sold until the target firm exits, which gives incentives to focus on long term performance rather than short term (Kaplan, 1989). Although most studies show that managerial incentives are a large contributor to value creation in PE-firms, there are exceptions. Leslie and Oyer (2008) compare PE-firms to public firms and question if the incentives PE-firms use create value. They show that PE-owned companies use much stronger incentives for their managers but do not outperform public firms in profitability and operational efficiency (Leslie and Oyer, 2008).

Cultural Drivers

Activities that affect cultural aspects of target companies can also serve as indirect value drivers in LBOs (Hannus, 2015). Cultural drivers can include aspects such as the parenting effect of PE firms, improved performance management and changes to corporate culture. PE firms commonly increase frequency of complexity of reporting and can monitor and control portfolio companies through board positions (Berg & Gottschalg, 2003). Additionally, Bruining and Wright (2002) study the effect that venture capital ownership has on the entrepreneurial orientation, i.e., the effective combination of innovativeness, proactiveness to seeking new opportunities, the competitive aggressiveness, risk taking and autonomy, of the

target firm (Bruining & Wright, 2002). They find that venture capital ownership enhances entrepreneurial orientation and that knowledge transfer between PE firm and portfolio company is an important part of this effect.

2.3.1.3 Value Capturing

A change in value that does not stem from a change in underlying financial performance is referred to as value capturing. This implies that those activities that lead to a transfer of value from one party to another, rather than an increase in value, are distinguished as value capturing (Berg & Gottschalg, 2003; Hannus, 2015). The primary lever of value capture is multiple arbitrage (Hannus, 2015), which is the action of buying at a lower valuation multiple and selling at a higher without improving company fundamentals.

The potential for value capturing is determined by the identification of a promising investment target, the negotiation of acquisition price and the entry valuation, the business and market potential of the target and industry, as well as the choice of exit mode. Hannus (2015) distinguishes these types of value drivers as commercial drivers. The commercial drivers are in many ways dependent on the skill and characteristics of the private equity firm. For example, a well-established PE firm may have access to unique transaction opportunities, which can improve target selection (Kaufman & Englander, 2001). Additionally, a PE firm's ability to identify market trends in order to capitalize on a higher exit multiple, is influenced by the PE firm's skill and information advantage relative to the seller (Hannus, 2015).

Finally, Hannus (2015) claims that the reduction of corporate tax is a form of value capture as it is primarily a transfer of funds between society and the target firm. As both interest payments and carried interest are tax deductible, a PE firm that increases debt and claims carried interest will capture value from reduced tax payments.

Table 1 provides a summary of Hannus (2015) framework of value drivers.

Table 1: Summary of Hannus (2015) Value Driver Framework

Direct Levers of Value Creation	
Financial Drivers	Value creation through i.a.capital structure optimization and providing financial expertise and network to ensure favorable funding terms in target firms.
Operational Drivers	Value creation through improvements of cost structure and capital management. Providing operational expertise to the target firm.
Strategic Drivers	Value creation through changes to the strategic direction of the portfolio company, e.g., by performing divestment, buy-and-build strategies, or implementing growth strategies.
Indirect Levers of Value Creation	
Governance Drivers	Indirect value creation through restructuring board of directors and management team. Reducing agency costs through incentivization.
Cultural Drivers	Indirect value creation through parenting advantage, improving performance management and revising the firm's KPIs.
Temporal Drivers	Indirect value creation through the sense of urgency following a buyout that is part of being owned by a PE fund with a constrained time horizon.
Lever of Value Capture	
Commercial Drivers	Value capture from e.g. the aability to identify unique transaction opportunities and realize multiple expansion. Derive from the skill and characteristics of the private equity firm.
Organizational Drivers	Value capture from corporate tax shield, carried interest and capital income.

3.2 Value Creation in Secondary Buyouts

According to Achleitner and Figge (2014), the increase in SBO activity from 2% of global LBO transactions in the first PE boom in 1985-1989 to 25% in the second boom in 2005-2007, shown by Kaplan and Strömberg (2009), brought researchers' focus to the SBO deal. The general opinion in early research is that an SBO is primarily a second-best exit channel rather than a potential value creating investment. Kitzmann & Schiereck (2009) test this statement by comparing exit multiples between trade sales, IPOs and SBOs, and find that profitability of SBOs are not significantly different from trade sales. They therefore draw the conclusion that SBOs should not be seen as a second-best alternative and that multiple aspects of the SBO deal have potential for adding value.

The sources of value creation have been further researched in a number of coeval articles (Bonini 2010; Sousa, 2010; Wang; 2011; Achleitner & Figge, 2014). These studies claim that LBO theory on value drivers cannot be fully applied to the SBO deal, and therefore focus on the specific value creation drivers of SBOs. The literature question SBOs because (1) there would be limited value creation potential resulting from the primary financial sponsor having already exhausted all value creation potential in the portfolio company, (2) attractive deals would be primarily dependent on favorable debt market conditions and an increase of debt level, and (3) the selling firm would use market timing and negotiation skills to achieve highest possible exit value, causing deals to be overpriced. This motivates their further studies of the specific value drivers of SBOs.

Three potential value creation drivers are commonly distinguished in the secondary buyout setting (Achleitner, Figge & Lutz, 2014), relating to the above stated challenge of the secondary buyout deal. Research differentiate between value creation from operational improvements, changes in capital structure, and from multiple expansion.

3.2.1 Operational improvements

Taking slightly different approaches in their research of the SBO deal, Bonini (2010) Sousa, (2010), Wang (2011) and Achleitner & Figge (2014) present numerous relevant findings on the topic of value creation in SBOs. While Wang (2012) and Sousa (2010) focus more on the motives for SBOs, Bonini (2010) and Achleitner and Figge (2014) researches the difference between PBOs and SBOs with regards to value creation stemming from operational improvements, leverage and pricing. Regarding operational improvements, Bonini (2010) concludes that the primary sponsor generates a “large and significant improvement in operating performance and efficiency”, while the secondary sponsor does not. Achleitner & Figge (2014) criticize Bonini’s (2010) research for only capturing the low-hanging fruit effect and not the realized performance over the total holding period. In their research, Achleitner & Figge (2014), therefore conduct similar research to Bonini (2010), but use a slightly different methodology for testing. Achleitner & Figge (2014) measure operating performance and equity returns over the holding period of the investment, meaning that only realized transactions are included when testing variables. Their research contradicts Bonini (2010) as

they find no evidence that secondary buyouts have less potential for operational performance improvements than other buyouts.

Further research on the topic has sought to identify in which situations there may still be operational value creation potential to be exploited by a second private equity sponsor. Wang (2012) claims that a second PE firm can improve operational performance either if the first PE firm has exited the investment before all potential for efficiency gains has been exploited or if the second PE firms have different skills than the first, such that the two firms can improve performance in different ways. Considering Wang's (2012) first claim, much research has focused on identifying the situations where there is potential for value creation in the SBO setting. Considering the selling side, a private equity fund may exit an investment early due to the ending lifetime of the fund. Achleitner & Figge (2012) claim that, according to Jelic and Wright (2011) and Sousa (2010), an early exit can also be motivated by a will to be able to demonstrate a "tangible track record" which can facilitate fundraising, or according to Strömberg (2008), can be an action motivated by cash flow generation. In either case, an early exit may imply that there is room for additional operational performance improvements which have not yet been exhausted by the first private equity investor.

Considering Wang's (2012) second claim, complementary characteristics of the selling and buying private equity firm has been identified as a potential driver of value creation in numerous researches. Achleitner & Figge (2014) write that financial sponsors can differ in their skill sets and resources due to their different size and geographical reach, business networks as well as industry and functional expertise. Differences between the PE firms along these dimensions lead Achleitner & Figge to hypothesize that SBOs can obtain a similar growth in operational value creation as PBOs, which they also found evidence for. A study conducted by Acharya et al. (2013) tests the impact of educational background and career path of the general partner of the PE fund on deal level performance. They find that previous career path of the GP strongly influences the type of deal in which the PE firm is successful. Degeorge, Martin and Phalippou (2016) build on this work and test whether differences in (1) educational/career path of GP, (2) strategy pursued in target company, and (3) geographical focus (regional vs global) impact the value creation potential in the secondary buyout. The

authors find that SBOs perform better if the first and second PE firm differ along all of the above stated dimensions.

Finally, Achleitner, Figge & Lutz (2014) find that additional use of management incentivization, by committing additional capital and extending participation to management packages, may positively affect performance in the secondary buyout setting.

3.2.2 Capital Structure

The use of leverage as a source of value creation has been highlighted in previous studies. The idea is that, if a second financial sponsor can increase leverage with cheap debt, there is potential to create value from increasing the financial risk, even if operational value creation potential is limited (Achleitner & Figge, 2014). Research has therefore sought to investigate whether SBOs represent an attractive investment, independently of the temporary condition of the market.

Numerous studies have researched the difference in leverage ratios between PBOs and SBOs. Both Jenkinson & Sousa (2011) and Bonini (2015) find that debt levels are higher in SBOs than in PBOs after controlling for industry effects, while Boucly, Sraer & Thesmar (2011) find no such increase in leverage ratios in their sample of French buyout deals. Bonini (2015) claims that these differences in findings would be related to differences in buyout practices across regions or investors. Concurrently, Achleitner & Figge (2014) find "slight indications" of a higher debt/equity ratio in the secondary buyout but significantly higher debt/EBITDA ratio in SBOs than PBOs, which strengthens the claim that SBOs obtain more leverage than PBOs. These findings were made while controlling for market conditions, which led Achleitner & Figge (2014) to conclude that the greater use of leverage in secondary buyouts can be explained by the reduction of information asymmetries between the lenders and the second PE firm. This conclusion is further confirmed in an additional study by Achleitner et al. (2014), in a case study of the acquisition of Brenntag by BC Partners.

3.2.3 Multiple Expansion

As in the primary buyout, there is potential for value capturing through multiple expansion in the SBO setting. However, Bonini (2015) argues that the second-round PE buyer should be unlikely to receive a discount from fair value from the first-round PE firm, as this buyer will want to achieve a high selling multiple. I.e., the first PE firm will use market timing (Achleitner, Figge & Lutz, 2014; Jenkinson and Sousa, 2015) and negotiation skills (Achleitner, Figge & Lutz, 2014) to maximize exit value. This argument is supported by Achleitner and Figge (2014) who find that secondary buyouts are 6-9% more expensive than other buyouts. However, when approaching the end of the fund horizon, a seller may be forced to exit in less favorable market conditions. This will increase the odds of valuation multiple expansion for the second buyer. On the other hand, research has found that larger target firms exhibit higher valuation multiples due to their financial stability, and thus their lower discount rates (Hannus, 2015). Achleitner et al. (2011) therefore claim that sales growth can be rewarded by a higher exit multiple due to the resulting increase in firm size.

3.2.4 Additional Motives for Engaging in Secondary Buyouts

There are a number of additional motives for engaging in SBOs commonly discussed in previous literature, namely dry powder, complementing theory and collusion and reciprocity.

From the buyer perspective, large amounts of dry powder can create pressure to enter new investments (Jenkinson and Sousa (2015); Degeorge et al., (2016)), which would explain the incentives to engage in secondary transactions. Arcot, Fluck, Gaspar & Hege. (2015) researches performance of secondary buyout transactions in this setting and find that secondary buyers under pressure to spend underperform, while performance is no different from other buyouts when not in this setting. Value destruction under pressure to spend is also found in the study conducted by Degeorge et al. (2016). However, they also find that SBOs made under no pressure to spend perform as well as other buyouts. Bonini (2015) discusses the Complementing theory, which states that SBOs can be used as a portfolio diversification strategy to reduce risk from more risky investment while still yielding positive returns. The

dry powder would, hence, be used in the SBO for this purpose rather than for entering new high value-adding investments.

Collusion has been discussed among researchers as an explanation for engaging in SBOs. Collusion is when portfolio companies are being traded among PE-firms because the market environment for trading assets is favorable (Wang, 2012). Reciprocity is similar to collusion and implies that PE-firms engage in cooperative behavior with each other and buy each other's portfolio companies with the reason to boost returns and support an exit. The reason for reciprocity could be that market conditions change which generates the need for a forced exit. A forced exit affects the returns and harms the reputation of the firm which could make fundraising more difficult (Bonini, 2015). By trading firms among each other, the PE-firms help each other out. The seller finds an exit and a buyer under pressure to invest capital, in line with the dry powder theory, finds an investment target. However, the support in the academic literature for collusion as a driver to engage in SBOs is weak. Neither Wang (2012) nor Bonini (2015) could show the collusion- and reciprocity-hypothesis to be a motive.

A summary of findings related to secondary buyouts is found in Table 2.

Table 2: Summary of SBO Literature

SBO Literature	Market and time frame	Main Findings
Achletiner, Bauer, Figge & Lutz (2012)	Europe & US 1995-2008.	SBOs are not exits of last resort. PE firms choose SBO as exit channel in response to company- and market-specific factors.
Acheitner & Figge (2014)	Europe & US 1990-2010.	No evidence that SBOs offer lower operational value creation potential. SBOs are more leveraged than PBOs. SBOs are more expensive than other buyouts.
Achleitner, Figge & Lutz (2014)	Case study. Germany. 2013.	There is still potential to realize operational improvments in SBOs. SBO performance is positivley affected by additional use of management incentivization, by committing additional capital and extending participation to management packages. Opportunities for multiple expansion are limited in secondary buyouts.
Arcot, Fluck Gaspar & Hege et al. 2015	Europe. 1980-2010.	PE funds under pressure engage more in SBO transactions. Pressured buyers pay higher multiples and use less leverage. Pressured sellers exit at lower multiples and have shorter holding periods. Funds that invest under pressure underperform.
Bonini (2015)	Europe. 1999-2007.	Returns from SBOs are positive but significantly lower than from PBOs. EBIT- and EBITDA-margin increases after a PBO and decreases after an SBO. PBOs exhibit higher sales growth than SBOs. Median leverage levels are higher in SBOs compared to PBOs. SBOs are priced higher than PBOs in terms of EV/EBITDA-multiple.
Boucly, Sraer & Thesmar (2011)	France. 1994-2004.	SBOs experience post buyout sales growth to a lesser extent than PBOs. Both PBOs and SBOs increase in profitability after the buyout, but no significant difference between the deal types.
Degeorge, Martin, Phalippou (2016)	Global. 1986-2007.	SBOs underpreform when the buyers are under preassure to spend capital. SBOs made under no preassure to spend perform as well as other buyouts. If buyer and seller have complementary skill sets, SBOs outperform other buyouts.
Jenkinson & Sousa (2015)	Europe. 2000-2014.	SBOs have significantly higher leverage levels than PBOs. SBO purchases may be a quick way of spending comitted capital.
Kitzmann & Schiereck (2009)	Global. 1999-2004.	SBOs should not be seen as a second best alternativer for recycling the PE investors capital. Exit multiples of SBOs is comparable to other exit options.
Wang (2012)	UK. 1997-2008.	SBOs exhibit positive and significat sales growth and significant decreases in EBITDA-margin. SBOs are priced higher than PBOs due to favorable debt capital market conditions.

4. Hypotheses

In this chapter, hypotheses to guide the quantitative testing and to further answer the research question, are developed using literature reviewed in the previous section. Hypotheses are in line with the conventional wisdom of value creation in SBOs, which is that PBOs outperform SBOs in terms of operating performance improvements. Furthermore, we expect our testing to show that SBOs are more leveraged and more expensive compared to PBOs. A detailed evaluation of the measures used to test the hypotheses will be presented in Section 5.2.2 Variables.

4.1 Operational Improvements

Since PBOs and SBOs are both leveraged buyout transactions, the same value drivers are theoretically available in SBOs and PBOs. As value creation potential should have already been exhausted in the PBO, this implies that there should be greater value creation potential in the PBO compared to the SBO. There is evidence in the literature that operating growth in SBOs is lower compared to PBOs (Bonini, 2015; Wang, 2012; Degeorge, 2015). On the other hand, complementary skill sets of buyer and seller and structural characteristics of the deal (such as an early exit), may imply that there is additional value creation potential in the SBO. This argument is supported by Achleitner and Figge (2014) who find no evidence that SBOs offer less value creation potential than other buyouts. Furthermore, the increase in frequency of SBOs in the Nordics during the last decade proclaims that there should be significant upside opportunities in the SBO deal as well. Additionally, researching the competitive Nordic market which contains numerous large and experienced PE actors (Wright et al., 2019), it can be expected that actors have the expertise to continue operational improvements in an SBO setting. These arguments convince us that there may still be value creation potential in SBOs.

However, considering the previous literature within the field, a predominant part finds no such evidence. Bonini (2015), who study both sales growth and EBITDA-margin contribution, finds neither a significant increase in sales nor margin growth in the secondary

setting. Wang (2012) finds that SBOs show significant drops in EBITDA-margin and EBITDA compared to PBOs and that SBOs do not improve the efficiency of the target company. The author, however, finds that SBOs still generated a high sales growth. Achleitner & Figge (2014) also find indications of higher sales growth in SBOs compared to PBOs, even if results were not significant. Additionally, Degeorge et al.'s (2015) findings are mixed. Only when the transaction takes place between a PE firm focusing on sales growth and a PE firm focusing on margin improvements, the SBO will perform better than the PBO. Furthermore, when the buyer is under pressure to spend, the SBO will perform worse than a PBO. Although Boucly et al. (2010) find that SBOs still experience operational growth post buyout, it is to a lesser extent compared to PBOs with regards to sales growth, and no difference could be made between the two buyout types with regards to change in EBITDA-margin.

Based on these considerations, and following the conventional wisdom of secondary buyouts, we develop the following hypotheses related to operational improvements:

- *H1.a. Sales growth is lower in secondary buyouts compared to primary buyouts*
- *H1.b. EBITDA-margin growth is lower in secondary buyouts compared to primary buyouts*

4.2 Leverage

As alterations of capital structure is one of the most commonly identified value drivers in LBOs, it should be assumed that the primary buyer has already exhausted value from increasing debt. However, a second PE sponsor can take advantage of favorable market conditions to increase value from the use of additional leverage. This can also be done even if there is limited potential for value creation from operational improvements.

According to Axelson, Jenkinson, Strömberg & Weisbach (2013), variations in debt market conditions have a large impact on the leverage levels in buyouts. This implies that a higher LBO-spread leads to lower leverage levels in transactions. The authors find evidence that leverage levels, in general, are higher in secondary buyouts compared to other buyout types,

which are findings that have support in several other studies. Jenkinson and Sousa (2012), Achleitner and Figge (2014) as well as Bonini (2015) find evidence for higher debt/EBITDA ratio in SBOs compared to PBOs. Additionally, Achleitner and Figge (2014) find slight indications of higher debt/equity ratio in SBOs. Furthermore, Arcot et al. (2014) show that if buyers are under pressure to spend capital, leverage levels will be lower, meaning that leverage levels will depend on the context in which the transaction takes place.

Contrary to these studies, Boucly et al. (2010) find no evidence that debt levels are higher in SBOs compared to PBOs. The authors believe that this is due to the increased debt levels during the first buyout as well as retained earnings that are brought into the second buyout. The secondary buyout sponsor, therefore, would not need to further increase debt levels, to continue developing a target company (Boucly et al., 2010). However, in line with the majority of the previous literature as well as the conventional wisdom of leverage of SBOs, we hypothesize that:

- *H2.a. The net debt to EBITDA ratio is higher in secondary buyouts compared to primary buyouts*
- *H2.b. The net debt to equity ratio is higher in secondary buyouts compared to primary buyouts*

4.3 Pricing

As in the primary buyout, there is potential for value capturing through multiple expansion in the SBO setting. However, a higher acquisition price i.e., a higher multiple at entry, will make value capturing from multiple expansion more difficult in the SBO. There is evidence in previous literature that SBOs are generally more expensive than PBOs. This implies that value capturing from multiple expansion should be less likely in an SBO compared to a PBO. As the first-round seller will want to sell at the highest multiple possible, the second-round buyer should be unlikely to receive a discount from fair value from the first round PE firm (Bonini, 2015). It can be assumed that the selling PE firm will have superior negotiation skills and experience in maximizing the acquisition price compared to buying from shareholders.

Additionally, the selling PE firm has several exit options, for example, IPO and trade sale, which means that the selling PE firm will use market timing to maximize the value of an exit. Furthermore, a firm that has previously been PE-owned may have grown (in line with H1) to a size at which it implies higher valuation multiples.

Wang (2012) found significant evidence that enterprise value is 19% higher and the EV-multiple at entry is 14,4% higher in SBOs compared to PBOs. The author states the reasons to be debt market condition, firm size and reputation of the acquirer. Additionally, from studying the entry EV/EBITDA-multiple, Achleitner and Figge (2014) find that SBOs are 6-9% more expensive than other buyouts. The higher price of SBOs can, according to the authors, be explained by market timing skills of the first PE-owner as well as higher growth outlooks for SBOs.

On the other hand, a PE seller is constrained by the fund's lifetime, meaning that the PE firm may not be able to sell a target company at the most optimal mode or time. This would imply a window of opportunity for the second-round buyer to acquire the firm at a lower valuation multiple. In support of this notion, Arcot et al. (2010) find that the pricing in transactions will depend on the context; if a seller is under pressure it will sell at lower multiples and consequently, a pressured buyer will pay higher multiples. However, we believe that this effect should be less significant in comparison to before stated effects. Therefore, we hypothesize in accordance with the conventional wisdom of SBOs with regards to pricing:

- *H3. The EV/EBITDA multiple is higher in secondary buyouts compared to primary buyouts*

A summary of hypotheses is found in Table 3.

Table 3: Summary of Hypotheses

Hypotheses
Operational Improvements H1.a. Sales growth is lower in secondary buyouts compared to primary buyouts H1.b. EBITDA-margin growth is lower in secondary buyouts compared to primary buyouts
Debt H2.a. The net debt/EBITDA ratio is higher in secondary buyouts compared to primary buyouts H2.b. The net debt/equity ratio is higher in secondary buyouts compared to primary buyouts
Price H3. The EV/EBITDA multiple is higher in secondary buyouts compared to primary buyouts

5. Methodology

*In this chapter, the chosen methodology will be described and analyzed. We begin by presenting the **Research design**, where we describe the methodology that has been applied in order to answer the proposed research question. In the subsequent section, **Model Building**, we give a detailed overview of choices related to statistical testing. These include the selected time frame, variables, and treatment method for outliers. Thereafter, in the **Data** section, we describe the process of data collection and sample construction, as well as properties and statistics of our sample. Finally, we discuss the **Reliability and Validity** of our methodology.*

5.1 Research Design

5.1.1 Research Approach

We have taken a quantitative approach to answer the proposed research question. Hence, we have sought to draw conclusions of whether secondary buyouts differ from primary buyouts in terms of operational improvements, leverage, and pricing, by running statistical tests on sample data related to transactions involving target companies based in the Nordics. The statistical testing has been performed based on the hypotheses developed in Chapter 4, related to operational improvements, leverage, and pricing of the transactions. In other words, we have found evidence for or against the stated hypotheses based on the testing. The evidence in support for or against hypotheses has been used to answer the research question.

A deductive approach has been taken in the study, meaning that we have held the conventional wisdom of SBOs for true and tested whether the premises hold for the Nordic market. Hypotheses have therefore been developed based on the general logic that secondary buyouts would not incur the same operational performance improvements, that they are more highly leveraged and that they are more expensive than primary buyouts. This approach has been taken in previous studies, which have shown inconsistent results as to whether these basic premises hold true. As the research field is young and previous research is scarce, this

means that our findings can add to the general understanding of value creation in SBOs to support future research on the topic.

5.1.2 Statistical Method

In previous literature, two different approaches have been taken in quantitative hypothesis testing on the subject. Either financial measures of the same company are collected over time such that the financial development of each target company is followed from the primary buyout through the secondary buyout (e.g., Bonini, 2015; Boucly, 2011), resulting in a panel data structure. Alternatively, a sample of buyouts within a certain time interval is collected, where transaction type (PBO/SBO) is distinguished by a binary variable (e.g., Achleitner & Figge, 2014; Jenkinson & Sousa, 2015). This means that performance post transaction can be compared between the groups. The methods entail different challenges regarding their reliability. While the panel data approach implies that the transactions are controlled for company specific effects, the methodology poses high requirements on data availability. Additionally, the methodology has a problem of survivorship bias, as firms must have survived some number of years before the primary buyout until some number of years after the secondary buyout. The second approach implies that large samples are more conveniently constructed, but that the sample must be carefully controlled for industry and time related effects. The second approach has been taken in this study, primarily due to the limited data availability of target financials.

The sample of PBO and SBO transactions has been tested in two steps. First, we used t-tests to evaluate whether there is a statistically significant directional difference in means between the PBOs and the SBOs of the sample. Two-sample one tailed t-tests were performed for each of the dependent variables: Sales growth (H1a), EBITDA-margin growth (H1b), Net debt to EBITDA (H2a), Net debt to Equity (H2b) and Enterprise value to EBITDA (H3a). Additionally, all the stated dependent variables were adjusted for median industry figures and tested again.

Having performed the t-tests, regression analysis was performed to further distinguish the differences in operational value creation, leverage, and pricing between PBOs and SBOs. The

hypotheses were tested in OLS regressions using a PBO/SBO dummy variable as the only explanatory variable, and several control variables to control for market, industry, and time effects. All variables included in statistical testing are explained and evaluated in section 5.2.2 Variables.

5.1.2.1 T-test

T-tests that have been performed compare the means of each dependent variable, contingent on whether it is a primary or secondary buyout. The null hypothesis of the test is that the difference in means is zero. The p-value then measures the probability of sample data supporting the null hypothesis. This means that, observing a p-value (Pr (|T|>|t|) below 0,1 (*), 0,05(**) or 0,01(***), leads to the conclusion that there is a statistically significant difference in means between PBO and SBO groups. The one tailed t-tests can further test the alternative hypotheses of T< t and T>t. Statistical significance in the left tail (T<t) implies that the mean of SBOs is statistically significantly higher than the mean of PBOs. Conversely, statistical significance in the right tail suggests that the mean of PBOs is higher than the mean of SBOs. We hypothesize (Chapter 4) that the mean of the tested variables is higher/lower in SBOs compared to PBOs, making the one-tailed test suitable for all hypotheses.

The basic assumptions of the Student's t-test are that the quantitative response variable is approximately normally distributed within each group. Additionally, it is assumed that the variance within each group is equal (Agresti, Franklin & Klingenberg, 2017). However, the test can be modified in case a variance test, e.g., Levene's test, would show that groups have different variances. In case variances differ, Welch's t-test for unequal variances can be used instead. In performing t-tests, each dependent variable has been tested for equal variances. In any case unequal variances were detected, the Welch's t-test for unequal variances was performed instead of the Student's t-test.

5.1.2.2 Regressions Analysis

The independent variables related to operational improvements, debt, and pricing, have been tested using multiple regression analysis. The multiple regression model assumes a linear

relationship between a dependent variable, Y, and multiple independent variables, X (Montgomery, Peck & Vining, 2012).

The relationship is explained by:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k + \varepsilon$$

where β_0 is the constant and β_{1-k}, the regression coefficients, are the expected change of y per unit of change in X_k, given that all other dependent variables are held constant The term ε is the random error component. Even if this function does not represent the true underlying relationship between the dependent and independent variables, the model can be used to approximate the true unknown function. The regression coefficients are estimated using the ordinary least squares (OLS) method, which implies that regression coefficients are determined such that the sum of squares of the difference between the dependent variable in the dataset and that predicted by the regression, is minimized (Montgomery et al. 2012). For the tests conducted, the only explanatory variable of concern is whether the transaction is a secondary buyout or not, i.e., a binary variable represented by a dummy variable. However, control variables will be used to single out the effect of the SBO dummy variable, such that it can be determined whether a transaction being an SBO, rather than a PBO, significantly affects operational improvements, debt, and pricing.

The OLS regression analysis is based on assumptions, both concerning the variables as well as the residuals. The main assumption of the model is that there is a linear relationship between the independent and the dependent variable. Furthermore, variables are assumed to be fixed and measured without error, and error terms are assumed to be normally distributed with $E(\varepsilon) = 0$ and $Var(\varepsilon) = \sigma^2$ and uncorrelated (Montgomery et al. 2012).

Multicollinearity occurs when independent variables are highly correlated. In OLS regression, no multicollinearity is one of the underlying assumptions. The occurrence of multicollinearity can be evaluated from the correlation matrix including all explanatory variables. The numbers in the correlation matrix should be as close to zero as possible since this implies that the variables are not correlated. To further check for multicollinearity, variance inflation factor

(VIF) tests can be conducted. VIF starts at 1 which implies that there is no correlation between the independent variable and any other independent variable. VIFs between 1 and 5 suggest that there is a moderate correlation but not enough to motivate that any changes should be made in the model. VIFs over 5 means that there are high levels of multicollinearity between independent variables (Montgomery et al., 2012). VIF shows output values for both centered and uncentered VIF. The uncentered VIF is used when the regression model does not include a constant term, hence, centered VIF was regarded this study.

Another assumption of OLS regression is that the residuals have a constant variance, i.e., homoscedasticity. Heteroskedasticity more commonly occurs in datasets with broad range between the largest and smallest numbers (Angrist & Pischke, 2009). Heteroskedasticity can be tested for by performing White's test. The null hypothesis of the test is homoscedasticity, meaning constant variance of residuals. If the null hypotheses cannot be rejected, the errors in the model are heteroscedastic and the assumptions of the model are not fulfilled. In such a case, the model can be adjusted using Huber-White's Robust Standard Error approach for calculation of covariance matrix. This means that OLS regression model can still be used, but that the violation of assumptions is adjusted for.

5.2 Model Building

In this section, we review the studied time frame, the included variables, and the methodology used for ensuring fulfillment of OLS assumptions.

5.2.1 Time Frame

There are dispersions in the academic literature regarding how many years to include in the time frame when studying value creation in leveraged buyouts. Using a panel data methodology, Bonini (2015) studies a time window of one year prior to the first buyout to two years after the second buyout. The reason for the chosen time window is that a longer time window would not result in a large enough sample since the market for secondary buyouts has developed in the last ten years. Also, complete financial statements are required from one year

before to two years after the buyout, and an extension of the window would result in a lack of data (Bonini, 2015). Wang (2012) analyses a three-year window centered on the buyout year. This time window allows enough time to examine the trend going into the buyout but at the same time minimize potential noise from using a long event window. However, Achleitner and Figge (2014), argue that this method focuses on a noticeably short performance window. On the one hand, it captures the low-hanging fruit effect but on the other hand, it will not capture the actual realized performance over the total holding period. Therefore, Achleitner and Figge (2014) study the entire holding period from entry to exit. However, 47% of the transactions are non-realized and for those they use the latest valuation date available.

In this study, the time window is set to the transaction year to two years after [0;+2]. Only including a fraction of the holding period, means that value creation after the cut-off period will not be accounted for, and the impact of the private equity ownership is not completely captured. However, Alperovych, Amess & Wright (2013) find in their study that it is during the first two years after the buyout that major improvements are implemented and materialized. This finding is also supported in other buyout literature (Kaplan & Strömberg, 2009; Guo et al, 2011; Boucly, 2009; Jenkinson & Sousa). Wang (2012) finds that EBITDA increases the most during the first three years after the buyout. These findings support the chosen time frame. Additionally, this time window made it possible to include buyouts in the sample that have not yet exited. This meant that the sample size was increased such that more reliable tests for operational improvements could be performed. Furthermore, measuring from year zero is not in line with previous studies. However, since the corporate structure may change as part of the acquisition, the sample of correct consolidated accounts for one year prior to the transaction was limited. This issue is also discussed by Gaspar (2012) who stresses the importance of identifying the correct corporate unit after a transaction. Since measuring from one year prior to the acquisition would reduce the sample size and thus compromise the reliability of testing, we considered measuring from year zero the preferrable solution. This is further discussed in the Section 5.3.2.2 Delimitations and Reductions to Initial Sample.

5.2.2 Variables

Five dependent variables related to operational improvements, debt and pricing, are tested as part of the hypothesis evaluation. The independent, and controlling variables included in each of the five regression models are evaluated in this section. A summary of these variables is found in Table 4.

Table 4: Overview of Variables

Operational Improvements	Debt	Pricing
	Independent variables	
Log Sales growth Log EBITDA-margin growth	Debt/EBITDA Debt/Equity	EV/EBITDA
	Explanatory variable	
SBO Dummy	SBO Dummy	SBO Dummy
	Control variables	
	Industry specific variables	
Log Sales growth Log EBITDA-margin growth	Debt/EBITDA Debt/Equity	EV/EBITDA
	Market variables	
	LBO spreads at entry	LBO spreads at entry
	Fund specific variables	
Sponsor age Specialization	Sponsor age	Sponsor age Specialization
	Deal specific variables	
Log EV at entry Log EBITDA at entry Time dummy	Log EV at entry Log EBITDA at entry Time dummy	Log EV at entry Log EBITDA at entry Log EBITDA margin Time dummy

5.2.2.1 Operational Improvements

The following variables were used when testing hypotheses 1a and 1b.

Dependent Variables

The value created from increased operating cash flow in the target firms was measured by studying changes in EBITDA. EBITDA was split into sales and margin contribution and used as dependent variables. The decision to split the EBITDA value contribution in these to metrics made it possible to distinguish differences in the operational value creation between PBOs and SBOs. EBITDA margin is defined as EBITDA/Sales. The EBITDA margin growth is the difference between the EBITDA-margins in year 0 until year 2. Sales growth is calculated as a compounded annual growth rate (CAGR) between the entry year and year 2.

EBITDA is a suitable measure for comparing operating performance between companies since the measure excludes differences in companies' capital structure, asset base, and tax rates (Pignataro, 2013). Additionally, sales growth and EBITDA-margin are used to break down the operational value creation in the primary and secondary settings in multiple other studies about value creation in leveraged buyouts such as Achleitner & Figge (2014), Wang (2012), Puche et al. (2015), Boucly et al. (2011), Bonini (2015).

Sales was considered a more suitable measure for this study than revenues. Revenues can include items such as foreign exchange gains and losses or proceeds from investments, which are not related to a company's core operations. To capture the operational improvements of the target companies, we were interested in knowing what solely the operations generate, and therefore sales were assessed to be a more suitable measure for capturing this than operating revenues.

Explanatory Variable

A dummy variable taking the value of 1 if the transaction is an SBO and 0 if it is a PBO was used as explanatory variable when testing for differences in operational improvements between SBOs and PBOs. A transaction is an SBO if both the buyer and seller is a PE firm or

financial sponsor which is in line with how previous studies define an SBO (Achleitner & Figge, 2014; Bonini, 2015; Wang, 2012). For the PBOs only the buyer needs to be a PE firm. Previous SBO-studies that use a regression analysis method for testing the variables have also used a SBO-dummy as explanatory variable (Achleitner & Figge, 2014; Bonini, 2015).

Control Variables

Characteristics of the industry, the PE-firm, the target company as well as the market has shown to affect the performance and the value creation potential of the target company after the buyout. Specific variables for these characteristics have therefore been controlled for in the five regressions. However, the control variables included differ for each dependent variable.

Industry Variables

Testing the dependent variables Sales growth and EBITDA-margin growth, industry and time effects have been accounted for by including median industry figures related to each transaction. Since the sample includes the Rev.2 NACE industry classification code, which is the central industry classification system for the EU (Eurostat, 2008), data could be retrieved for companies with the same NACE-code for the relevant time period. This made it possible to control for differences within different markets. Since the median industry figures used were calculated for the years of which the buyout took place, the figures also control for time patterns within the industries. The creation of these peer control groups is further discussed in the Data section under Constructing control variables.

Target Specific Variables

Furthermore, target specific measures have been included as control variables in the operational improvements testing. Research has shown that larger deals create more value through EBITDA-margin improvements and that value creation through sales growth is more common in smaller transactions (Achleitner et al., 2010). Previous studies also emphasize the importance of controlling for these effects (Achleitner & Figge, 2014; Wang, 2012; Jenkinson & Sousa, 2015). Therefore, enterprise value at entry and EBITDA at entry were used to control for company size and profitability effects which can have an impact on the value

creation potential in the target firms. Enterprise value is calculated by adding net debt and equity. Since the target companies are private, no public market capitalization is available meaning it is the book enterprise value that has been used. The numbers are in logarithmic scale to improve normality. However, since the measures can be negative, a constant was added to both the EBITDA at entry and enterprise value at entry to be able to transform the values to logarithmic scale. This was considered a plausible way of handling negative numbers, since these variables are included to capture the effect of having companies of different sizes and different profitability at entry, i.e., different types of firms. Since the values will remain constant in relation to each other, this effect should remain despite whether numbers are negative or positive.

Fund Specific Variables

Sponsor age was used as a proxy for skills and experience of the PE firm. Sponsor age was calculated from the foundation of the PE firm year to investment entry. Returns for PE funds can be influenced by sponsor experience, which means that sponsor age can have an impact on the operational performance of the target firms. Earlier studies have found a relationship between fund experience and increased performance (Kaplan & Schoar, 2005; Schmidt, Nowak & Knigge, 2004). The age distribution in the sample is skewed and contains large outliers which compromises underlying assumptions of regression analysis. To solve the problem of outliers, it was decided that all firms older than 30 got rearranged into one group with the age of 30. We reasoned that the marginal skills gained for each year should be diminishing i.e., whether a firm has been active in one vs five years will have a larger impact on sponsor skills than whether a firm has been active in 20 vs 25 years. Therefore, we believe that the skills of the PE-firms were still captured despite this change.

PE firm specialization was also included as a control variable. Specialization refers to whether the PE firm only invests in companies within certain industries or if the firm invests in companies within all types of industries. Studies have found that PE-firm specialization positively affects the target company's performance. In some cases, specific skills like industry specific knowledge of a PE firm might be essential in order to create operational improvements within the target firm (Arcot et al., 2015). A dummy variable was used, taking the value of 1 if the PE firm is a specialist and 0 if it is a generalist.

Market Specific Variables

To control for time patterns in the buyout market, a dummy variable was included in the regression. The dummy takes the value of 1 if the transaction took place before 2014 and 0 if it took place in 2014 or after. The decision to split the sample in year 2014 was based on what we can see in Figure 3 showing the number of transactions each year in our sample where it is evident that the frequency of deals increases over the chosen study period. It is likely that these time patterns are related to effects following the 2008 Financial crisis. Since the time span of the study is relatively short, we chose to divide the sample into two periods.

5.2.2.2 Debt

Dependent Variables

To test if SBOs are more leveraged than PBOs, the dependent variables net debt to EBITDA and net debt to Equity were used. In both cases net debt at investment entry were used, is in line with Achleitner and Figge (2014). Net debt was calculated by subtracting cash and cash equivalents from non-current liabilities. The variables were calculated at transaction entry to capture the new debt portfolio firms take on before they start to amortize loans. The net debt to Equity ratio is a common measure used to evaluate a company's financial leverage and in this case the financial risk a transaction can support. The net debt to EBITDA ratio is a useful measure when studying debt capacity, since higher EBITDA level implies that a company generates more earnings to repay the debt. Furthermore, the ratio well describes debt in relation to profitability (Axelson et al., 2013; Achleitner & Figge, 2014).

The collected data was reported in global standard format which provides broad definitions, primarily of balance sheet items. This meant that it was not possible, for example, to distinguish if there was a part of current debt that was interest bearing. Therefore, a broad definition of net debt was used. This means that, if a company has short-term debt that is interest-bearing, this will not have been captured in the calculated net debt. This may somewhat compromise the comparison between firms.

Explanatory Variable

When testing to see if there is a difference between SBOs and PBOs with regards to leverage, a dummy variable was used as explanatory variable in the same way as for the operational testing. The dummy takes the value of 1 for an SBO transaction and the value of 0 for PBO transaction.

Control Variables

Industry Variables

When testing the dependent variables net debt to EBITDA and net debt to Equity, industry effects were accounted for by including median industry figures related to each observation in the sample. The industry figures were calculated as described under Operational Improvements and discussed further in the Data section. Industries generally differ in debt level and controlling for these industry effects makes the companies more comparable. However, according to Axelson et al. (2013) debt levels in leverage buyouts mostly depends on the debt market conditions. According to the authors, industry characteristics such as profitability and growth opportunities, that are usually the explanation to debt levels in public firms, do not seem to explain the buyout leverage levels (Axelson et al., 2013). However, in the previous SBO literature, industry effects are controlled for when testing debt levels (Jenkinson & Sousa, 2015; Achleitner & Figge, 2014; Bonini, 2015). Therefore, we chose to follow the majority of previous studies and control for this factor.

Target Specific Variables

As in the regression models testing Operational Improvements, both EBITDA at entry and Enterprise Value at entry were controlled for when testing leverage. EBITDA at entry and Enterprise value are used as a proxy for transaction size and profitability since these should have an impact on the ability of the company to be granted lending (Achleitner and Figge, 2014).

Fund Specific Variables

Sponsor age was used as a proxy for skills and experience of the PE firm in the same way as described under Operational Improvements. However, the reason for controlling for experience when testing the debt levels differed from the tests for improvements of operating performance. Previous literature has found that more experienced PE sponsors use more debt to finance deals (Achleitner et al., 2011). Additionally, experience has also shown to have a positive relationship to a fund's ability to attract capital into new funds (Kaplan & Schoar, 2005). Similarly, Demiroglu and James (2010) find that reputation of the PE-fund is related to the debt levels in the buyout.

Market Variables

Numerous studies emphasize the effect that debt market conditions have on the leverage levels of buyout targe companies (Axelson et al., 2013; Wang, 2012; Bonini, 2015). Following Achleitner & Figge (2014) we therefore controlled for debt market conditions by including LBO spread in the transaction year as control variable. Annual numbers of Moody's seasoned Baa Corporate Bond Yield were used. The LBO spreads can be compared to the interest rate a firm would pay if they took a corporate bank loan. Therefore, Baa rated bonds which are classified as a medium grade and a moderate credit risk were used (Moody's, 2021). The Moody' seasoned corporate bond is the yield of the US market. However, considering the size of the US economy and how it affects the rest of the world, it was regarded representable for the Nordic market.

Finally, a dummy variable was included to control for time patterns in the buyout market. The dummy takes the value of 1 if the transaction took place before 2014 and 0 if it took place 2014 or after.

5.2.2.3 Pricing

Dependent Variables

Since the dataset does not contain pricing or valuation multiples, or the price paid by the buyer, the question of whether PE-firms pay higher prices for SBOs or PBOs was investigated using common valuation multiples. The multiple used is the EV-multiple, calculated as

enterprise value divided by EBITDA. Enterprise value for each company could be calculated from net debt and equity at entry. The EV-multiple is well used in pricing by PE firms why it was considered as a suitable price-measure (Axelson et al., 2010). It is also a common measure used in leveraged buyout literature (Achleitner & Figge, 2014; Bonini, 2015; Wang, 2012); Puche et al. 2015; Axelson et al, 2010).

Explanatory Variable

The SBO-dummy variable was used as explanatory variable also when testing to see if there is a difference in pricing between SBOs and PBOs. The dummy takes the value of 1 for a SBO transaction and the value of 0 for PBO transaction.

Control Variables

Industry Variables

Industry effects were accounted for by including industry figures for EV-multiple at entry. The industry figures used are calculated as described in Operational Improvements. Valuation multiples are often different for different industries which means that controlling for industry effects makes the companies more comparable to each other.

Target Specific Variables

Target specific measures were included as control variables when testing pricing. Larger firms are less vulnerable to external shocks compared to smaller firms with smaller asset base and are therefore higher valued (Achleitner et al., 2011). Additionally, more profitable firms are more likely to show higher valuation multiples (Hannus, 2015). Therefore, Enterprise value at entry and EBITDA at entry was used to control for company size effects.

Fund Specific Variables

Sponsor age was included as a control variable as a proxy for experience. The definition and calculation of the variable were the same as for Operational Improvements. As stated, more experienced PE firms use more debt financing and Achleitner et al. (2011) find that debt is positively related to entry buyout pricing. In addition, Achleitner et al. (2011) also find that

more experienced PE firms buy at lower prices due to negotiation skills. Additionally, PE firm specialization is also included as a control variable. A dummy variable was used, taking the value of 1 if the PE firm is a specialist and the value of 0 if it is a generalist.

Market Variables

As for the debt testing, LBO-spread was used as a variable to control for debt capital market conditions when testing the difference in pricing between PBOs and SBOs. The LBO-spreads are not directly correlated with the buyout pricing. However, since the spreads affect the leverage conditions it will indirectly have an impact on the price paid for a company and was therefore included in the regression. Axelson et al. (2010) find that the conditions of the debt capital market have an impact on the pricing of the transactions, where increased availability of leverage results in higher transaction prices. If the discount rate decreases, the price increases (Axelson et al. 2010).

The dummy variable to control for time patterns in the buyout market was also included in the regression for pricing. The dummy takes the value of 1 if the transaction took place before 2014 and 0 if it took place in 2014 or after.

Variable definitions for all variables included in regression models can be found in Table 5.

Table 5: Variable Definitions

Variable	Definition
Dependent Variables	
SBO-Dummy	Dummy variables takes the value of 1 if the transaction is a SBO and 0 if it is a PBO
Sales Growth	Target firm's Sales growth from year 0 to year 2. Calculated as: (Sales year 2/Sales year 0)^(1/2)-1
EBITDA-margin growth	Target firm's change in EBITDA-margin from year 0 to year 2. Calculated as:(EBITDA/Sales year 2)-(EBITDA/Sales year 0)
Net Debt/EBITDA	Target frim's Net Debt to EBITDA ratio at year 0
Net Debt/Equity	Target firm's Net Debt to Equity ratio at year 0
EV/EBITDA	Target frim's Enterprise Value to EBITDA ratio at entry. Calculated as: (Net Debt year 0 + Equity year 0)/EBITDA
Industry Variables	
Sales Growth	Median of industry peers' Sales growth from year 0 to year 2. Calculated as: (Sales year 2/Sales year 0)^(1/2)-1
EBITDA-margin growth	Median of industry peers' change in EBITDA-margin from year 0 to year 2. Calculated as:(EBITDA/Sales year 2)-(EBITDA/Sales year 0)
Net Debt/EBITDA	Median of industry peers' Net Debt to EBITDA ratio at year 0
Net Debt/Equity	Median of industry peers' Net Debt to Equity ratio at year 0
EV/EBITDA	Median of industry peers' Enterprise Value to EBITDA ratio at entry. Calculated as: (Net Debt + Equity)/EBITDA
Taget, Fund and Market Variables	
Sponsor Age	Age calculated on investment entry from the foundation year of the PE firm. All firms older than 30 got rearranged into one group with the age of 30.
Specialization	Dummy variable taking the value of 1 if the PE firm is a specialist and 0 if it is a generalist
EV at Entry	Enterprise Value of the target firms at entry. Calculated by adding net debt and equity
EBITDA at Entry	Target firm's EBITDA at entry
EBITDA-margin at Entry	Target firm's EBITDA-margin at entry
Time Dummy	Dummy variable taking the value of 1 if the transaction took place before 2014 and 0 if it took place 2014 or after.

5.2.3 Testing OLS Assumptions

When performing statistical testing on the sample, several final modifications had to be made to convey the underlying assumptions of regression analysis. Different modifications had to be performed for each of the five regression models. Therefore, the considerations concerning OLS assumptions are reviewed for each model in this section. However, common for all models was that distributions for multiple variables contained large outliers. This was not unexpected as the sample includes transactions of varying sizes but demanded a treatment method to control for the effect of these outliers. Histograms depicting the distribution of residuals can be found in Appendix A.

Winsorizing was chosen as treatment method for limiting the effect of outliers. By winsorizing a sample, values that appear outside a certain lower and upper percentile (e.g., 5% and 95%) of a distribution, are replaced by the values representing the cut-off percentile.

Winsorizing, rather than trimming the sample, was done since the outliers are a part of the distribution. If we could suspect that outliers were errors, trimming would be the preferred method (Steyenberg, 2019). Winsorizing also meant that the sample size did not have to be further compromised, which was important consideration. However, even if treatment of the outliers of the sample was necessary to be able to perform statistical testing on the sample, the reader should be aware that tests were performed on a modified sample.

Model 1: Sales Growth

First, the model was tested for multicollinearity. Studying the correlation matrix, Enterprise value and EBITDA at entry were found to have a correlation of 0,69. To identify whether this would be problematic for the model, VIF-test for multicollinearity was performed. Results of VIF tests did not motivate any changes to the model. Secondly, and as previously discussed, the sample is highly dispersed. The assumption of normality of residuals therefore had to be carefully tested. To satisfy the assumption of normality, the statistical properties of the sample had to be improved, and variables were therefore transformed to logarithmic scale. However, since negative numbers cannot be transformed to logarithmic scale, all numbers need to be positive. Therefore, we added +1 to Sales growth to overcome the issue of negative numbers. However, even after transforming variables to logarithmic scale, the normality of the distribution was constrained. The Jarque-Bera null hypothesis of normal distribution of residuals was rejected, implying a violation of OLS assumptions. In order to improve normality, outliers were identified and trimmed from the sample which improved normality of residuals (Appendix A). Finally, White's test was conducted to detect heteroscedasticity of variables. The null hypothesis of homoscedasticity could not be rejected at the 5% level. Therefore, the test was run without additional adjustments to the model.

Testing the OLS assumptions for the Sales growth regression model, we found that the sample had to be modified by a 5% winsorization, trimming of outliers as well as the use of log scale of variables.

Model 2: EBITDA-Margin Growth

To improve the statistical properties of the model, variables were transformed into logarithmic scale. Subsequently, multicollinearity was tested by observing the correlation matrix and performing VIF test. The correlation matrix showed that EV and EBITDA at entry once again were the highest correlated variables. However, the VIF test again did not suggest that variables had to be excluded from the model. Furthermore, normality of residuals was tested with the Jarque-Bera test for normal distribution of residuals. The p-value, which returned higher than 5%, implied that we failed to reject the null hypothesis of normality. Therefore, we could assume normality of residual distribution (Appendix A). Finally, White's test for heteroscedasticity showed that the null hypothesis of homoscedasticity failed to reject. This implied that homoscedasticity could be assumed.

Testing the OLS assumptions for the EBITDA-growth regression model, we found that the sample had to be modified by a 5% winsorization and logarithmic variables had to be used.

Model 3: Net debt/EBITDA

Since both EBITDA and net debt can take negative values (net cash), variables cannot be transformed to logarithmic scale to improve the statistical properties of the data. As previously discussed, the variables of the sample are generally dispersed and contain outliers. This meant that, also at 5% winsorization, the statistical properties of data that had not been further modified could not satisfy the assumptions of OLS regression. The main violation to OLS assumptions concerned the normality of residuals, which was observed from conducting Jarque-Beras test for normality of residuals. Our alternative solutions to this issue were therefore to either run the regression with deviations from assumptions or trim the sample from outliers to improve normality. Although trimming the sample from outliers significantly improved the Jarque-Bera statistics, the normality assumption still was violated (Appendix A). Additionally, tests were conducted for multicollinearity as well as heteroscedasticity. While the multicollinearity assumption was sufficiently fulfilled, the model had to be modified to adjust for heteroscedasticity. Therefore, Huber-White's standard errors were assumed in the model.

Based on the OLS assumptions testing, we find that there are issues related to the quality of the data which could have implications for the reliability of testing. We decided to run the model with the above discussed modifications but concluded that results from this model would have to be carefully interpreted.

Model 4: Net Debt/Equity

In testing net debt to equity, we again encountered negative values hindering the transformation of variables to logarithmic scale. Therefore, we had the choice of either excluding all negative values, alternatively, trimming the sample from the largest outliers to improve the statistical properties of the sample. The choice of trimming the sample from the largest outliers was made, first, because that meant that more observations could be kept in the sample, and secondly, because we reasoned that the trimming of outliers would closer resemble a random sample than excluding all negative variables. This meant that the sample used for testing was both winsorized at 5% and trimmed for largest outliers. Test of normality of residuals for the treated sample is attached in Appendix A.

Inspecting the correlation matrix, we further found that LBO spread and Time dummy, as well as EV and EBITDA at entry, had higher correlations. Tests for multicollinearity were conducted, which showed slightly increased VIF measures for EV and EBITDA at entry, but that were within a range sufficient to run tests. However, testing for heteroscedasticity, we rejected the null hypothesis of homoscedasticity, implying that assumptions of OLS were violated. In order to control for the heteroscedasticity of the sample, we assumed Huber White's standard errors.

Model 5: EV/EBITDA

Several issues were encountered in the EV/EBITDA sample before running the regressions. First, as is evident when studying means and standard deviations, the sample is dispersed, even at 5% winsorization. Secondly, we encountered negative observations since EBITDA can be negative. This meant that we again faced issues of incurring sufficient statistical properties to return reliable test results. Two options were considered: the first was to include all observations, also negative values, without transforming variables to logarithmic scale.

The second option was to trim the sample from negative values and improve statistical properties by using the logarithmic scale of variables.

Neither of the options was unproblematic with regards to statistical properties. The sample that could not be transformed to logarithmic scale did not fulfill the assumption of normality of residuals. Since multiple variables are dispersed, the sample could not be trimmed to a degree where both sample size and normality of residuals were sufficient. This meant that the test was run despite the violation of the normality assumption. Assumptions of no multicollinearity and homoscedasticity were also tested, which did not show violations to these assumptions.

The second sample showed better statistical properties than the first. The Jarque-Bera test for normality showed that the null hypothesis of normality failed to reject. This meant that normality of residuals could be assumed (Appendix A). Additionally, tests showed limited evidence of multicollinearity and heteroscedasticity in the second sample. Therefore, this sample was regarded in hypothesis testing.

5.3 Data

5.3.1 Structure of Data

The study takes a retrospective perspective to the study of secondary buyouts. This implies that we have tested historical observations that have occurred at different states of time. Even though data for each observation has been collected from different points in time, the dataset has most comparable properties to a cross-sectional structure. Cross-sectional data implies that multiple variables of data have been collected from a specific point in time. In our dataset, data for most variables have been collected from the transaction year, *t*. Even if the year of t may differ between observations, we consider *t* a specific point of time. However, this argument only holds for variables that have been measured only at time *t*, i.e., net debt to EBITDA, net debt to equity and EV/EBITDA-multiple. For the Sales growth and EBITDA-margin growth variables, data has been collected for the same company at multiple points of

time, which resembles collecting time-series data. On the other hand, this data has been condensed into metrics that fit into the cross-sectional-like structure of the dataset. We conclude that no one definition of data structure is suitable to define the structure of the dataset, but that it has properties that are most similar to cross-sectional data.

Furthermore, the nature of SBOs implies that these transactions concern the same companies as have once been represented in a PBO, which could imply that the same company could occur as both a PBO and an SBO. However, as the researched interval of eight years is relatively short, no target company is represented both as a PBO and an SBO.

5.3.2 Construction of Sample

5.3.2.1 Collecting Data from Financial Databases

Data has been collected in a multi-stage process. First, a sample that identifies primary and secondary transactions occurring in Sweden, Denmark, Finland, and Norway from 1989 to 2020 was collected. This data was retrieved from the statistical database Valu8 (n.d). Valu8 is a database that aggregates private company and ownership information in European countries and provides detailed company information and underlying reports. In this sample, transaction date, target company, deal type (PBO/SBO), region, buyer, seller, buying fund specialization and Rev.2 NACE industry classification of target company was retrieved. In a second step, financials for target companies were retrieved. This was done for each company individually since the consolidated financials for target companies could not be retrieved in the initial dataset. Target company financial data was collected from the statistical database Orbis. In a third step, complementing data for control variables was retrieved. PE fund data was retrieved from the statistical database Preqin. However, encountering substantial amounts of missing data in this dataset, the only variable that came to be used from this dataset was buying PE fund year of establishment. Additionally, LBO spreads were retrieved from Moody's (FRED Economic Data, 2021). Finally, financial data for industry peers was retrieved to construct industry control variables. The data was collected from Orbis such that data would be comparable to target financials.

5.3.2.2 Delimitations and Reductions to Initial Sample

The initial sample of transactions contained 822 buyout deals of currently active and inactive target companies in Denmark, Finland, Norway, and Sweden, from 1989 to 2020. The search was conditioned on transaction type (buyout) and had to be a buy-deal, such that the same transaction would not appear as both a buy and a sell transaction. Additionally, the buyer should have obtained controlling ownership of the company.

The initial sample was trimmed from several transactions which were considered disturbing for comparability of the transactions of the dataset. This meant that any unfinished transactions were eliminated from the sample. Additionally, financial sponsors that are not traditional PE funds, such as family offices and investment companies were eliminated from the sample. This action was taken since several properties that differ between traditional PE firms and, for example, investment companies could be disturbing to our research. First, if the investing firm does not have a typical fund structure, the firm also will not be pressured to exit investments. As ending fund life of the primary buyer has been identified as a potential situation from which a second buyer can create value, any funds that do not have the typical fund structure would not incur this effect. Therefore, such firms have been eliminated from the sample.

Additionally, it was determined that the sample would be limited to transactions from the time interval 2010 to 2017. The decision was based on several considerations. First, data from Preqin (see Chapter 2, Figure 3) suggests that buyout activity started to return, after being heavily constrained during the 2008 Financial crisis, in 2010. Limiting the sample to 2010-2017 meant that transactions have occurred in a relatively stable macroeconomic environment, which improves comparability of transactions. On the other hand, effects of the financial crises would have likely been captured by the control variables included in the regression testing. However, as the initial sample contained a much smaller number of transactions from the years prior to 2010, we deemed the pros of having a more condensed dataset to outweigh the cons. Additionally, having a shorter sample period meant that any regulatory changes with regards to accounting practices were less likely to disturb comparability of the transactions. Furthermore, comparing the availability of target financials for early transactions in the sample with transactions closer to present, we found that data

availability improved as transactions occurred at a later point in time. The reason for the reduced quality of data in early transactions could not be clearly determined, why we found that there could be a risk of survivorship bias in the accessibility of data. In order to limit any bias from the sample selection, it was therefore concluded that transactions within the time interval 2010-2017 would provide the most reliable data and a sufficient number of transactions.

Furthermore, in collecting financial data for target companies, several considerations had to be taken into account. First, there is an ongoing discussion of the use of consolidated and unconsolidated financial accounts for target company data (Wang, 2012; Boucly, 2011). The use of consolidated financial accounts implies that there is a risk that non-organic growth is captured in sales measures (Wang, 2012). On the other hand, using unconsolidated financial accounts means that debt that has been raised in a holding company will not be included in debt measures. Additionally, turnover and profitability measures can be misleading if the acquired company has subsidiaries that are not accounted for in the unconsolidated statements. Therefore, the process of selecting the appropriate corporate unit was an important part of the sample construction process. The selection process went as follows: first, we identified the corporate unit which had been acquired by the PE company. If there were consolidated financial accounts available for the company, the data was retrieved. If there were no consolidated accounts available, we investigated the structure of the corporate group. If the company had no subsidiaries, we retrieved unconsolidated financials for the company. If we encountered a transaction where a corporate group had been acquired, but to which we could not retrieve consolidated financial accounts, the transaction was removed from the sample. Additionally, in any case where an abnormally large sales increase between two years could be identified, the transaction was further investigated. If the sales increase turned out to be non-organic, the transaction was eliminated as well. In other words, every transaction in the sample has been reviewed manually. Gaspar (2012) discusses the issue of consolidation of accounts and concludes that manually verifying company financials between multiple data sources is a crucial procedure to obtain reliable sample data.

After the above-stated constraints had been applied to the initial sample and financial data for target companies had been collected, the sample size had been reduced to 180 transactions of which 125 were PBOs and 55 were SBOs.

5.3.2.3 Construction of Control Variables

Target, fund, and market specific control variables could be retrieved directly from databases as explained in the previous section. However, for industry specific variables, a methodology for constructing peer groups had to be developed. Industry control variables have been constructed as follows: first, the 3-digit Rev.2 NACE code was defined for each target company. The Eurostat NACE Rev.2 report (2008) states that ”NACE is the statistical classification of economic activities in the European Community”. Each code can be up to 4 digits and a company’s industry classification can be determined at different levels of specificity depending on the number of digits. The 3-digit NACE codes were retrieved from Valu8 in the initial sample. In a second step, transactions that involved holding companies had to be identified since those NACE codes would distinguish the activities of the holding company rather than the activities of the subsidiaries held in the holding company. In those cases, NACE codes had to be redefined manually. Thereafter, consolidated, financial data for publicly traded companies in Sweden, Denmark, Finland, and Norway were retrieved for each 3-digit code. Each industry specific control variable was calculated for each of the companies and for all years included in the sample (2010-2019) . From this data, median metrics of the peers from a specific industry could be matched with the industry and year of each transaction. For those industries where the sample did not contain more than 10 companies, the 2-digit NACE code was used instead. Naturally, this will lead to lower accuracy in capturing industry specific effects, but the gains of using a larger peer sample, and thus eliminating company specific effects, were considered greater than the cons of using a broader industry definition.

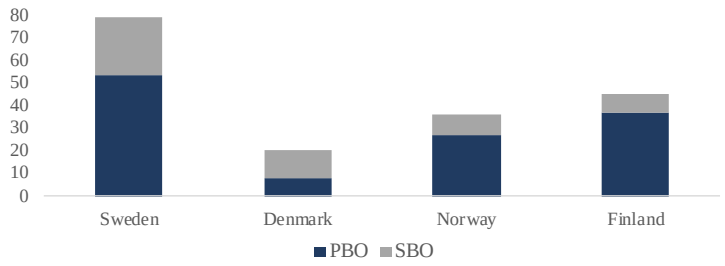
5.3.3 Sample Statistics

5.3.3.1 Target Characteristics

The final sample contains 180 transactions of which 125 are primary buyouts and 55 are secondary buyouts. This means that SBOs represent 30,5% of total transactions in the sample. According to data from Preqin (2019), SBOs represented 31% of total number of exits in 2018. This is also depicted in Figure 1 of Chapter 1. Even if this number may not be representative for buyout activity, it gives an indication of the size of the secondary buyout market. Additionally, looking at previous scholars (e.g., Achleitner & Figge, 2013; Bonini, 2010; Jenkinson & Sousa, 2015), their portion of SBOs in the samples are around 20-40%. We therefore believe the relative portion of PBOs and SPOs to be roughly representative for the population.

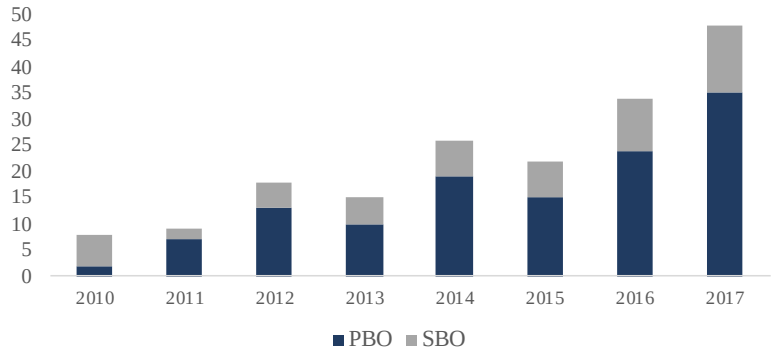
The distribution of transactions by country can be found in Figure 4. The country division is based on the country where the target company is registered. As the histogram shows, Sweden accounts for the largest number of transactions followed by Finland, Denmark, and Norway. The distribution departs from the true distribution of transactions between the four countries. According to data from Preqin (see Chapter 2, Figure 3) Sweden on average accounted for 39% of buyouts in the Nordics from 2010 to 2017, while Denmark accounted for 26%, Finland 18%, and Norway 17%. In our sample, Sweden accounts for 44% of transactions, followed by Finland at 25%, Norway at 20%, and finally Denmark at 11%. We assume that the deviations from the true population are random, but we are aware that it could also have occurred due to differences in data availability.

Figure 4: Number of Transactions by Country and Type



Furthermore, looking at the distribution of transactions included in the sample over time, the increase in buyout activity during the time period under observation is clearly depicted in the sample. Figure 5 depicts number of transactions included in the sample by year and type. Comparing the increase, however, our sample increases more sharply compared to data from Preqin (see Chapter 2, Figure 3). The reason could be that data availability becomes increasingly better the closer we are to present time. This may cause a certain degree of survivorship bias, which has been further discussed in the Validity and Reliability section of this chapter.

Figure 5: Number of Transactions by Year and Type



5.3.3.2 Fund Characteristics

The Private equity funds represented in the sample are in a vast majority of cases headquartered in the Nordic countries. Only in 9 transactions, the PE sponsor is located in a country outside the Nordics. In total, 64 PE firms are represented which gives an average of 2,8 PE transactions for each PE firm. Looking at the transactions, 132 transactions have involved a “Generalist” PE sponsor, while 48 have involved a “Specialist” sponsor. Furthermore, the median sponsor age at entry, i.e., the time from establishment of the PE firm until transaction announcement date, is 14 years. The statistics have been summarized in Table 6.

Table 6: Sample Summary Statistics

Sample	
Number of Observations	180
Number of Primary Buyouts	125
Number of Secondary Buyouts	55
Number of Firms represented	64
Median Sponsor Age at Entry	14
Fund specialization	
Number of Generalists	132
Number of Specialists	48

An overview of all transactions included in the sample can be found in Appendix B.

5.3.4 Variable Summary Statistics

Descriptive statistics of mean and median target company financial figures of our sample of 55 SBOs and 125 PBOs are depicted in Table 7. Several observations based on the figures should be noted. First, we find that sales growth is positive for both transaction types. The average sales growth is slightly higher in the PBO transaction compared to the SBO. However, comparing average and median figures, it is evident that both groups are affected by large outliers. Even after winsorizing at 5%, there is a substantial difference between average and median figures. Looking at the median figures of sales growth, the relationship between SBOs and PBOs is reversed. The median figures instead suggest that sales growth is higher in SBOs than in PBOs.

Secondly, regarding the EBITDA-margin growth, the average and median figures suggest that PBOs offer higher EBITDA-margin growth during the first two years of ownership compared to SBOs. It should also be noted, looking at average EBITDA-margin growth for SBOs, that the figure is negative when outliers have not been treated.

Thirdly, looking at the debt measures net debt to EBITDA and net debt to equity, it is evident that the means have been affected by outliers. The mean figures change vastly, even at 2,5% winsorization. Therefore, figures that are adjusted for outliers should provide a better depiction of the true state of the sample. Comparing mean and median figures for net debt measures at 5% winsorization, we find that mean net debt to EBITDA is higher in SBOs compared to PBOs and that average net debt to equity is slightly higher in SBOs compared to PBOs. The median figures confirm this view for both debt metrics.

Fourthly, the median figures for EV/EBITDA multiple suggest that SBOs exhibit a higher multiple than PBOs. The average figures, which change vastly when the sample is winsorized, suggest that the multiple is either equal to or slightly higher in SBOs compared to PBOs.

Finally, figures of enterprise value and EBITDA margin at entry provide a unanimous view on the differences between PBO and SBO targets. Both mean and median figures at any level of outlier treatment, suggest that SBO targets are both larger in terms of enterprise value, and more profitable in terms of EBITDA-margin, at the time of PE entry.

Table 7: Descriptive Statistics

	PBO		SBO		Full Sample	
	Average	Median	Average	Median	Average	Median
Before treatment of outliers						
Sales growth	29,1%	11,9%	26,8%	12,4%	28,4%	12,1%
EBITDA-margin growth	4,5%	2,9%	-0,5%	1,1%	3,0%	2,0%
Net debt/EBITDA	-0,37	0,00	6,87	0,43	1,84	0,10
Net debt/Equity	1,35	0,06	0,73	0,26	1,16	0,13
EV/EBITDA	3,66	2,51	9,51	3,81	5,44	2,76
EBITDA-margin at entry	7%	7%	10%	9%	8%	8%
EV at entry	26 298	6 468	136 196	25 765	59 878	9 664
2,5% Winsorization						
Sales growth	27,2%	11,9%	24,7%	12,4%	26,4%	12,1%
EBITDA-margin growth	3,5%	2,9%	0,3%	1,1%	2,6%	2,0%
Net debt/EBITDA	1,12	0,00	2,89	0,43	1,66	0,10
Net debt/Equity	1,08	0,06	0,81	0,26	1,00	0,13
EV/EBITDA	5,60	2,51	5,86	3,81	5,68	2,76
EBITDA-margin at entry	8%	7%	10%	9%	8%	8%
EV at entry	26 347	6 468	80 163	25 765	42 791	9 664
5% Winsorization						
Sales growth	26,4%	11,9%	23,8%	12,4%	25,6%	12,1%
EBITDA-margin growth	3,6%	2,9%	1,1%	1,1%	2,8%	2,0%
Net debt/EBITDA	1,91	0,00	3,12	0,43	2,28	0,10
Net debt/Equity	0,73	0,06	0,84	0,26	0,76	0,13
EV/EBITDA	5,64	2,51	5,63	3,81	5,63	2,76
EBITDA-margin at entry	8%	7%	10%	9%	8%	9%
EV at entry	23 098	6 468	54 324	25 765	32 639	9 664

5.3.4.1 Correlation Matrix

Correlations between all independent variables are depicted in Table 8. We note that EV at entry and EBITDA at entry are the highest correlated measures. This is not surprising as both are stated in absolute numbers and are related to the size of the target company. Additionally, the Time dummy and the LBO spread at entry are correlated at 62%, which is expected as the LBO spread is dependent on time.

Table 8: Correlation Matrix

	SBO Dummy	Sponsor age	Specialist dummy	Time dummy	LBO Spread at entry	EBITDA at entry	EV at entry	EBITDA margin at entry	Industry Sales growth	Industry EBITDA-margin growth	Industry Net Debt/ EBITDA	Industry Net Debt/ Equity	Industry EV/ EBITDA
SBO Dummy	1												
Sponsor age	0,1305	1											
Specialist dummy	-0,0182	-0,1095	1										
Time dummy	0,0434	-0,0504	-0,0322	1									
LBO Spread at entry	0,1373	-0,0778	-0,0935	0,6240	1								
EBITDA at entry	0,3068	0,3510	0,0759	-0,0049	0,0851	1							
EV at entry	0,2839	0,2048	0,0274	0,1073	0,1243	0,7468	1						
EBITDA margin at entry	0,0857	0,1473	-0,1013	-0,0533	-0,0526	0,3573	0,3272	1					
Industry Sales growth	-0,0824	-0,1209	0,0892	-0,2809	-0,2378	-0,1766	-0,1414	-0,0849	1				
Industry EBITDA margin growth	0,0776	-0,0194	0,1930	0,0195	-0,0895	-0,0864	0,0048	-0,1058	0,1578	1			
Industry Net Debt/EBITDA	0,1192	-0,0963	-0,0521	-0,0393	-0,0341	-0,0519	-0,0149	-0,1048	0,0309	0,1068	1		
Industry Net Debt/Equity	-0,0812	-0,0879	0,0115	0,0900	0,0828	-0,0380	0,0364	-0,0365	-0,2285	-0,0092	0,0605	1	
Industry EV/EBITDA	-0,0897	-0,0625	-0,0253	-0,0669	-0,0148	0,0076	0,0141	-0,0474	-0,0309	-0,0746	0,0199	0,6041	1

5.4 Reliability and Validity

5.4.1 Reliability

5.4.1.1 Sample Size and Treatment of Outliers

There are multiple dimensions to be considered when discussing sample size in relation to reliability of statistical testing. First, it should be noted that the quantitative methodological approach selected to research the value creation potential of SBOs is dependent on a sufficiently large sample of transactions. Statistical testing is dependent on normality of distributions and limited effects of outliers which implies that testing should become more reliable as the sample size grows larger. There are two issues related to sample size when approaching the topic of private equity transactions. First, the sample is naturally limited to the transactions that have occurred in the past, meaning that there is no way that the sample size can be expanded apart from awaiting future transactions. Secondly, data for the target companies of transactions that have occurred is often incomplete, which additionally constrains the sample size.

The sample of this study has, in most cases shown sufficient statistical properties to ensure reliable testing results. However, the fact that reliability would be further improved from a larger sample cannot go unforeseen. On the other hand, a limited sample size implies that the quality of observations can be controlled. Observations where large outliers have been encountered have been further investigated in order to validate that the outliers are not caused by errors in the data. This also supports winsorizing rather than trimming as chosen treatment method for outliers.

5.4.1.2 Collecting and Calculating Financial Measures

The chosen methodology implies that each observation is reliant on two measuring points in the historical financial statements of the target company. This implies that one-time, company specific effects, affecting the financial reports at one of these measuring points, cannot be controlled for. In case the financials at one of the measuring points do not represent the true underlying operative state of the company, the measures used to study operational improvements, debt and price will be affected. However, in the tradeoff between the previously discussed issues of sample size versus being able to better control for company specific effects, the methodology used has still been considered superior to a panel data approach. Thus, in a different study with a broader geographical limitation, we cannot preclude the possibility that a panel data methodology would have better isolated these effects.

It should also be noted that financial data has been retrieved from global standardized financial reporting formats in Orbis. Since the format is standard, a degree of specificity, primarily of balance sheets, is foregone. The implication to this study was that a more granular measure of net debt had to be used, one that does not include the short-term portion of interest-bearing debt. In other words, the debt measures will be underestimated for companies that report current short-term debt. On the other hand, using a global standard format improves comparability between reporting standards of different geographical regions, and facilitates collection of larger data samples. On the other hand, we realize that the measure of debt also somewhat constrains comparability to other research.

5.4.2 Validity

5.4.2.1 Consolidation of Accounts

Pros and cons of retrieving financial data from target companies from consolidated or unconsolidated accounts have been previously discussed. However, this choice's implications for the validity of the study should be further discussed. As consolidated financial statements have primarily been used, we encounter the risk of capturing effects on operating performance that are not directly related to improving measures of PE firm. Examples of such effects could be acquisitions made during the holding period. If acquisitions do not result in figures that create large outliers in our dataset, there is a risk that these cases would not be identified or accounted for. This would disturb the research since it is likely to result in large figures for sales growth and potentially for the change in EBITDA-margin. In the case that this would influence the testing performed, this would imply that we cannot distinguish improving measures of the PE firm as driver of growth.

As previously mentioned, each transaction has been screened for acquisitions in the years following the transaction, to identify cases where using consolidated statements would be an issue. This methodology is possible when dealing with the sample size of this study and should eliminate any vast implications of the problem. However, we have found no immediate methodological approach to dealing with these issues on a large scale. Neither have we seen a discussion on how to manage this problem in previous research. This is noticeable as we find that there is an apparent risk of compromising the validity of research if the financial figures cannot be directly related to PE ownership.

5.4.2.2 Measures

It should be noted that the measures used to test operational improvements, debt and pricing may not fully capture what they are aimed at. For example, we cannot preclude that EV/EBITDA-multiple, which is the measure used to draw conclusions of transaction price, is not representative of the true price paid in the transaction. We have presented arguments (section 5.2.2 of this chapter) for why we believe our measures to be good proxies for the studied relationships, but the risk that the proxies do not portray the true relationships of

operational performance, debt or price must indeed be noted. Again, we are limited by the private nature of the transactions that are studied.

Additionally, we are aware that the control variables included in our models do not control for all factors circumventing the target companies. I.e., the empirical nature of the study implies that it is not possible to create perfect testing condition. Therefore, we cannot preclude that factors in the environment, that we have not controlled for, have affected the results of the study. This is a result, both of problems with retrieving private data, but also of finding testable variables for capturing these effects. However, looking at the Adjusted R-squared of our models in relation to previous research, we find that our retrieved values, which are between 7-35%, are in line with previous literature. For example, we use a similar methodology to Achleitner & Figge (2014), who retrieve adjusted R-squared values between 7-20%.

5.4.2.3 Time Frame

A detailed discussion of the time frame used in this study can be found in section 5.2.1 of this chapter. However, a few remarks should be made in terms of the effect that the time frame may have on the validity of the study. First, drawing conclusions of operational improvements in a two-year time frame means that we expect all improving measures to materialize within two years. Even if previous research suggests that most operational improvements materialize within two years, examining the entire holding period could improve validity of results. However, in this study, examining the entire holding period would have resulted in an insufficient sample size, and therefore was not considered a valid alternative.

Additionally, we implicitly assume that improving measures materialize equally fast in PBOs as in SBOs. If improvement efforts have different aims in a PBOs compared to an SBO, the time it will take for improvement efforts to materialize may differ as well. Furthermore, no distinction has been made between transactions that are announced at the beginning of the year versus those that are performed at the end of the year. A transaction that is announced at the beginning of the year will have had more time for improving measures to be performed

and materialized within the two-year time frame. This is an additional factor that should be taken into consideration when analyzing the results.

5.4.2.4 Sample Reductions

Finally, the occurrence of any bias that has been caused by reductions to the sample must be evaluated. Comparing the initial and final sample, it is evident that data availability has caused a significant loss of transactions from the sample. Evaluating this data loss, we find no evidence of structural data loss of a certain type of transaction. However, there are indications that data quality improves as transactions occur closer to present time. This may have caused a skew towards more present transactions. The implications could be, that conclusions drawn are not represent of the entire time frame.

6. Results and Economic Interpretation

In this section, results from statistical testing are presented and hypotheses are evaluated. Furthermore, results are related to previous research to provide an economic interpretation of the testing conducted. Statistical testing has been performed on data where variables have been winsorized at different levels. This was done in order to be able to monitor the effect of outliers that are present in the sample. T-tests results are hence presented from tests involving untreated data, as well as data winsorized at 2,5% and 5%. For all regression models, the sample has been winsorized at the 5% level.

6.1 Operational Improvements

6.1.1 Hypothesis Testing

6.1.1.1 Sales Growth

H1.a. Sales growth is lower in secondary buyouts compared to primary buyouts

T-test

Hypothesis H1.a is tested in the right tail (Pr (T > t)) since we hypothesize that the mean sales growth is higher in PBOs than in SBOs. Observing test results from samples that have not been controlled for industry effects, we find that t-values are positive, meaning that the mean of sales growth of PBOs is higher than the mean of sales growth of SBOs. Additionally, we observe that p-values are closest to significant in the right tail, but that none of the tested samples return significant support H1.a. We do, however, note that the positive difference in means (PBO>SBO) grows larger as outliers are eliminated and standard deviation decreases. We find the same results when controlling for industry and time effects; at each level of winsorization, t-values are positive but insignificant in the right tail. This implies that we find no statistically significant support for H1.a. Summary statistics of all t-test performed can be found in Table 9.

Table 9: Results of t-tests – Sales Growth

diff = mean (Buyout) - mean (Secondary)
H0: diff = 0

	Obs		Mean		Std.dev					
	PBO	SBO	PBO	SBO	PBO	SBO	t =	Pr(T < t)	'r(| T | >| t |	Pr(T > t)
Sales growth										
No winsorizing	125	55	1,2909	1,2684	0,5156	0,4518	0,2959	0,6161	0,7679	0,3839
95% winsorizing	125	55	1,2717	1,2475	0,4077	0,3679	0,3930	0,6525	0,6950	0,3475
90% winsorizing	125	55	1,2643	1,2382	0,3740	0,3253	0,4725	0,6813	0,6374	0,3187
Abnormal Sales growth										
No winsorizing	125	55	0,2255	0,2173	0,5156	0,4518	0,1067	0,5424	0,9152	0,4576
95% winsorizing	125	55	0,2063	0,1964	0,4109	0,3678	0,1590	0,5630	0,8740	0,4370
90% winsorizing	125	55	0,1989	0,1872	0,3809	0,3247	0,2111	0,5834	0,8332	0,3166

Table 9 shows the output of the Two-Sample t-test of the dependent variable sales growth from year 0 until year 2. Outputs are shown for the original sample as well as winsorized at 2,5% (95%) and 5 % (90%) The table also shows the abnormal sales growth compared to industry peers.

Regression Analysis

In Table 10, regression results related to hypothesis 1.a. with sales growth as dependent variable are presented. The untrimmed sample (OLS 1) returns no statistically significant coefficient for the explanatory SBO dummy variable, i.e., we find no evidence that there is a difference between PBOs and SBOs with regards to sales growth. The trimmed sample (OLS 2), on the contrary, returns a 10% significant SBO dummy. Both models show a positive coefficient for the SBO dummy, suggesting that a transaction being an SBO would have a positive effect on sales growth from transaction year to two years following the transaction. The adjusted R-squared is 0,1892 (OLS 1) and 0,0863 (OLS 2).

T-tests, as well as the regression analysis performed on the untrimmed sample, do not provide evidence that average sales growth is higher in PBOs compared to SBOs. Conversely, we find evidence on the 10% level that SBOs obtain higher sales growth than PBOs when performing the regression on a sample trimmed for outliers. These results would provide significant support against H1.a.

We, therefore, conclude that our tests provide mixed evidence related to sales growth, which means that we find no evidence to accept hypothesis H1.a.

Table 10: Regression Results - Sales Growth

		Hypotheses 1.a	
		Log (Sales Growth+1)	**Log (Sales Growth+1)**
Variable		OLS (1)	OLS (2)
SBO Dummy	*Coefficient*	0,0109	0,0549
	SE	0,0424	0,0281
	P-value	(0,7984)	(0,0522)
Log (Industry Sales Growth)	*Coefficient*	-0,0214	-0,0845
	SE	0,2464	0,1862
	P-value	(0,9307	(0,6507)
Log (Enterprise Value at Entry)	*Coefficient*	0,1123	0,0321
	SE	0,0225	0,0169
	P-value	(0,0000)	(0,0603)
Log (EBITDA at Entry)	*Coefficient*	-0,2777	-0,0929
	SE	0,0407	0,0321
	P-value	(0,000)	(0,0044)
Sponsor Age	*Coefficient*	0,0054	-0,0008
	SE	0,0023	0,0017
	P-value	(0,0207)	(0,6169)
Specialist Dummy	*Coefficient*	0,0217	0,0541
	SE	0,0352	0,0278
	P-value	(0,5391)	(0,0532)
Time Dummy	*Coefficient*	-0,0416	-0,0635
	SE	0,0372	0,0265
	P-value	(0,2656)	(0,0178)
N		180	157
Adjusted R-squared		0,1892	0,0863

Table 10 shows the regression analysis for testing Hypothesis 1 a. The dependent variable is Sales Growth from year 0 until year 2. The numbers are transformed to logarithmic scale and the sample is winsorized at a 5% level. OLS (1) includes the full sample and OLS (2) includes the trimmed sample. The explanatory variable is a dummy variable with the value of 1 if the transaction is a SBO and 0 if it is a PBO. Independent variables include: Log Industry Sales Growth, Log EV at Entry, Log EBITDA at Entry, Sponsor Age, Specialist Dummy and Time Dummy. The numbers of observations as well as Adjusted R squared is presents. Both models have F statistics that are significant at $p < 0,05$. Coefficient, Standard Errors and P-values for each variable is presented. In both regressions heteroskedasticity robust standard errors are applied.

6.1.1.2 EBITDA-Margin Growth

H1.b. EBITDA-margin growth is lower in secondary buyouts compared to primary buyouts

T-test

Hypothesis 1.b is tested in the right tail since we hypothesize that the mean improvement of EBITDA-margin is larger in PBOs than in SBOs. The results return significant in the right tail at the 5% level for all levels of winsorizing, suggesting that EBITDA-margin growth is lower in SBOs than in PBOs. The same effect is found in t-tests performed on industry abnormal

improvements in EBITDA-margin. The t-tests reveal that PBOs have a statistically significant higher mean in abnormal EBITDA-margin improvements, compared to SBOs. Results of t-tests are depicted in Table 11.

Table 11: Results of t-test - EBITDA-Margin Growth

diff = mean (Buyout) - mean (Secondary)
H0: diff = 0

	Obs		Mean		Std.dev					
	PBO	SBO	PBO	SBO	PBO	SBO	t =	Pr (T < t) r (| T | >| t	Pr (T > t)	
EBITDA-margin growth										
No winsorizing	125	55	1,0450	0,9952	0,1503	0,1374	2,1783	0,9843	0,0314	0,0157
95% winsorizing	125	55	1,0353	1,0033	0,1119	0,1110	1,7817	0,9612	0,0777	0,0388
90% winsorizing	125	55	1,0358	1,0107	0,1001	0,0888	1,6841	0,9526	0,0948	0,0474
Abnormal EBITDA-margin growth										
No winsorizing	125	55	0,0450	-0,0099	0,1539	0,1377	2,3746	0,9904	0,0192	0,0096
95% winsorizing	125	55	0,0353	-0,0018	0,1184	0,1120	2,0107	0,9766	0,0468	0,0234
90% winsorizing	125	55	0,0358	0,0057	0,1069	0,0906	1,9462	0,9730	0,0539	0,0270

Table 11 shows the output of the Two-Sample t-test of dependent variable EBITDA-margin growth from year 0 until year 2. Outputs are shown for the original sample as well as winsorized at 2,5% (95%) and 5 % (90%). The table also shows the abnormal EBITDA-margin growth compared to industry peers

Regression analysis

In Table 12 regression results related to hypothesis 1.b. with EBITDA-margin growth as dependent variable are presented. The regression output shows that the dummy variable coefficient is negative and significant at the 10% level. This result suggests that a transaction being an SBO, rather than a PBO, negatively affects the change in EBITDA margin between entry and two years after the transaction. The adjusted R-squared is 7%, implying that 7% of the variation in the dependent variable can be explained by the variance of the independent variables.

Combining the results of t-tests as well as regression analysis, we conclude that we find statistically significant evidence in support for H1.b.

Table 12: Regression Results - EBITDA-Margin Growth

		Hypothesis 1.b
		Log (EBITDA-margin growth+1)
Variable		OLS
SBO Dummy	*Coefficient*	-0,0263
	SE	0,0155
	P-value	(0,0929)
Log (Industry EBITDA-margin growth +1)	*Coefficient*	0,0958
	SE	0,2401
	P-value	(0,6904)
Log (Enterprise Value at Entry)	*Coefficient*	-0,0333
	SE	0,0086
	P-value	(0,0002)
Log (EBITDA at Entry)	*Coefficient*	0,0582
	SE	0,0167
	P-value	(0,0006)
Sponsor Age	*Coefficient*	0,0001
	SE	0,0009
	P-value	(0,8871)
Specialist Dummy	*Coefficient*	-0,0072
	SE	0,0159
	P-value	(0,6524)
Time Dummy	*Coefficient*	0,0151
	SE	0,0139
	P-value	(0,2812)
N		180
Adjusted R-squared		0,0717

Table 12 shows the regression analysis for testing Hypothesis 1 b. The dependent variable is EBITDA-margin growth from year 0 until year 2. The numbers are transformed to logarithmic scale the sample is winsorized at a 5% level. The explanatory variable is a dummy variable with the value of 1 if the transaction is a SBO and 0 if it is a PBO. Independent variables include: Log Industry EBITA-margin growth, Log EV at Entry, Log EBITDA at Entry, Sponsor Age, Specialist Dummy and Time Dummy. The numbers of observations as well as Adjusted R squared if presents. Both models have F statistics that are significant at $p < 0,05$. Coefficient, Standard Errors and P-values for each variable is presented.

6.1.2 Economic Interpretation of Results

The difference between operational improvements in secondary and primary buyouts has been tested in hypothesis 1 a. and 1.b. Operational improvements was split into sales growth and profitability improvements, measured as change in EBITDA-margin between year 0 and year 2. Both hypotheses 1 a. and b. were based on the conventional wisdom that PBOs outperform SBOs in terms of operating performance improvements.

The results related to sales growth are mixed. The t-tests show that PBOs have higher mean sales growth at all levels of winsorizing, but the results are not significant. Conversely, observing median figures for sales growth in the descriptive statistics, SBOs show higher sales growth. Indications of higher sales growth are confirmed by the regression analyses. The regression models return positive coefficients for the SBO dummy variable, indicating that sales growth is higher in SBOs. The OLS 2 regression model, which is performed on a trimmed and winsorized sample, returns a significant SBO dummy at the 5% level; these findings contradict H1.a. However, in OLS 1, where the full sample is included, the p-value of the SBO dummy returns insignificant. These mixed results imply that conclusions should be carefully drawn.

The two regression models both indicate that SBOs exhibit superior sales growth compared to PBOs, but the p-values differ such that one model returns significant (OLS 1) and the other does not (OLS 2). What should be considered when assessing these results, is that the assumptions of OLS were not fulfilled in the OLS 1 model in terms of normally distributed residuals. This implies the test results may not be completely trustworthy. In the second model, the statistical properties were better fulfilled, but the results rely on a sample that has been both winsorized and trimmed. This means that the test output may be more reliable, but that trimming the sample may have compromised the random sampling. Relying on either test to reject or accept H1.a may therefore be problematic.

We conclude that the findings of our testing related to sales growth are inconsistent. However, findings in SBO literature are also dispersed with regards to whether PBOs or SBOs exhibit higher sales growth. In line with our findings, Achleitner and Figge (2014) find indications in their OLS regression results that sales growth is higher in SBOs compared to PBOs. However, as in our testing, results were not significant. Contrary to these findings, Bonini (2015) and Boucly et al. (2011), find that first-round buyers experience higher sales growth compared to the second-round buyer. The studies were also performed by using regression analysis as main method of statistical testing.

Furthermore, testing the change in EBITDA-margin between year 0 and year 2 we find evidence, both in the t-tests and regression analysis, that EBITDA-margin improvements are

inferior in SBOs. This evidence is in line with the developed hypothesis. The statistical properties of the sample were sufficient, implying reliable results.

These findings are aligned with the rather consistent findings in the SBO literature. Achleitner and Figge's (2014) findings indicate that EBITDA-margin growth is lower in SBOs. However, their findings are not statistically significant. Wang (2012) and Bonini (2015) both find evidence that EBITDA-margin growth decreases in SBOs.

We, therefore, conclude that the conventional wisdom about SBOs holds true for our sample of Nordic transactions regarding EBITDA-margin improvements. With regards to sales growth, the findings are mixed but give indications that sales growth is higher in SBOs compared to PBOs. Lastly, to address the research question, we find that SBOs are inferior to PBOs in terms of operational improvements measured by EBITDA-margin growth. Additionally, the evidence is not strong enough to conclude that SBOs differ from PBOs in terms of sales growth.

6.2 Debt

6.2.1 Hypothesis Testing

6.2.1.1 Net Debt/EBITDA

H2.a. The Net debt/EBITDA ratio is higher in secondary buyouts compared to primary buyouts

T-test

Hypothesis H2.a is tested in the left tail, i.e., we hypothesize that the mean net debt to EBITDA measure of SBOs is higher than the PBO mean. This implies that the t-value is expected to be negative. As can be seen in Table 13, the t-test returns negative t-values for all levels of winsorization, for both the samples that are controlled for industry effects as well as those that are not. However, the difference in mean is only significant (at 10% level) in the

left tail for the untreated sample that is not controlled for industry effects. Looking at the mean and standard deviations of this sample, it is evident that means have been affected by large outliers. This is also confirmed by the t-value's change of signs at 2,5% winsorization. Therefore, we conclude that we find no support for hypothesis 2.a. in the t-tests.

Table 13: Results of t-tests - Net Debt to EBITDA

diff = mean (Buyout) - mean (Secondary)
H0: diff = 0

	Obs		Mean		Std.dev					
	PBO	SBO	PBO	SBO	PBO	SBO	t =	Pr (T < t) r (| T | >| t	Pr (T > t)	
Net debt/EBITDA										
No winsorizing	125	55	-0,3743	6,8709	29,1379	34,8542	-1,3481	0,0905	0,1810	0,9095
95% winsorizing	125	55	1,1220	2,8912	12,5887	11,5432	-0,9209	0,1795	0,3590	0,8205
90% winsorizing	125	55	1,9099	3,1168	7,5594	6,9625	-1,0431	0,1496	0,2991	0,8504
Abnormal net debt/EBITDA										
No winsorizing	125	55	-0,6391	4,5389	29,0013	39,3126	-0,8774	0,1914	0,3828	0,8086
95% winsorizing	125	55	0,8573	0,5592	12,3981	21,2445	0,0971	0,5385	0,9230	0,4615
90% winsorizing	125	55	1,6452	0,7848	7,4139	17,7025	0,3473	0,6352	0,7295	0,3648

Table 13 shows the output of the Two-Sample t-test of dependent variable net debt to EBITDA ratio at entry. Outputs are shown for the original sample as well as winsorized at 2,5% (95%) and 5 % (90%). The table also shows the abnormal debt to EBITDA ratio at entry compared to industry peers.

Regression Analysis

In Table 14, regression results related to hypothesis 2.a. with net debt to EBITDA-margin as dependent variable are presented. The regressions provide no evidence in support for hypothesis 2.a. Observing the SBO Dummy variable, we note that the coefficient is positive for both tests. This suggests that a transaction being an SBO has a positive effect on net debt to EBITDA multiple. However, as the table displays, neither of the coefficients returns significant, which means that the tests do not support this effect. The adjusted R-squared of the test is 0,1795 (OLS 1) and 0,2653 (OLS 2), which means that 18% and 27 % of variation in net debt to EBITDA can be explained by the independent variables of the model

Based on the t-test and regression analysis, we conclude that there are indications of higher net debt to EBITDA in SBOs compared to PBOs. However, this effect cannot be statistically proven. We, therefore, conclude that we find no support for hypothesis 2.a.

Table 14: Regression Results - Net Debt to EBITDA

		Hypothesis 2.a	
		Net debt/EBITDA	**Net debt/EBITDA**
Variable		OLS (1)	OLS (2)
SBO Dummy	*Coefficient*	0,8500	0,4095
	SE	1,1636	0,5031
	P-value	(0,4661)	(0,4170)
Industry Net Debt/EBITDA	*Coefficient*	-0,1283	0,1007
	SE	0,0635	0,1550
	P-value	(0,0451)	(0,5168)
LBO-Spread	*Coefficient*	-93,3334	37,7309
	SE	166,5675	73,1423
	P-value	(0,5760)	(0,6067)
EBITDA at Entry	*Coefficient*	-0,0004	-0,0002
	SE	0,0001	0,0001
	P-value	(0,000)	(0,0013)
Enterprise Value at Entry	*Coefficient*	0,0001	0,0001
	SE	0,0000	0,0000
	P-value	(0,0000)	(0,0000)
Sponsor Age	*Coefficient*	0,0463	0,0032
	SE	0,0624	0,0296
	P-value	(0,4592)	(0,9133)
Time Dummy	*Coefficient*	-0,6927	-0,4662
	SE	1,3111	0,6508
	P-value	(0,5979)	(0,4749)
N		180	154
Adjusted R-squared		0,1795	0,2653

Table 14 shows the regression analysis for testing Hypothesis 2 a. The dependent variable is Net Debt to EBITDA ratio at entry. The sample is winsorized at a 5% level. OLS (1) includes the full sample and OLS (2) includes the trimmed sample. The explanatory variable is a dummy variable with the value of 1 if the transaction is a SBO and 0 if it is a PBO. Independent variables include: Industry Net Debt to EBITDA, LBO-Spread, EV at Entry, EBITDA at Entry, Sponsor Age and Time Dummy. The numbers of observations as well as Adjusted R squared if presents. Both models have F statistics that are significant at $p < 0,05$. Coefficient, Standard Errors and P-values for each variable is presented. In both regressions heteroskedasticity robust standard errors are applied. In both regressions heteroskedasticity robust standard errors are applied.

6.2.1.2 Net Debt to Equity

H2.b. The net debt to equity ratio is higher in secondary buyouts compared to primary buyouts

T-test

Hypothesis 2.b is tested in the left tail since we hypothesize that secondary buyouts should show a higher net debt to Equity ratio than primary buyouts. The test does not return a significant difference in mean for any degree of winsorization, neither controlling nor not controlling for industry effects. However, we note that at 5% winsorization, the t-value turns negative, which implies that the mean net debt of SBOs becomes larger than the mean of PBOs. Results for all t-tests conducted are found in Table 15.

Table 15: Results of t-tests - Net Debt to Equity

diff = mean (Buyout) - mean (Secondary)
H0: diff = 0

	Obs		Mean		Std.dev					
	PBO	SBO	PBO	SBO	PBO	SBO	t =	Pr (T < t) r (| T | >| t	Pr (T > t)	
Net debt/equity										
No winsorizing	125	55	1,3523	0,7319	4,9028	2,4691	1,1267	0,8693	0,2614	0,1307
95% winsorizing	125	55	1,0796	0,8105	3,3412	2,2746	0,6284	0,7347	0,5307	0,2653
90% winsorizing	125	55	0,7276	0,8445	1,9085	1,9474	-0,3748	0,3543	0,7086	0,6457
Abnormal net debt/equity										
No winsorizing	125	55	1,3399	0,7863	4,8703	2,4592	1,0113	0,8434	0,3133	0,1566
95% winsorizing	125	55	1,0672	0,8648	3,3111	2,2671	0,4756	0,6825	0,6351	0,3175
90% winsorizing	125	55	0,7152	0,8993	1,8807	1,9436	-0,5911	0,2779	0,5557	0,7221

Table 15 shows the output of the Two-Sample t-test of dependent variable debt to equity ratio at entry. Outputs are shown for the original sample as well as winsorized at 2,5% (95%) and 5 % (90%) The table also shows the abnormal debt to equity ratio at entry compared to industry peers.

Regression Analysis

In Table 16 regression results related to hypothesis 2.b. with net debt to equity as dependent variable are presented. As is evident from the table, the SBO coefficient is positive and insignificant. The positive coefficient means that, a transaction being an SBO implies that the net debt to equity ratio increases. The adjusted R-squared of the test is 0,14, which means that

14% of variation in net debt to equity can be explained by the independent variables of the model. Observing the coefficients of control variables, LBO-spread returns negative but not statistically significant. A negative coefficient implies that an increase in LBO-spread results in a decrease in net debt to Equity.

Results from t-tests and regression analysis lead us to conclude that our sample provides no evidence in support for H2.b.

Table 16: Regression Results - Net Debt to Equity

		Hypotheses 2.b
		Net Debt/Equity
Variable		OLS
SBO Dummy	*Coefficient*	0,0641
	SE	0,2009
	P-value	(0,7502)
Industry Net Debt/Equity	*Coefficient*	0,2314
	SE	0,6169
	P-value	(0,1731)
LBO-Spread	*Coefficient*	-8,6819
	SE	31,4805
	P-value	(0,7831)
EBITDA at Entry	*Coefficient*	0,0000
	SE	0,0000
	P-value	(0,0016)
Enterprise Value at Entry	*Coefficient*	0,0000
	SE	0,0000
	P-value	(0,0000)
Sponsor Age	*Coefficient*	0,0012
	SE	0,0104
	P-value	(0,9072)
Time Dummy	*Coefficient*	0,3016
	SE	0,2322
	P-value	(0,1959)
N		165
Adjusted R-squared		0,1484

Table 16 shows the regression analysis for testing Hypothesis 2 b. The dependent variable is Net Debt to Equity ratio at entry. The sample is winsorized at a 5% level. The explanatory variable is a dummy variable with the value of 1 if the transaction is a SBO and 0 if it is a PBO. Independent variables include: Industry Net Debt to EBITDA, LBO-Spread, EV at Entry, EBITDA at Entry, Sponsor Age and Time Dummy. The numbers of observations as well as Adjusted R squared if presents. Both models have F statistics that are significant at $p < 0,05$. Coefficient, Standard Errors and P-values for each variable is presented. In both regressions heteroskedasticity robust standard errors are applied. Heteroskedasticity robust standard errors are applied in the regression.

6.2.2 Economic Interpretation of Results

Debt levels in terms of net debt to EBITDA and net debt to equity at entry have been tested in hypotheses 2 a. and b to determine whether debt levels differ between secondary and primary buyouts. The hypotheses were developed based on the conventional wisdom of SBOs, that PE firms use more leverage to finance SBOs.

Studying the descriptive statistics in Table 7 in Chapter 5, both mean and median figures of net debt to EBITDA are higher in SBOs compared to PBOs. The t-tests also showed indications in line with the hypotheses, that SBOs experience higher debt levels than PBOs at entry. However, the results are not significant.

Previous research (Axelson et al., 2013; Wang, 2012) is consistent in that debt capital market conditions affect the leverage levels used in a buyout. We should therefore mainly look to regression analysis that is controlled for debt capital market conditions, industry effects and deal specific effects, to draw conclusions of debt levels. Our regression analysis returned no significant evidence that SBOs are more highly leveraged than PBOs. However, the SBO-dummy coefficient was positive in both the original sample and the trimmed sample. This implies that the model estimates a positive relationship between debt level and a transaction being SBOs, in line with the conventional wisdom of SBOs. However, since the assumption of normally distributed residuals was not fulfilled in either of the models, we assume that the reliability of outputs is compromised to some degree. Therefore, we are careful in our interpretation of these results.

Although evidence cannot be provided to support the hypothesis that SBOs are more leveraged than PBOs, both our data and testing provide indications of such. Relating our findings to previous research, Bonini (2015) also finds higher mean and median figures for net debt to EBITDA in SBOs compared to PBOs. Additionally, Axelson et al. (2013) find higher leverage levels in SBOs compared to other buyouts, and both Achleitner & Figge (2014) and Jenkinson & Sousa (2015) find significant evidence of higher net debt to EBITDA in SBOs compared to PBOs. These findings are aligned with the conventional wisdom of SBOs, i.e., that the second PE firm would increase leverage using cheap debt as a way to

create value when the possibilities of value creation from operational performance improvements are limited.

The descriptive statistics related to net debt to equity multiples show that PBOs have higher mean net debt to equity ratio than SBOs at the lower levels of winsorizing, but lower median debt to equity multiple. Winsorizing the sample at 5%, we find that also the mean is higher for SBOs than for PBOs. This indicates that the sample is affected by outliers and that the winsorized sample should provide more trustworthy results. However, t-tests did not return any significant difference in means for any degree of winsorization.

Using the sample winsorized at 5% and trimmed for outliers, the regression analysis returned a positive, but insignificant, coefficient for the SBO dummy. This means that the model estimates a positive relationship between debt to equity multiple and a transaction being an SBO rather than a PBO. Although the coefficient was insignificant, the results give indications in line with the hypothesis. We find the fulfillment of the assumptions sufficient to accept the result of the test. However, since the sample is both winsorized and trimmed, the random sampling could have been compromised.

Our findings are in line with Achleitner and Figge's (2014), whose regression analysis provides slight indications of SBOs having a higher debt to equity ratio. Additionally, Axelson et. al. (2013) and Jenkinson & Sousa (2011) find significant evidence for higher net debt to equity ratios in the second buyout compared to other buyouts, in line with the indications provided by our data.

We, therefore, conclude that the conventional wisdom about SBOs being more leveraged cannot be supported for our sample of Nordic transactions although the statistics and tests show indications of SBO being more leveraged. To address the research question, we therefore conclude that we do not find evidence strong enough to state that SBOs differ from PBOs in terms of leverage.

6.3 Pricing

6.3.1 Hypothesis Testing

6.3.1.1 EV/EBITDA

H3. The EV/EBITDA multiple is higher in secondary buyouts compared to primary buyouts

T-test

Hypothesis 3 is tested in the left tail since we hypothesize that the mean EV/EBITDA multiple is higher in SBOs compared to PBOs. Looking at the samples that are not controlled for industry and time effects, we find no evidence in support of H3 at any level of winsorization. Additionally, we note that the standard deviation of the sample is high, which suggests a high spread of observations within the sample. At 5% winsorization, the t-value changes signs from positive to negative which means that, when controlling for outliers, the mean EV/EBITDA multiple of PBOs is higher than that of SBOs. However, looking at EV/EBITDA adjusted for industry and time effects, the t-value is constantly negative, even no difference in mean adjusted EV/EBITDA is found to be significant. Results of t-tests are found in Table 17.

Table 17: Results of t-tests for EV/EBITDA-Multiple

diff = mean (Buyout) - mean (Secondary)
H0: diff = 0

	Obs		Mean		Std.dev					
	PBO	SBO	PBO	SBO	PBO	SBO	t =	Pr (T < t)	Pr (| T | >|	Pr (T > t)
Net EV/EBITDA										
No winsorizing	125	55	3,6551	9,5053	49,3497	47,4259	-0,7529	0,2266	0,4531	0,7734
95% winsorizing	125	55	5,6026	5,8610	25,8959	25,5049	-0,0623	0,4752	0,9504	0,5248
90% winsorizing	125	55	5,6374	5,6283	11,6200	10,2075	0,0053	0,5021	0,9958	0,4979
Abnormal EV/EBITDA										
No winsorizing	125	55	0,7376	-6,2153	49,3016	47,2694	-0,8019	0,2122	0,4243	0,7878
95% winsorizing	125	55	2,6851	3,3087	25,8045	25,3682	-0,1511	0,4401	0,8802	0,5599
90% winsorizing	125	55	2,7199	3,0760	11,6397	10,2173	-0,2062	0,4185	0,8370	0,5815

Table 17 shows the output of the Two-Sample t-test of dependent variable EV/EBITDA-multiple at entry. Outputs are shown for the original sample as well as winsorized at 2,5% (95%) and 5 % (90%) The table also shows the abnormal EV/EBITDA-multiple at entry compared to industry peers.

Regression Analysis

In Table 18, regression results related to hypothesis 3 with EV/EBITDA as dependent variable are presented. The SBO Dummy coefficient is not significant for either of the OLS regressions. In other words, our sample does not prove that EV/EBITDA multiple is higher in SBOs than in PBOs. The coefficient is negative for both regressions which, if significant, would imply that a transaction being an SBO rather than a PBO, would have a negative effect on EV/EBITDA multiple. From t-tests and regression analysis we therefore conclude that we find no support for H3 in our sample.

Table 18: Regression Results - EV/EBITDA-Multiple

		Hypotheses 3	
		EV/EBITDA	**Log EV/EBITDA**
Variable		OLS (1)	OLS (2)
SBO Dummy	*Coefficient*	-1,4783	-0,2019
	SE	1,8256	0,2071
	P-value	(0,4192)	(0,3314)
Industry EV/EBITDA	*Coefficient*	0,3452	-0,0325
	SE	0,4284	0,0831
	P-value	(0,4214)	(0,6963)
LBO-Spread at Entry	*Coefficient*	-510,37	-15,7229
	SE	265,53	29,6283
	P-value	(0,0563)	(0,5965)
Enterprise Value at Entry	*Coefficient*	0,0000	0,6994
	SE	0,0000	0,0833
	P-value	(0,0000)	(0,0000)
EBITDA Margin at Entry	*Coefficient*	-2,3002	
	SE	7,7165	
	P-value	(0,7660)	
Specialist Dummy	*Coefficient*	-3,9257	-0,3582
	SE	1,8328	0,2023
	P-value	(0,0336)	(0,0789)
Sponsor Age	*Coefficient*	-0,1269	-0,0423
	SE	0,0954	-0,0106
	P-value	(0,1855)	(0,0001)
Time Dummy	*Coefficient*	2,6110	0,2615
	SE	2,0702	0,2275
	P-value	(0,2089)	(0,2524)
N		180	146
Adjusted R-squared		0,0945	0,35144

Table 18 shows the regression analysis for testing Hypothesis 3. The dependent variable is EV/EBITDA-multiple at entry. The explanatory variable is a dummy variable with the value of 1 if the transaction is a SBO and 0 if it is a PBO. The sample is winsorized at a 5% level. OLS (1) includes the full sample with independent variables: Industry EV/EBITDA-multiple, LBO-Spread at entry, EV at Entry, EBITDA-margin at Entry, Sponsor Age, Specialist Dummy and Time Dummy. OLS (2) includes the trimmed sample with independent variables: Log Industry EV/EBITDA-multiple at entry, LBO-spread, Log EV at Entry, Sponsor Age, Specialist Dummy and Time Dummy. The numbers of observations as well as Adjusted R squared if presents. Both models have F statistics that are significant at $p < 0,05$. Coefficient, Standard Errors and P-values for each variable is presented. In both regressions heteroskedasticity robust standard errors are applied.

6.3.2 Economic Interpretation of Results

The pricing of the transactions has been tested using the EV/EBITDA valuation multiple. The hypothesis was based on conventional wisdom of SBOs, stating that SBOs are more expensive than PBOs. Higher valuation multiple at entry implies less opportunity to capture value from multiple expansion.

Studying the mean and medians of the sample, figures suggest that SBOs have higher EV/EBITDA multiples. However, looking at the winsorized samples the means and medians become more similar as higher levels of winsorization are applied. This suggests that the measures are affected by large outliers. T-tests also did not show any significant differences between SBOs and PBOs.

In the regression analysis, when industry and size effects were controlled for, the coefficient returned negative. Contradicting to out hypothesis, this suggests that a transaction being an SBO would have a negative relationship to EV/EBITDA multiple. These results are surprising as they are not in line with previous studies. Wang (2012) shows that SBOs are higher priced due to favorable debt market conditions. Additionally, both Achleitner and Figge (2014) and Bonini (2015) find that exhibit higher EV/EBITDA multiples compared to PBOs. We therefore considered the quality of our regression model as potential source to the deviation from literature. The first model showed signs of violations to OLS assumptions, implying that the reliability of results may be compromised. The second model, with values in logarithmic scale, showed better statistical properties, but since this sample needed to be trimmed from all negative values, the random sampling could have been compromised. However, as previously stated, none of the models returned significant results. Therefore, we conclude that our sample does not provide evidence that the conventional wisdom about SBOs holds true for the Nordic market. This is not in line with what previous studies have found in other markets. To address the research question, we do not find that SBOs differ from PBOs in terms of pricing.

6.4 Summary of Findings

Our hypotheses, findings, and a selection of previous research is summarized in Table 18. Our hypotheses and findings related to those, are written in bold.

Table 19: Summary of Results

Hypothesis	Findings
Operational Improvements	
H1.a. Sales growth is lower in secondary buyouts compared to primary buyouts	**Mixed results for H1.a**
Achleitner & Figge (2014)	Finds positive but insignificant "SBO Dummy"
Wang (2012)	Finds that SBOs exhibit positive and significant SBO sales growth compared to PBOs
Bonini(2015)	First round buyers obtain better sales growth than secondary buyers
Boucly et al. (2011)	SBOs experience post buyout growth to a lesser extent than PBOs
H1.b. EBITDA-margin growth is lower in secondary buyouts compared to primary buyouts	**Support for H1.b**
Achleitner & Figge (2014)	Negative but insignificant SBO-dummy for EBITDA-margin growth
Wang (2012)	Significant decreases in EBITDA-margin after the secondary buyout
Bonini (2015)	EBIT and EBITDA margins increase after PBO and decrease after SBO
Boucly et al (2011)	PBOs and SBOs increase in profitability following buyout, no significant difference between deal types
Debt	
H2.a. The Net debt/EBITDA ratio is higher in secondary buyouts compared to primary buyouts	**No support for H2.a**
Achleitner & Figge (2014)	Strong evidence that SBOs obtain more leverage in terms of debt/EBITDA
Bonini (2015)	Finds that mean and median debt/EBITDA is higher in SBOs than in PBOs
Jenkinson & Sousa (2011)	Show that leverage level in SBOs is significantly higher than in PBOs
Axelson et al. (2013)	Find that leverage level is higher in SBOs than other buyouts
H2.b. The Net Debt/Equity ratio is higher in secondary buyouts compared to primary buyouts	**No support for H2.b**
Achleitner & Figge (2014)	Slight indications that SBOs have higher debt/equity ratio than PBOs
Jenkinson & Sousa (2011)	Show that leverage level in SBOs is significantly higher than in PBOs
Axelson et al. (2013)	Find that leverage level is higher in SBOs than other buyouts
Price	
H3. The EV/EBITDA multiple is higher in secondary buyouts compared to primary buyouts	**No support for H3**
Achleitner & Figge (2014)	Find that SBOs are more expensive than PBOs
Wang (2012)	SBOs are priced higher than PBOs due to favorable market conditions
Bonini (2015)	EBITDA-multiples are higher in SBOs
Achleitner et al. (2013)	SBOs are more expensive than PBOs

7. Analysis of Results

In this section, the results obtained from statistical testing are related to value driver frameworks of Hannus (2015) and Berg & Gottschalg (2003). We analyze value drivers of leveraged buyouts in the secondary buyout setting and reason about the differences and similarities between the value levers available to a primary and a secondary PE sponsor.

There are broadly three potential routes to value creation in the SBO setting: Value creation from operative performance improvements, from increase of leverage and from multiple expansion. The levers to achieve value creation through these routes have been discussed previously in the paper in Chapter 3, Literature Review. We referred to Hannus (2015) and Berg & Gottschalgs' (2003) frameworks that map out value creation levers of LBOs. By examining the framework in relation to the results of the study, we seek to discuss how the value drivers differ between SBOs and PBOs.

The conventional wisdom of SBOs, which the hypotheses were developed from, assumes that the same value drivers are available in PBOs and SBOs and thus that some of these drivers would have been exhausted in the primary buyout. However, our study, along with studies of previous scholars (Achleitner & Figge, 2014; Achleitner, Figge & Lutz, 2014; Degeorge, 2015), find limited evidence to accept the conventional wisdom and suggests that SBOs are not necessarily related to an overall inferior value creation potential.

Our sample of buyout transactions in the Nordics suggests that there are differences with regards to size and profitability between the companies that are acquired in primary buyout transactions as opposed to those that are acquired as part of secondary transactions. As the descriptive statistics presented in Chapter 5, Table 7 show, SBO target companies are larger than PBO target companies, both in terms of mean and median enterprise value in the year of the transaction. Additionally, the profitability, as measured both by mean and median EBITDA-margin, is higher for SBOs than PBOs in the transaction year. This suggest that target companies subject to SBOs are both larger and more profitable when a second PE-firm obtains ownership of a target, compared to the first PE firm. The same properties of SBO target companies were found by Bonini (2015). This is also not surprising when looking at the

properties of the primary transactions of our dataset. PBOs exhibit both a large abnormal sales growth as well as positive abnormal EBITDA-margin growth in the first two years following the transaction. This implies that, at the point when the company is sold to a second PE sponsor, the target company has already grown and become increasingly profitable. This should imply that some of the value drivers of the PE toolbox have already been exhausted.

7.1 Direct Levers of Value Creation

Looking at direct levers of value creation, Hannus (2015) distinguishes between operational, strategic and financial drivers of value creation. Relating these drivers to the findings of the research, we conclude that there should be value creation potential to be achieved from direct levers of value creation in the SBO setting.

First, we repeat that operational value drivers are any efforts related to cost structure and capital management improvements as well as the value that derives from operational expertise that the sponsor will provide the target company. A primary sponsor is likely to quickly perform measures to improve cost structure and capital management, and thus improve the EBITDA-margin of the target firm, as these improvements are likely to be considered low hanging fruit. We reason that, performing cost cutting measures is likely to be easier than, e.g., performing measures to grow sales. Therefore, these actions are likely to be some of the first efforts performed following the primary buyout transaction. Additionally, a primary sponsor would be able to provide operational guidance and experience to a target company as part of the first holding period, which could result in both improved EBITDA-margin and sales growth.

The descriptive statistics of our sample show that PBOs exhibit abnormal EBITDA-margin improvements, while abnormal EBITDA-margin was approximately unchanged in SBOs in the first two years from the transaction year. Additionally, we found statistically significant evidence that the change in EBITDA margin was inferior in SBOs, compared to PBOs. Based on these insights we find it possible that, if a primary sponsor has already improved cost structure and working capital management practices, these measures may not work as levers

of value creation in the secondary buyout, and thus limit the ability of improving EBITDA-margin. However, with regards to operational guidance and expertise provided by the PE sponsors, PE sponsors can provide different and complementary guidance to the target firms. Therefore, this would be a lever that is consistently available to PE sponsors. Previous research has also found that a secondary sponsor will create value in the target company if the primary and secondary sponsors have complementary skill sets (Degeorge et al., 2015). This suggests, and could explain, why we have found that SBOs exhibit value creation potential from sales growth rather than from EBITDA-margin growth. The fact that PE firms differ in their level of skills and experience could also explain why our research suggests that SBOs may exhibit higher sales growth than PBOs. Additionally, if a primary sponsor has cut costs and implemented practices to improve the efficiency of the target firm, the secondary sponsor should be well positioned to implement measures to grow sales.

Hannus (2015) also distinguish strategic drivers of value creation such as refocusing on the core, consolidation or growth strategies. Even if there may be organizational or technical implications implied in refocusing a strategy, the possibility of changing the strategic direction of a target company as a lever of value creation should be available to any order of PE owners. Considering this in relation to our testing, we again note that our results indicate that SBOs exhibit indifferent or even higher sales growth compared to PBOs. This could be a result of strategic refocusing from the primary sponsor. Degeorge et al. (2015) research this lever of value creation in SBOs. They find that, if either the buying or selling firm's strategy is to focus on EBITDA-margin growth and the other on sales growth, such that these are complementary, the SBO transaction can outperform other buyouts. Based on our test results along with previous research, we therefore find that strategic drivers should be available in the secondary PE sponsor's toolbox.

Developing the idea that a secondary sponsor would be well positioned to perform measures to improve sales growth if cost cuts and performance management practices have already been implemented, we also consider the idea that a secondary sponsor would be better informed about the target company than the primary sponsor. If a primary sponsor has improved reporting practices, there would be better information to form basis for strategic decision making for a secondary sponsor. Additionally, the secondary sponsor can observe the

strategy of the first sponsor to further develop a competitive strategy. In line with indication of higher sales growth in SBOs in our statistical testing, this would imply that the prospects for sales growth would be better in the secondary buyout setting.

As final part of the direct levers of value creation, Hannus (2015) distinguishes financial drivers. These include measures such as changing the capital structure and providing a financial contact network to secure favorable funding terms. It can be assumed that a primary sponsor will use the financial engineering available in order to maximize value by e.g., increasing leverage and refinancing loans with unfavorable terms. However, even if the primary sponsor has used financial engineering to gain value from the transaction, numerous previous scholars have found that secondary sponsors can take advantage of favorable debt market conditions and increase leverage of the target company to create value (e.g., Wang, 2012; Axelson et al., 2013). The idea that SBOs would not provide further potential for operational improvements and instead create value from increased debt financing, is also the criticism that bases the conventional wisdom of SBOs. Our regression analysis does not provide significant evidence that SBOs are more leveraged than PBOs. However, both means, medians (controlling for outliers) and the positive (but insignificant) regression coefficients of both debt measures indicate that SBOs may be more leveraged. Concurrently, we find that SBOs exhibit high and potentially greater sales growth than PBOs. This implies that we do not find evidence of a situation where SBOs compensate for lacking possibilities of operational performance improvements by increasing debt. Even if the results of our study cannot provide evidence that the secondary sponsor use more leverage, the increased size and profitability of the secondary firms resulting from sales and margin improvements during the first holding period, should imply that the companies are more financially stable to take on additional debt. Additionally, a company with a longer track record of profitability should be able to obtain more debt funding. On the other hand, as our results show that secondary PE sponsors can create value from operational improvements, the secondary PE sponsor may not need to compensate for the lack of value creation potential in operational improvements by increasing financial risk. We therefore conclude that the direct financial levers of value creation are accessible to a secondary PE sponsor and are not used solely to compensate for lacking operational value creation potential. However, our results do not support an extensive use of financial drivers, with regards to debt levels, in the SBO setting.

7.2 Indirect Levers of Value Creation

Hannus (2015) distinguish between governance, cultural and temporal drivers as indirect levers of value creation. Studying these drivers along the results of our study, we find that many indirect effects on value creation caused by PE ownership may have already been exhausted.

Governance drivers are measures such as management and board restructurings and incentives alignment through implementation of incentives compensation. As research by Gong and Wu (2011) confirms, it is likely that changes to management and board of directors are implemented during the first holding period. It is therefore also likely that the primary sponsor has enforced incentives compensation as part of the managerial changes, which means that managers will be incentivized to maximize shareholder value. This implies that it is likely that value creation through reductions of agency costs have already been captured by the primary sponsor. I.e., if agency conflicts have already been resolved, one might suspect that value creation attached to such conflicts have already been exhausted. This could be a partial explanation to why margin improvements in SBOs have returned inferior to PBOs in our testing.

On the other hand, a secondary sponsor can make further restructurings and add additional competencies to the board and management. Additionally, by adding their fund specific expertise and experience, complementary skills between the primary and secondary sponsor can result in opportunities for operational value creation. Looking at the Nordic private equity market where PE sponsors, especially in Sweden, are relatively large and experienced (Copenhagen Economics, 2017), there should be opportunities for additional operational value creation from PE sponsor parenting and mentoring. This may explain why there are indications that sales growth is as large or even larger in SBOs compared to PBOs.

Furthermore, there may be limited value creation potential from cultural and temporal indirect drivers, as the main effects of these drivers are likely to have been experienced as part of the primary buyout. Cultural and temporal drivers are levers of value creation related to parenting effects, changes to corporate culture, and implementation of performance management

practices. Additionally, it is the sense of urgency following a buyout that is part of being owned by a PE fund with a constrained time horizon.

Since the PE business model implies that sponsors contribute to target firms with their expertise, it can be assumed that a target company experiences positive effects on value creation from parenting of the first PE sponsor. On the other hand, PE sponsors will differ in their level of active ownership, which means that acquiring from a less active owner may imply better possibilities for further value creation in a second holding period. Additionally, and as previously discussed, the firms may contribute with complementary knowledge and expertise.

Furthermore, the effects of PE ownership to corporate culture and the sense of urgency should have already been experienced within the target company as part of the first holding period. Additionally, implementing improved performance management practices may improve both sales and efficiency of operations. One may therefore question if there could be additional value to be created from such effects in a second holding period. Finally, the value captured from replacing an underperforming CEO with an outperforming CEO would be attributed to a primary sponsor if they succeed to do so. Comparing this reasoning to the results of our study, it does not seem surprising that we have found EBITDA-margin improvements to be superior in PBOs. Many of the indirect levers of value creation are likely to improve the efficiency of operations and reduce costs. If the cost reduction measures have already been implemented, there may not be as much value creation potential in the SBO as in the PBO.

7.3 Levers of Value Capture

In addition to direct and indirect levers of value creation, the PE firm can capture value from commercial drivers such as detection of market trends, timing of business cycles, detection of previously undiscovered business potential etc., or from restructuring financing and capture value from corporate tax shield (Hannus, 2015; Berg & Gottschalg, 2003). The conventional wisdom poses that SBO targets are more expensive than PBO targets. A relatively higher entry acquisition multiple means that the prospects for multiple expansion deteriorate. If

SBOs are relatively more expensive than PBOs, the SBO should have inferior prospects for value capture from commercial drivers. However, our research cannot provide evidence that SBOs are more expensive than PBOs. Given that these results are representative for the population, there would be no difference between PBOs and SBOs with regards to their potential to exploit commercial drivers of value creation. Additionally, it is possible that the secondary sponsor is better positioned to take advantage of value capture from increase of debt and the resulting tax shield. Our data shows that SBO target companies are on average larger and more profitable than PBO targets, which as previously explained, could imply that SBO targets can take on more debt. This would also mean that the potential value capture from corporate tax shields is in fact higher in SBOs. This means that it is difficult to draw conclusions regarding the differences between the prospects of value capture based on our findings.

7.4 Final Notes

The purpose of this section was to relate the findings of our research to the value drivers in buyout settings and analyze the differences and similarities between the levers of value creation available to primary and secondary PE sponsors. In line with our findings with regards to EBITDA-margin growth, we find that many of the indirect value drivers that improve efficiency of operations and reduce costs, are likely to have been exhausted by the primary PE sponsor. However, with regards to both direct value creation drivers and value capture, the potential for further value creation is not necessarily inferior to PBOs. However, we note that these conclusions provide a highly generalized view of the buyout transactions in question. In order to draw conclusions of the value creation potential of an SBO, each individual case must be analyzed as the actions and characteristics of the primary sponsor are crucial for determining further value creation potential of the SBO.

8. Conclusion

The purpose of the study was to investigate the value creation potential of secondary buyouts. This investigation was guided by the research question: *Do secondary buyouts differ from primary buyouts in terms of operational improvements, leverage, and pricing?* By collecting a sample of 180 buyouts of target companies in Sweden, Denmark, Norway and Finland, the research has provided statistical evidence to answer the research question. The OLS regression analysis on five financial metrics related to operational improvements, leverage and pricing of the target companies, and the following analysis of the results, has resulted in several conclusions. First, based on our research, we conclude that we do not find evidence to support all claims underlying the conventional wisdom of SBOs. While SBOs offer statistically significantly lower EBITDA-margin improvements than PBOs, we find no evidence that sales growth of SBOs is inferior to PBOs. Secondly, our testing indicates, but does not provide significant evidence, that SBOs are more leveraged than PBOs. Therefore, we cannot confirm the second conventional wisdom of SBOs – that the second PE sponsor only creates value from increasing leverage, as a result of limited potential for operative improvements. Thirdly and finally, we find no evidence that the price of SBOs is higher than the price of PBOs. Therefore, we cannot confirm the conventional wisdom that SBOs are too expensive and provide limited potential for value capture.

Based on the above stated conclusions, the levers of value creation in buyout transactions have been revisited and analyzed from the SBO perspective. We conclude that, while the value creation potential stemming from some levers, such as efficiency gains from eliminating agency conflicts, the potential for further value creation is not necessarily inferior to PBOs. We also point out that our analysis provides a granular view of the differences between PBOs and SBOs with regards to their value creation potential, and that the value creation potential of each individual SBO case is contingent upon the actions and characteristics of the primary sponsor.

9. Discussion

The conclusion of our research is that all aspects of the conventional wisdom of SBOs cannot be supported in our sample on the Nordic private equity market. With our findings, we are contributing to the forming of consensus in the relatively nascent field of research concerning SBOs and their value creation potential. Additionally, we add to the existing literature by researching the Nordic region using an up-to-date sample of transactions.

It is evident that research in this field is at an early stage as consensus has not yet been formed regarding the performance of SBOs compared to PBOs. It is also clear that most studies, including our own, are still trying to grasp a granular view of SBO performance. In other words, we still work to understand whether SBO performance is comparable to PBO performance, and in what ways they differ in terms of how value is created. The next step to understanding the SBO transaction is to further investigate the value drivers of the SBO and how those drivers are contingent on the PBO transaction. Here, we believe that research such as that conducted by Degeorge et. al (2015) who draw conclusions about when SBO performance is comparable and better than PBOs depending on what has happened in the primary transaction, takes a significant step in that direction. We believe that we must understand more about the situations in which SBOs are successful for this field to have managerial implications.

However, this field of research is restrained by methodological issues. First, there are multiple dimensions to issues concerning data used for testing. Sample sizes can only grow as large as the number of transactions that have previously occurred. SBOs are a new phenomenon, and hence the number of transactions that can be included in a sample is still limited. This implies that it is difficult to study specific aspects of the SBO transaction such as a specific market or type of buyer, seller, or target company. Adding the fact that company financial data is often incomplete, it can be problematic to attain the sufficiently large sample needed in order to cancel out company specific effects. This could be one of the reasons why research has not gone deeper in the understanding of the SBO transaction.

Secondly, the data collection process and selection of corporate unit from which target financial data are retrieved may have large implications on the research. In reviewing previous literature, we conclude that scholars have taken different approaches to whether consolidated or unconsolidated accounts have been the basis of research. For example, Boucly (2015) uses unconsolidated accounts while Wang (2012) uses primarily consolidated accounts. As previously discussed, there may be significant differences between consolidated and unconsolidated accounts, why this decision could affect the results retrieved in the studies. We have seen limited discussion of issues related to the consolidation of accounts in previous research, which is surprising as the choice may have large effects, both on methodology and results obtained.

These questions are also part of a broader discussion of validity of research in this field. In previous research, there is an ongoing discussion concerning which methodology that can most reliably distinguish the effect on performance when target companies have previously been PE owned. As the conditions in which the target companies operate constantly change, eliminating the conditions that circumvent the company is a challenge that is addressed but not easily resolved. Adding the problem of attaining large sample sizes, which could be a way to reduce the influence of circumventing factors, it can be concluded that attaining reliable statistical testing is challenging. In summary of this discussion, we therefore conclude that there are numerous issues to be addressed and new angles to explore in future research on the topic of secondary buyout transactions.

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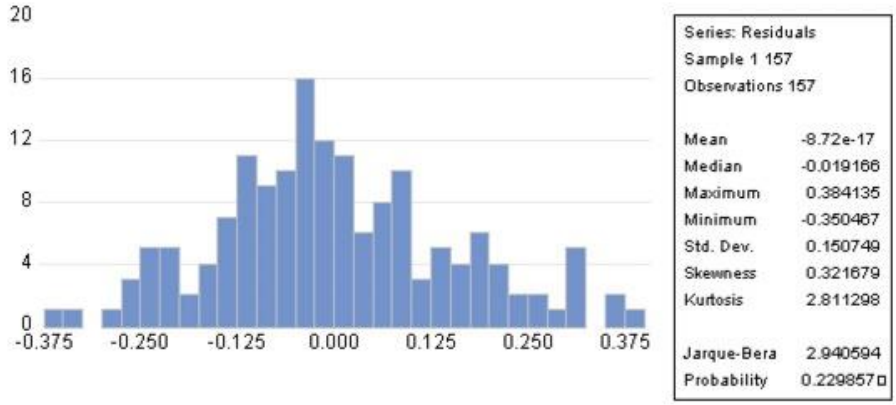
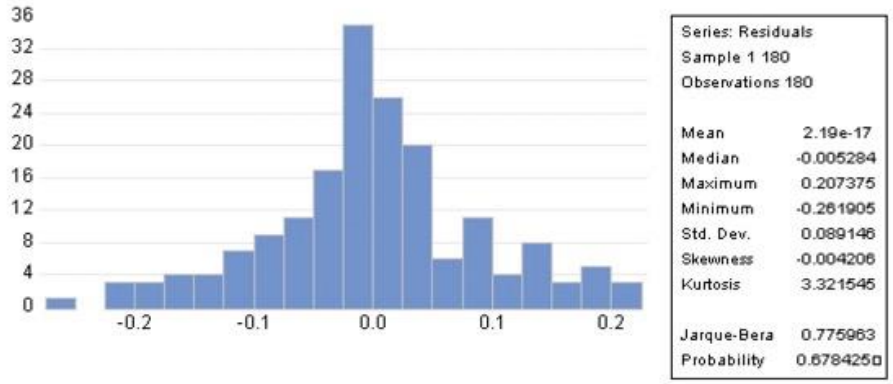
Appendix

Appendix A: Normal Distribution of Residuals

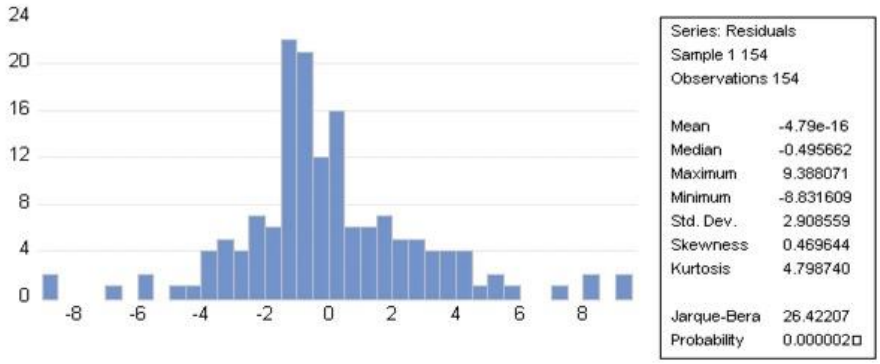
Log(Sales growth) – Trimmed Sample



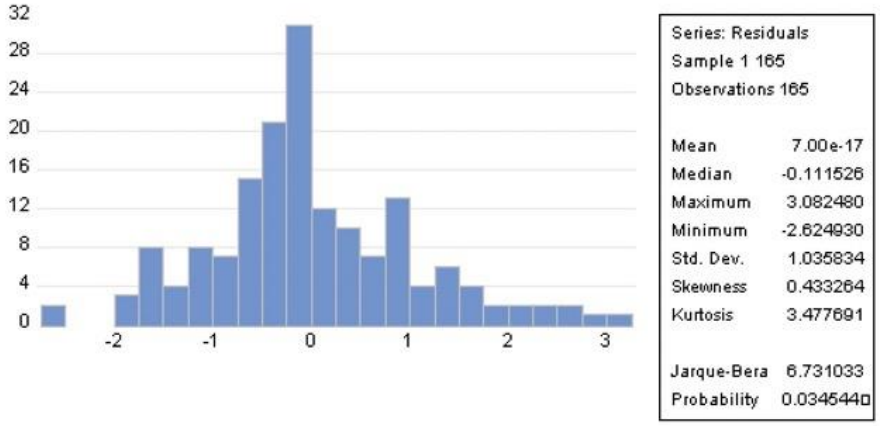
Log(EBITDA-margin growth) – Original Sample



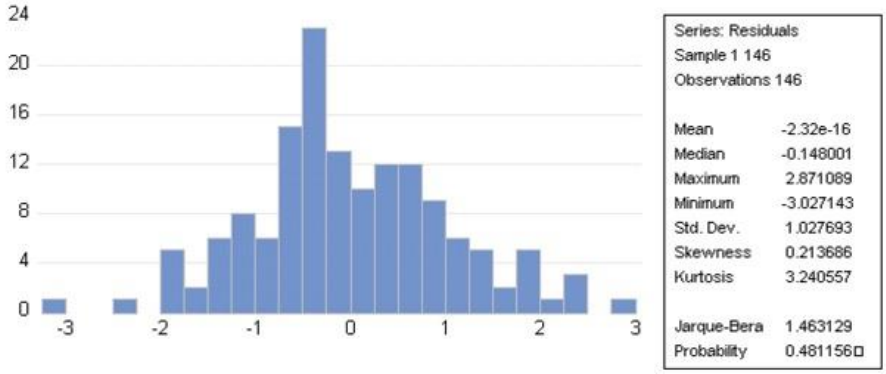
Debt to EBITDA – Trimmed Sample



Debt to Equity – Trimmed Sample



EV/EBITDA – Trimmed Sample



Appendix B: Transactions Included in the Sample

Target	Buyer	Country	Buyout Type	Year	Target	Buyer	Country	Buyout Type	Year
Envirotainer International AB	Armada Mezzanine Capital Oy	SE	Buyout	2010	21 Grams AB	Priveq Advisory AB	SE	Buyout	2015
Ovako Group AB (Ovako Midco AB)	TRITON INVESTMENTS ADVISERS LLI	SE	Buyout	2010	Eton Group AB	EQT Partners AB;EQT VII	SE	Secondary	2015
Onemed group oy	3I GROUP PLC	FI	Secondary	2010	Perstorp Holding AB	PAI Partners SAS	SE	Secondary	2015
Babyshop Sthlm Holding AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2010	Iptor Supply Chain Systems AB	MARLIN EQUITY PARTNERS LIMITED	SE	Secondary	2015
SW Kontorsvaror på Internet AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2010	Hamlet Protein A/S	Altor Equity Partners AB	DK	Secondary	2015
Webforum Europe AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2010	Conscia A/S (Conscia Danmark A/S)	Axcel Industriinvestor A/S	DK	Secondary	2015
Firecon group oy	Evolver Investment Group Ab	FI	Secondary	2010	Kotkamills Group Oyj	MB Rahastot Oy	FI	Secondary	2015
Diab group ab	Ratos AB	SE	Secondary	2010	CubiCasa Oy	Butterfly Ventures Oy	FI	Secondary	2015
Coromatic Group AB	EQT Partners AB	SE	Buyout	2011	Convini Sverige AB	AB Max Sievert	SE	Buyout	2016
Oy Galvatek Ab	Erhvervsinvest Management A/S	FI	Buyout	2011	Inteno Broadband Technology Aktiebolag	Accent Equity Partners Aktiebolag	SE	Buyout	2016
Norsk Jernbanedrift AS	Herkules Capital AS	NO	Buyout	2011	Vitamin Well AB	BRIDGEPOINT GROUP LIMITED	SE	Buyout	2016
KYMAR AS	Credo Partners AS	NO	Buyout	2011	Touhula Varhaiskasvatus Oy	EQT Partners AB	FI	Buyout	2016
PEMA Sweden AB	Varenne AB	SE	Buyout	2011	Renta Group Oy	Intera Partners Oy	FI	Buyout	2016
Treston group oy	Sentica Partners Oy	FI	Buyout	2011	Oy Valioravinto Ab	Intera Partners Oy	FI	Buyout	2016
Benify AB	VITRUVIAN PARTNERS LIMITED	SE	Buyout	2011	Puuha Group Oy	Intera Partners Oy	FI	Buyout	2016
Reseguiden Interactive AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2011	Kas-Telineet Oy	Intera Partners Oy	FI	Buyout	2016
CTEK Sweden AB	Altor Equity Partners AB	SE	Secondary	2011	FD Sweden AB	Litorina Capital Advisors AB	SE	Buyout	2016
Dinair Group AB	Alder Fund I AB	SE	Buyout	2012	Fresks Försäljning AB	Litorina Capital Advisors AB	SE	Buyout	2016
Ovenia Group Oy	Armada Mezzanine Capital Oy	FI	Buyout	2012	SYSCO AS	Credo Partners AS	NO	Buyout	2016
BROADNET AS (GLOBALCONNECT AS)	EQT Partners AB	NO	Buyout	2012	Hypergene AB	Monterro Investment AB	SE	Buyout	2016
Umacon oy	Erhvervsinvest Management A/S	FI	Buyout	2012	Gudrun Sjoden Group AB	Ratos AB	SE	Buyout	2016
LOG AS	Credo Partners AS	NO	Buyout	2012	Airteam A/S	Ratos AB	DK	Buyout	2016
Accountor Holding Oy	Sponsor Capital Partners Oy	FI	Buyout	2012	Suvanto Trucks Oy	Sievi Capital Oyj	FI	Buyout	2016
Plastiroll oy (Walki Plastiroll Oy)	Sponsor Capital Partners Oy	FI	Buyout	2012	LTP Logistics Oy	Vaaka Partners Oy	FI	Buyout	2016
Lahti Precision Oy	VERDANE CAPITAL ADVISORS AS	FI	Buyout	2012	Turun Tietokeskus Oy	Vaaka Partners Oy	FI	Buyout	2016
ABAX HOLDING AS	Norvestor Equity AS	NO	Buyout	2012	Mediaplanet International AB	Priveq Advisory AB	SE	Buyout	2016
Smoke Free Systems AB	Priveq Advisory AB	SE	Buyout	2012	Danfo International AB	Priveq Advisory AB	SE	Buyout	2016
SAR AS	STIRLING SQUARE CAPITAL PARTNEF	NO	Buyout	2012	Hermes Medical Solutions AB	Segulah Advisor AB	SE	Buyout	2016
Aditro Logistics AB	Valedo Partners AB	SE	Buyout	2012	Zengun AB	Segulah Advisor AB	SE	Buyout	2016
Snow Software AB	VITRUVIAN PARTNERS LIMITED	SE	Buyout	2012	Stor & Liten AB	VERDANE CAPITAL ADVISORS AS	SE	Buyout	2016
Crem International Holding AB	Priveq Advisory AB	SE	Secondary	2012	Smart Senior AB	VERDANE CAPITAL ADVISORS AS	SE	Buyout	2016
SSG A/S	Bwb Partners P/S	DK	Secondary	2012	XAIT AS	Viking Venture AS	NO	Buyout	2016
Ahlsell AB	CVC Capital Partners Limited	SE	Secondary	2012	Unilabs AB	APAX PARTNERS LLP	SE	Secondary	2016
Fiskarhedenvillan Group AB	Litorina Capital Advisors AB	SE	Secondary	2012	PLANTASJEN AS	Ratos AB	NO	Secondary	2016
Easy Park AS	VERDANE CAPITAL ADVISORS AS	NO	Secondary	2012	Industrial and Financial Systems, IFS Aktiel	EQT Partners AB	SE	Secondary	2016
Steni AS	Accent Equity Partners Aktiebolag	NO	Buyout	2013	Vexve Oy	DevCo Partners Oy	FI	Secondary	2016
Powerbox International Aktiebolag	Alder Fund I AB	SE	Buyout	2013	NeTel Group AB	IK Investment Partners Limited	SE	Secondary	2016
Aidon oy	Alder Fund I AB	FI	Buyout	2013	Realia Group Oy	Altor Equity Partners AB	FI	Secondary	2016
EDS Group AS	Alder Fund I AB	NO	Buyout	2013	Atos Medical Holding AB	PAI Partners SAS	SE	Secondary	2016
Delete group oy	Axcel Industriinvestor A/S	FI	Buyout	2013	Jupiter Group A/S (Jupiter Bach A/S)	VERDANE CAPITAL ADVISORS AS	DK	Secondary	2016
Itslearning AS	EQT Partners AB	NO	Buyout	2013	Consector AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2016
IP-Only Group AB	EQT Partners AB	SE	Buyout	2013	TeleComputing AS (VISOLIT AS)	IK Investment Partners Limited	NO	Secondary	2016
VALIDUS ENGROS AS	FSN Capital Partners AS	NO	Buyout	2013	Eco Log Sweden AB	Accent Equity Partners Aktiebolag	SE	Buyout	2017

Target	Buyer	Country	Buyout Type	Year	Target	Buyer	Country	Buyout Type	Year
Axiomatics AB	Monterro Investment AB	SE	Buyout	2013	Danoffice It ApS	AGILITAS PRIVATE EQUITY LLP	DK	Buyout	2017
Klättermusen Aktiebolag	Scope Capital Advisory AB	SE	Buyout	2013	Xzakt Kundrelation AB	Altor Equity Partners AB	SE	Buyout	2017
Royal Design Group AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2013	Languagewire A/S	Catacap Management A/S	DK	Buyout	2017
EG A/S	Axcel Industriinvestor A/S	DK	Secondary	2013	Gasa Group Denmark A/S	Erhvervsinvest Management A/S	DK	Buyout	2017
Logstor A/S	TRITON INVESTMENTS ADVISERS LLI	DK	Secondary	2013	Finnsiirto Oy	Erhvervsinvest Management A/S	FI	Buyout	2017
Hansen Protection AS	IK Investment Partners Limited	NO	Secondary	2013	Agentur Arne & Mirja Holmberg Oy	Erhvervsinvest Management A/S	FI	Buyout	2017
Beerenberg Holding AS	Segulah Advisor AB	NO	Secondary	2013	BECKMANN AS	Herkules Capital AS	NO	Buyout	2017
Brenderup group ab	Accent Equity Partners Aktiebolag	SE	Buyout	2014	Hydroline Oy	Intera Partners Oy	FI	Buyout	2017
Suominen Corporation (Suominen Oyj)	Ahlström Capital Oy	FI	Buyout	2014	GARDA SIKRING AS	LONGSHIP AS	NO	Buyout	2017
Satel oy	Alder Fund I AB	FI	Buyout	2014	HR PROSJEKT AS	LONGSHIP AS	NO	Buyout	2017
Spectrum ASA	Altor Equity Partners AB	NO	Buyout	2014	Detection Technology Inc	Ahlström Capital Oy	FI	Buyout	2017
Primex Pharmaceuticals Oy	Bocap Investment Oy	FI	Buyout	2014	Glaston Oyj Abp	Ahlström Capital Oy	FI	Buyout	2017
Jatkopolut oy	Erhvervsinvest Management A/S	FI	Buyout	2014	Geia Food A/S	Credo Partners AS	DK	Buyout	2017
Leos Lekland	Litorina Capital Advisors AB	SE	Buyout	2014	Tacton Systems AB	Kirk Kapital A/S	SE	Buyout	2017
Nets Holding A/S (Nets Holding AS)	BAIN CAPITAL PRIVATE EQUITY (EUF	DK	Buyout	2014	Itello AB	Monterro Investment AB	SE	Buyout	2017
MADE FOR MOVEMENT GROUP AS	Credo Partners AS	NO	Buyout	2014	Familjeläkarna i Olofström AB	Nordstjernan Aktiebolag	SE	Buyout	2017
Amerplast Oy	LONSDALE CAPITAL PARTNERS LLP	FI	Buyout	2014	Ficolo Oy	Pontos oy	FI	Buyout	2017
Lime Technologies Sweden AB	Monterro Investment AB	SE	Buyout	2014	Indoor Group Oy	Sievi Capital Oyj	FI	Buyout	2017
Ledil oy	Ratos AB	FI	Buyout	2014	Hittapunktse AB	Sprints Capital Management Ltd	SE	Buyout	2017
MINTRA TRAININGPORTAL AS	The Riverside Company	NO	Buyout	2014	VIEW SOFTWARE AS	Viking Venture AS	NO	Buyout	2017
Enegia Group Oy	Vaaka Partners Oy	FI	Buyout	2014	WEXUS GRUPPEN AS	Norvestor Equity AS	NO	Buyout	2017
Bemz AB	VERDANE CAPITAL ADVISORS AS	SE	Buyout	2014	NETNORDIC HOLDING AS	Norvestor Equity AS	NO	Buyout	2017
Fidelix oy	Procuritas Capital Investors	FI	Buyout	2014	Omegapoint Group AB	Priveq Advisory AB	SE	Buyout	2017
Lokaltidningen Mitt i Stockholm AB	Segulah Advisor AB	SE	Buyout	2014	Ljung & Sjöberg Aktiebolag	Priveq Advisory AB	SE	Buyout	2017
Best Transport Holding AB	Valedo Partners AB	SE	Buyout	2014	RD Velho Oy	Sentica Partners Oy	FI	Buyout	2017
Marinaman Sweden AB	VERDANE CAPITAL ADVISORS AS	SE	Buyout	2014	Varamiespalvelu-Group Oy	Sentica Partners Oy	FI	Buyout	2017
S:t Eriks AB	Accent Equity Partners Aktiebolag	SE	Secondary	2014	ECOONLINE AS	Summa Equity AB	NO	Buyout	2017
Musti Group Nordic Oy	EQT Partners AB	FI	Secondary	2014	Pagero AB	Summa Equity AB	SE	Buyout	2017
San Sac AB	Accent Equity Partners Aktiebolag	SE	Secondary	2014	Linfre Education AB	Summa Equity AB	SE	Buyout	2017
Napatech A/S	VERDANE CAPITAL ADVISORS AS	DK	Secondary	2014	GLAMOX AS	TRITON INVESTMENTS ADVISERS LLI	NO	Buyout	2017
Tia Technology A/S	EQT Partners AB	DK	Secondary	2014	BRP Systems AB	Valedo Partners AB	SE	Buyout	2017
StormGeo Holding AS	EQT Partners AB	NO	Secondary	2014	Fashionable Development Europe AB	VERDANE CAPITAL ADVISORS AS	SE	Buyout	2017
Performiq AB	VERDANE CAPITAL ADVISORS AS	SE	Secondary	2014	SUNKOST AS	VERDANE CAPITAL ADVISORS AS	NO	Buyout	2017
Cervera AB	Accent Equity Partners Aktiebolag	SE	Buyout	2015	Propellerhead Software Aktiebolag	VERDANE CAPITAL ADVISORS AS	SE	Buyout	2017
Reconor A/S (MH Gruppen)	AGILITAS PRIVATE EQUITY LLP	DK	Buyout	2015	Scaleable Solutions Holding Oy	Aito Capital Oy	FI	Secondary	2017
Gasmet technologies oy	Alder Fund I AB	FI	Buyout	2015	Ryds Bilglas AB	Nordic Capital AB	SE	Secondary	2017
Umia AB	Alder Fund I AB	SE	Buyout	2015	Gram Equipment A/S	FSN Capital Partners AS	DK	Secondary	2017
Oleter Group AB	Armada Mezzanine Capital Oy	SE	Buyout	2015	SONANS GRUPPEN AS	EMK Capital LLP	NO	Secondary	2017
G.S.V. Materieludlejning A/S	Catacap Management A/S	DK	Buyout	2015	Fitness World A/S	KIRKBI Invest A/S	DK	Secondary	2017
OLIVIA AS	Herkules Capital AS	NO	Buyout	2015	Docu Group Sweden AB	STIRLING SQUARE CAPITAL PARTNEF	SE	Secondary	2017
ADMINCONTROL AS	Herkules Capital AS	NO	Buyout	2015	Dynasafe International AB	Solix Group AB	SE	Secondary	2017
VEOLIA NORGE AS	Altor Fund III	NO	Buyout	2015	Bluestep Holding AB	EQT Partners AB	SE	Secondary	2017
Fågelviksgruppen Förvaltning Aktiebolag	H.I.G. EUROPEAN CAPITAL PARTNERS	SE	Buyout	2015	Lagkagehuset A/S	Nordic Capital AB	DK	Secondary	2017
Grade AB	Monterro Investment AB	SE	Buyout	2015	VISMA AS	HGCAPITAL LLP	NO	Secondary	2017
TFS Trial Form Support International AB	Ratos AB	SE	Buyout	2015	Tresu A/S	Altor Equity Partners AB	DK	Secondary	2017
Haltija group oy	Sponsor Capital Partners Oy	FI	Buyout	2015	ECURA AS	LONGSHIP AS	NO	Secondary	2017
Fysios holding oy	Vaaka Partners Oy	FI	Buyout	2015	Happy Socks AB	PALAMON CAPITAL PARTNERS, LP	SE	Secondary	2017