

Reaching for “High-Hanging Fruit”?

A Study of the Determinants of Operational Performance in Secondary Buyouts

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Abstract: Even though secondary buyouts (SBOs) have increased rapidly in recent years, the understanding of operating improvements in SBOs is limited. This thesis seeks to ascertain the determinants of operational improvements in SBOs. This is done by testing four hypotheses regarding the determinants of SBO operational performance. As an important step in testing these hypotheses the difference in performance between primary and secondary buyouts is also evaluated. The data sample, consisting of 92 consecutive Nordic buyouts, is analysed using a linear regression model. Using EBITDA CAGR as the main proxy for operational value generation, we find that a high level of operational improvements in the first round lowers operational improvements in the second round, and that SBOs owned by large sponsors perform better than SBOs owned by smaller sponsors. However, we do not find support that secondary buyouts sold by a pressured seller or owned by an industry-specific sponsor perform better than ordinary SBOs.

Keywords: Secondary Buyouts, Operational Performance, Specialization

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1. Introduction

If you are looking for an exit, do not forget the way you came in. For a private equity (PE) fund looking to exit an investment there are three main alternatives: a trade sale, an initial public offering (IPO) or a secondary buyout (SBO). In a SBO, a PE sponsor exits an investment the same way it came in, by selling the buyout company to another PE sponsor. Ten years ago SBOs were largely unheard of and accounted for 3% of all PE exits; in 2012 that number had risen to over 30% (Bonini, 2013). This sharp increase in SBOs challenges established empirical and theoretical evidence on value creation in leveraged buyouts (LBO), which has heretofore focused almost entirely on the effects of PE ownership in public-to-private and corporate spin-off transactions. This thesis focuses on the operational improvements made by the second PE owner and seeks to ascertain the determinants of operational improvements in SBOs. As an important step in answering this question the difference in performance between primary and secondary buyouts is also evaluated. Empirical evidence on the operational performance of SBOs will have implications for the perception of SBOs. Moreover, an increased understanding of the determinants of SBO operational performance will be valuable to both limited partners¹ and PE professionals.

Secondary buyouts are often presented as a convenient solution for two of private equity sponsors' main concerns. First, sponsors need to build a track record of realizing returns to investors. Second, PE sponsors are under pressure to spend committed capital as unspent committed capital foregoes management fees and will eventually be returned to the limited partners. And while realizing an acceptable return before passing the company on to another sponsor is an elegant solution to the above problems, the question of whether SBOs create value or not remains. At its heart, the question is whether secondary deals offer the same scope for operational improvements as ordinary private equity deals? Up to now research has primarily focused on answering this question, with a majority of academics suggesting that SBOs offer less scope for operational improvements (e.g. Wang, 2012; Bonini, 2013). Although predominantly pessimistic, academics agree there is no general case for SBOs and highlight the need for further research as the level of operational improvements may vary greatly between different types of SBOs (Wright *et al.*, 2009).

As we agree that there is no general case for SBOs, we want to test the determinants of SBO operational improvements. We have identified three testable hypotheses regarding the

¹ Limited partner refers to the investor of a private equity fund

determinants of SBO operational improvements. First, the level of operational improvements in the first round of PE ownership may impact the scope for operational improvements in the second round. Second, the first PE owners' may be forced to exit their investment prematurely, in what is referred to as a "forced sell". SBOs resulting from a "forced sell" may offer greater potential for continued operational improvements as the first owner did not have time to complete its entire value creation plan. Third, different skills among sponsors may have an impact on operational performance in the second round. A buyout company may have a mid-market focused sponsor in the first round, but as the business progresses, it may outgrow the first sponsor's area of expertise. In that case, the buyout company could benefit from being owned by a large or industry specialized sponsor that can make additional operational improvements or accelerate growth..

To test the above hypotheses, 92 Nordic SBOs taking place between 2000 and 2011, and their respective primary buyouts are tested. There are two reasons for focusing on the Nordic region. First, SBOs make strategic sense in the chosen geography because of the mature private equity industry along with the need to sell to another pan-European or large sponsor in the second round to facilitate further operating improvements. Second, unlisted companies in the Nordics are required to provide consolidated accounts, the availability of which is a prerequisite for our study.

The results show that SBOs underperform primary buyouts (PBO) in all measures except sales growth and reductions in Net Working Capital (NWC) as a percentage of sales. This underperformance is largely because the most easily realizable operational improvements have been made in the first round. We also find evidence that large sponsors add more value than the average sponsor in the second round. Specialized sponsors, on the other hand, show no such tendencies. Furthermore, we note that a "forced sell" has no significant impact on the level of operational improvements achieved in the second round.

1.1 Purpose

Our research contributes to the evolving SBO literature by providing empirical evidence for the determinants of SBO value creation. One of our main contributions will be our self-constructed data set consisting of data on *the same firms* across ownership rounds. This dataset allows us to perform tests on how operational performance in the first round affects operational performance in the second round. Previous research has focused on comparing PBOs and SBOs that are independent of each other and detailed studies of the determinants

of operational performance are rare. Furthermore, no study using a similar dataset has been conducted on the Nordic region. An increased understanding of the determinants of SBO operational performance will be valuable to limited partners and PE professionals alike.

1.2 Research questions

To put our research in context of the existing body of research and provide a foundation for the other hypotheses we compare the level of operational improvements between SBOs and PBOs in our Nordic sample:

Do secondary buyouts offer the same scope for operational improvements as primary buyouts?

We then proceed to answer the following questions with regard to the determinants of operational performance:

Do large operational improvements in the first round adversely affect operational improvements in the secondary buyouts?

Do secondary buyouts subject to a “forced sell” have larger operational improvements than normal ones?

Do secondary buyouts taken over by a large/specialized sponsor have larger operational improvements than non-large/non-specialized sponsors?

1.3 Definitions and delimitations

We use the following definitions throughout the thesis:

- i. A *leveraged buyout* (LBO) is the takeover of a majority interest by a private equity firm, financing the transaction using a significant amount of leverage (Kaplan and Strömberg, 2009).
- ii. A *primary buyout* (PBO) is when a company is first taken over by a PE firm using an LBO. A *secondary buyout* (SBO) is when a company owned by a PE sponsor is taken over by another PE sponsor.
- iii. In this thesis, PBO is used interchangeably with *first round*, and similarly SBO is used interchangeably with *second round*. There can also be multiple rounds of ownership, e.g. *third round* or *tertiary buyout* and *forth round* or *quartary buyout*. An issue we encountered was whether to include tertiary and quartary buyouts in our sample. Achleitner and Figge (2012) include all forms of sponsor-to-sponsor deals,

arguing that the same logic that applies to SBOs also applies to tertiary and quaternary buyouts. Following Achleitner and Figge's reasoning, we include tertiary and quaternary deals in our sample. In effect, we do not limit our study to a comparison of SBOs and PBOs. Instead the subsequent PE buyout is compared to the buyout conducted by the previous sponsor.

- iv. *Committed capital* is a contractual agreement between the investor and the PE firm. An investor can commit a certain amount of capital to a PE fund, which is then drawn from when the investments are made. In this thesis *fund size* is referred to as the capital committed to one particular fund. *Assets under management* (AUM) is used to denote the total amount of committed capital in all funds.
- v. We refer to the company that is the subject of an LBO as the *buyout company* and to the acquirer as the *PE firm* or *sponsor*.
- vi. In this thesis, we distinguish between *ordinary, large and specialized sponsors*. Large PE-firms are defined as private equity firms with AUM in excess of €5 billion and at least one fund in exceeding €2 billion in AUM. Private equity firms focusing on a particular industry are referred to as *specialized* or *industry-specific*. To be classified as specialized a sponsor is required to have at least 50% of total AUM invested in a particular sector.
- vii. Throughout this thesis we refer to *excess operational improvements* as the operational improvements of a buyout company that are in excess of expected operating improvements. The performance of a peer group of firms is used to estimate expected improvements. Excess operational improvement is used interchangeably with *excess operating performance*.

To narrow the scope of this thesis we make the following delimitations:

- i. We look exclusively at operational performance and do not examine value creation in the form of leverage or governance improvements as operational improvements are cited as the most important source of value (e.g. Acharya *et al.*, 2011; Achleitner *et al.*, 2010; Matthews *et al.*, 2009).
- ii. As a consequence of (i) and because data on deal values are difficult to come by, we do not study investors' returns on SBOs.
- iii. Even though venture capital firms are a type of financial sponsors, their *modus operandi* differs greatly from that of PE sponsors. Hence, we focus exclusively on PE-backed companies.

- iv. As mentioned in the introduction, we limit our sample to the Nordic region.
- v. In recent times, academics have looked for the economic rationale behind SBOs and have identified three possible reasons: operational improvements, collusion among sponsors and debt market conditions. Although this thesis contributes to the existing literature on operational improvements as a rationale for SBOs, that is not its primary purpose. Rather, this thesis should be viewed as a detailed study on the determinants of operational performance in SBOs.

2. Background

2.1 Introduction to Secondary Buyouts

The divestment, more often referred to as the exit, is an important phase of any LBO transaction (Berg and Gottschalg, 2003). In a secondary buyout one private equity fund sells its investment in a buyout company to another PE sponsor. Thus, the SBO is unique in that the buyout company remains PE owned post exit of the PBO.

As mentioned in the introduction, secondary buyouts have increased dramatically in recent years. Despite this dramatic increase, the understanding of the scope for operational value creation in SBOs is limited. As of today, there is little research on secondary buyouts and the research that exists is largely based off of theories on primary buyouts (Bonini, 2013). For instance, previous research has a comparative approach where the performance of a secondary buyout is compared to that of a PBO, but the reasons underlying the differences are not understood. Against this background, academics have stressed the need to study secondary buyouts further (Achleitner *et al.*, 2010; Cumming *et al.*, 2007; Wright *et al.*, 2009). One reason why operational value creation in SBOs is interesting is that it enables one to study the long-term ramifications of PE ownership, as the company in question remains PE owned (Strömberg, 2008). There are two opposing views of PE as a long-term governance form. Jensen (1989) considered PE ownership to be a superior long-term governance structure and thus predicted that PE ownership would ultimately become permanent. Rappaport (1990), on the other hand viewed PE ownership as “shock therapy”, to improve poorly performing companies before returning them to the public market. If there is room for improvements in SBOs it could be viewed as evidence that PE is a viable long-term governance structure as predicted by Jensen (Sousa, 2013).

Existing literature on the value creation in SBOs is largely based upon the same framework as that used for primary buyouts. The original framework on value creation, which is still in use today, was suggested by Jensen (1989; 1993). The framework suggests that there are three sources of improvements: governance, leverage and operational improvements. However, the difference between primary and secondary buyouts in terms of the framework is that additional governance improvements are rendered inapplicable in the second round (Nikoskelainen and Wright, 2007). This leaves leverage and operational improvements as possible sources of value in SBOs.

2.2 Operational value generation in Leverage Buyouts

Operational improvements are at the centre of understanding value creation in LBOs. Bergström *et al.* (2007) argue that operational improvements reflect the true value creation on an aggregated societal basis. This view is supported by Phalippou and Zollo (2005) who argues that leverage, the other source of improvement in LBOs, does not create value, but simply transfers wealth from one stakeholder to another (through the creation of tax shields). Another reason why operational improvements are important is that LBOs are valued based on multiples of EBITDA. *Ceteris paribus*, an increase in EBITDA increases the value of the buyout company. Therefore operational improvements, in the form of EBITDA growth, are a key driver of value creation in LBOs (Acharya *et al.*, 2011; Achleitner *et al.*, 2010; Matthews *et al.*, 2009).

The most comprehensive framework of operational value generation is that presented by Berg and Gottschalg (2003). Berg and Gottschalg (2003) distinguish between *value capturing* and *value creating activities*. Value capturing is the increase in value due to changes in market valuation multiples for comparable companies or updated expectations regarding financial forecasts. *Value creating activities*, on the other hand, are activities that increase the free cash flow of the buyout company, namely sales growth, margin expansion and the free-up of resources through a reduction in net working capital and fixed assets. Value creating activities can in turn be divided into primary and secondary value creation levers. *Primary levers* have a direct effect on value generation through improvements in operational efficiency and strategic distinctiveness. *Secondary levers* are factors that facilitate primary value levers e.g., strategic expertise, a network of industry professionals and expertise in M&A activities. In other words, secondary levers affect operational performance as they determine which primary levers are used, and are in effect what a sponsor actually brings to

the table. Hence, primary levers alone do not explain why the previous owner performed a certain activity. Examples of secondary levers include, mentoring management teams, leveraging networks to find business partners and recruitment of key employees.

2.3 Operational value generation in Secondary Buyouts

Several studies (e.g. Degeorge and Zuckhauser, 1993; Kaplan, 1989; Muscarella and Vetsuypens, 1990) show that private equity backed companies outperform peers in terms of operational performance. However similar studies on SBOs are rare. To our knowledge there are five articles examining the operational performance of SBOs, in part or in full (Achleitner and Figge, 2012; Bergström *et al.*, 2007; Bonini, 2013; Jenkinson and Sousa, 2014; Wang, 2012). Interestingly the articles use different bases for comparison. As a consequence, the interpretation of the results is not identical across the articles.

Table 2.1 – Summary of previous literature on operational improvements in SBOs

Authors	Geography	Type	Findings
(Achleitner and Figge, 2012)	Western Europe	SBOs vs. LBOs	Sample of 448 SBOs and find that SBOs offer the same scope of operating improvements as LBOs. No significant difference between the excess operating performance of SBOs and LBOs.
(Bergström <i>et al.</i> , 2007)	Sweden	SBOs vs. LBOs	Sample of 14 SBOs and find that there is no significant support that LBOs outperform SBOs in terms of operating improvements, suggesting that there can still be operating improvements in SBOs.
(Bonini, 2013)	Western Europe	SBOs vs. PBOs	Sample of 111 SBOs and find that SBOs, in contrast to PBOs, do not generate abnormal operating performance. Examines a special type of PBOs, namely those that later transition into SBOs.
(Jenkinson and Sousa, 2014)	Europe	SBOs vs. Other exit opps.	Sample of 345 SBOs and find that SBOs underperform investments exited via IPOs in terms of operating performance, thus indicating that the scope for further operating improvements is not the rationale behind SBOs.
(Wang, 2012)	UK	SBOs	Sample of 485 SBOs and do not observe any significant operating improvements in SBOs, concluding that the scope for further operating improvements is not the rationale behind SBOs.

With regards to operational improvements the results are mixed, but a majority of the articles listed above suggest that SBOs do not outperform their peers. Although this is an important contribution, none of the abovementioned articles contain an explicit and all-encompassing study of the determinants of operational performance in secondary buyouts. However, all five articles suggest testable explanations as to what determines the scope for operational improvements in SBOs. In essence we have cherry-picked theories dealing with operational performance in order to create an all-encompassing study of what the determinants of operational performance in SBOs are. These hypotheses are presented below.

2.4 "Low-Hanging Fruit" hypothesis

One common view is that the scope for operational improvements in SBOs is limited, as the first sponsor will have performed most of the available measures to improve operational performance (i.e. used up the easily realizable primary levers). Achleitner and Figge (2012) coined this the "low-hanging fruit" hypothesis, comparing the easily realised value creation levers in the first round to "low-hanging fruit". A more technical definition of the "low-hanging fruit" hypothesis is that a high level of operational improvements in the first round adversely affect the level of operational improvements achieved in the second round (e.g. Jenkinson and Sousa, 2014; Achleitner and Figge, 2012). The theoretical basis for this hypothesis springs from Cumming and MacIntosh (2003), who stated that a private equity investor will only sell a portfolio company once the expected marginal return of value creation through his or her own effort and investment is lower than the marginal cost represented by that very effort and investment. Assuming sponsors use similar measures to create value (i.e. have access to similar secondary levers) this implies there should be no room for operational improvements in SBOs that are worthwhile to the second sponsor.

Some academics have a less stringent view of the "low-hanging fruit" hypothesis, arguing that the hypothesis mainly concerns operational efficiency improvements in the form of margin improvements and resource allocation (Achleitner and Figge, 2012; Wang, 2012). Their reasoning is as follows: in a PBO the sponsor pulls secondary value creation levers through implementing incentive alignments, improving corporate governance structures and reworking internal processes. This takes time and results in primary value creation levers such as reduction of overhead costs and other cost-cutting measures being realized. In an SBO however, experienced management is already in place and the resources that have been used to improve margins in the first round can be focused on growth in the second round (Achleitner and Figge, 2012). Consequently, the less stringent view suggests that operational improvements resulting in growth are possible in the second round of PE ownership, whereas the scope for additional margin improvements is limited (Achleitner and Figge, 2012; Bergström *et al.*, 2007; Wang, 2012).

While the "low-hanging fruit" hypothesis is mentioned in numerous papers (e.g. Achleitner and Figge, 2012; Jenkinson and Sousa, 2014; Wang, 2012), few papers have explicitly tested its validity. We believe there are two reasons why the "low-hanging fruit" hypothesis is seldom tested. First, many view the comparative research of SBOs and PBOs as sufficient,

assuming that if SBOs show lower operational improvement than PBOs it is indicative that the “low-hanging fruit” hypothesis is true. Second, it is difficult to test the hypothesis, as it requires the use of proxies and data on consecutive LBOs.

To our knowledge only Jenkinson and Sousa (2014) have tested the “low-hanging fruit” hypothesis. Jenkinson and Sousa (2014) use a sub sample of 345 secondary deals for which they have data on the duration of the first holding period. After dropping extreme observations they construct two groups: The first group consists of companies with a short holding period in the first round and the second group consists of companies with a long holding period in the first round. When comparing the two groups, they find that the group of SBOs with a long holding period in the first round significantly underperforms the other group of SBOs, thus supporting the “low-hanging fruit” hypothesis. The underlying assumption in Jenkinson and Sousa’s test is that a long holding period implies that the sponsors have realized a greater share of the available operational improvement in the first round. Although a reasonable assumption, many factors can adversely affect the holding period of a company. For instance, Strömberg (2008) hypothesize that market conditions and local variations in capital markets have an impact on the duration of holding periods.

2.5 “Forced Sell” hypothesis

Most funds have a limited investment horizon, and the duration of a fund is often limited to ten years. For the first five years of a fund’s life, the committed capital is invested. The remaining five years are used to implement changes in the buyout companies and exit investments before the fund closes. This structure has implications for the *modus operandi* of sponsors as they have to raise new funds continuously and have to exit the fund’s investments prior to the closing of the fund. Divestments that are a result of the limited investment horizon are sometimes called “forced sells” (Achleitner *et al.*, 2012; Wang, 2012). “Forced sells” are believed to have an impact on operational value creation in the second round as a sponsor exiting via a “forced sell” is in effect exiting an investment prematurely, implying that there are easily realizable value creation levers left for the second sponsor.

Achleitner and Figge (2012) provide three explanations why a sponsor might have to perform a “forced sell”, and effectively leave room for operational improvements in the second round. First, the limited time horizon of the fund acts as a physical barrier to the overall holding period (Jelic and Wright, 2011; Sousa, 2013). Although holding periods can be prolonged, it is seldom done in practice as it is believed to damage sponsors’ reputation and make it more

difficult to raise future funds (Sousa, 2013). Second, a sponsor might want to divest an investment early in order to generate a tangible track record to show when raising new funds (Achleitner and Figge, 2012; Degeorge *et al.*, 2013). This idea stems from Gompers (1996) who identified that young venture capital firms realized investments prematurely in order to build a reputation. Wang (2012) applies this logic to PE and suggests that PE sponsors in the process of raising new funds have incentives to demonstrate their abilities to generate tangible returns and thus realize their investments prematurely. Third, funds may exit an investment prematurely as they have a desire to show a stable cash flow profile in order to attract and maintain investors (Achleitner and Figge, 2012; Strömberg, 2008).

To our knowledge, there are two papers testing the impacts of a “forced sell”. Degeorge *et al.* (2013) observe that SBOs bought from a sponsor in the process of raising a new fund perform better in terms of returns. Similarly, Arcot *et al.* (2013), using a “sell pressure index”, conclude that firms bought from sellers pressured to exit their investments yield higher returns. However, neither Arcot *et al.* (2013) nor Degeorge *et al.* (2013) examine the implications of a “forced sell” on operational performance of the buyout company. Hence, it is not possible to conclude if the upside available in “forced sells” is derived from a lower purchase price or an extended scope for operational improvements.

At first glance, the “forced sell” hypothesis might be thought of as contradictory to the “low-hanging fruit” hypothesis. In contrast to the “low-hanging fruit” hypothesis, the “forced sell” hypothesis predicts that operational improvements are possible in SBOs. However, this contradiction does not imply that the “low-hanging fruit” hypothesis and the “forced sell” hypothesis are mutually exclusive. Rather, the “forced sell” hypothesis should be viewed as an exception of the “low-hanging fruit” hypothesis as a “forced sell” offers a greater scope for operational improvements as the first sponsor exited the buyout company prematurely and did not realize all the easily realizable value creation levers.

2.6 “Sponsor Characteristics” hypothesis

According to the “low-hanging fruit” hypothesis the first sponsor will have realized most primary value creation levers by the time the buyout company is up for sale. However, a second sponsor can potentially add value through secondary value creation levers that were not available to the first sponsor. In other words, the second sponsor may have unique attributes that enable continued improvements as the business progresses (Bergström *et al.*, 2007; Degeorge *et al.*, 2013). In technical terms, a specialized skillset offers an explanation

as to how a second sponsor can add value without invalidating Cumming and MacIntosh (2003) prediction that a sponsor will only sell a buyout company once it has realized all the improvement opportunities it considers worthwhile.

Achleitner and Figge (2012) concluded that specialization can occur along a number of dimensions, namely, (i) size and geographic reach, (ii) business network, (iii) industry, and (iv) functional expertise. It is often difficult to distinguish between these four dimensions in practice and as a result broader classifications are often used. One frequently recurring distinction, and the one we are going to use, is that between industry-specific sponsors and large sponsors.

Large sponsors typically have international reach and large amounts of assets under management (AUM). They add value to buyout companies through secondary levers such as international networks and functional expertise in how to operate large companies (Achleitner and Figge, 2012). International networks enable international expansion, and in turn sales growth, and functional expertise in running large companies means they can improve governance and margins (Achleitner and Figge, 2012; Bonini, 2013). Large sponsors have a longer history of performing LBOs and assuming that experience and international networks take time to establish this explain why large sponsors have exclusive access to additional secondary levers (Bonini, 2013). Consistent with the less stringent view of the “low-hanging fruit” many hypothesize that large sponsors primarily impact sales growth (Bergström *et al.*, 2007; Cressy *et al.*, 2007).

Specialized sponsors are believed to improve operations through unique secondary levers such as industry-specific knowledge (e.g. Cressy *et al.*, 2007; Degeorge *et al.*, 2013; Hoskisson *et al.*, 2013). Hoskisson *et al.* (2013) state that focusing on one or a few industries provides greater scope for improving operational earnings as it “[...] enables PE firms to recruit experienced industry experts, accumulate important industry knowledge and experience, and cultivate the specialized capabilities necessary to deal with particular industry requirements”.

There are two empirical studies in support of specialized sponsors. Cressy *et al.* (2007) find that LBOs backed by specialized sponsors have higher operational returns than non-specialized sponsors. However, Cressy *et al.* (2007) focus only on LBOs and provide no evidence that specialization would have an impact on SBOs. Degeorge *et al.* (2013) focus on

SBOs and find that SBOs purchased by an industry-specific fund perform better than average SBOs. However, Degeorge *et al.* focus on pricing and returns and do not examine the impact of a specialized sponsor on operational performance. Hence, it is not possible to conclude if the upside available to specialized sponsors is due to an extended scope for operational improvements or some other factor.

3. Hypothesis Development

Tests of whether PBOs outperform SBOs provide a foundation for the other hypotheses we will test and put our research in context of the existing body of research. As a result, our first hypothesis aims to establish if SBOs achieve lower operational performance than PBOs. Thereafter follows four hypotheses with regard to the determinants of operational improvements in SBOs.

3.1 Difference in performance between PBOs and SBOs

According to research presented in section 2.3, a majority of articles suggest that SBOs do not outperform their peers in terms of all performance measures. Even though some research suggests SBOs are equal to its peers in terms of excess operational improvements, there is no research suggesting that SBOs would outperform PBOs. Hence, we hypothesize that:

H₁: SBOs achieve lower excess operational improvements than PBOs

3.2 “Low-hanging Fruit” hypothesis

The theory presented in section 2.4 suggests that the scope for operational improvements in LBOs is limited and that the first private equity sponsor typically perform the easiest and most value creating activities in the first round. The “low-hanging fruit” hypothesis state that a high level of operational improvements in the first round adversely affects the level of operational improvements achieved in the SBO. The only exception is that of sales growth; according to the less stringent view of the “low-hanging fruit” hypothesis, sales growth in the first round does not affect sales growth in the second round. In accordance with the less stringent view of the “low-hanging fruit” hypothesis we hypothesize:

H₂: Excess operational improvements in the first round adversely affect the level of excess operational improvements achieved in the second round, with the exception of sales growth

3.3 “Forced Sell” hypothesis

In section 2.5 it was established that a “forced sell” can occur for a number of reasons: (i) funds have a limited investment horizon, (ii) sponsors want to exhibit a tangible track record, and (iii) sponsors want to show a stable cash flow profile. If the primary buyer is forced to divest its investment before it has fully realized its value creation plan, then there should be value “left on the table” for the secondary buyer. Our proxy captures the effects of (i) and therefore we formulate our hypothesis accordingly: SBOs exited shortly before the end of the funds life exhibit higher excess performance in the second round.

If we make an analogous interpretation of the less stringent view of the “low-hanging fruit” hypothesis in terms of the “forced sell” hypothesis, it implies that a “forced sell” has no positive impact on sales. Rather, the positive effects of a “forced sell” stem from improvements in margins and efficiency measures.

H₃: SBOs resulting from “forced sells” have higher excess operational improvements compared to non-forced sells, with the exception of sales growth

3.4 “Sponsor Characteristics” hypothesis

In accordance with research presented in section 2.6 we hypothesize that SBOs purchased by a specialized sponsors exhibit higher excess operational performance than conventional SBOs.

H₄: SBOs owned by specialized sponsors have higher excess operational improvements compared to SBOs owned by non-specialized sponsors

With regards to large sponsors, their impact on operational performance is less clear-cut. In accordance with research presented in section 2.6 large sponsors are primarily believed to have a positive impact on sales growth, as a consequence of their business networks and global presence. However, some academics argue that large sponsors are experts in operating larger and more complex businesses and therefore improve other operational measures as well. Hence we hypothesize:

H₅: SBOs owned by large sponsors have higher excess operational performance compared to SBOs not owned by large sponsors.

4. Method

4.1 Accounting measures

To evaluate the operational performance of buyout companies we use six key metrics, relating to operational growth, operational profitability and operational efficiency.

Table 4.1 – Definition of Accounting Measures

Measure	Definition	Type of Measure
Sales Growth	$\text{Sales Growth} = \frac{\text{Sales}_{t+1} - \text{Sales}_t}{\text{Sales}_t}$	Operational Growth
Sales CAGR	$\text{Sales CAGR} = \left(\frac{\text{Sales}_{t+i}}{\text{Sales}_t} \right)^{\frac{1}{\text{Years}}} - 1$	
EBITDA Margin	$\text{EBITDA Margin} = \frac{\text{EBITDA}_t}{\text{Sales}_t}$	Operational Profitability
EBITDA CAGR	$\text{EBITDA CAGR} = \left(\frac{\text{EBITDA}_{t+i}}{\text{EBITDA}_t} \right)^{\frac{1}{\text{Years}}} - 1$	Operational Growth
Net Working Capital	Net Working Capital = Non Cash Current Assets - Short Term Payables	Operational Efficiency
Net Working Capital % of Sales	$\text{NWC \% of Sales} = \frac{\text{Net Working Capital}_t}{\text{Sales}_t}$	Operational Efficiency
ROIC	Return on invested capital. Financial metric that quantifies the companies ability to generate cash flow relative to capital invested in the business $\text{ROIC} = \frac{\text{NOPLAT}_t}{\text{Invested Capital}_t}$ Where Invested capital is equal to Net Working Capital + Fixed Assets NOPLAT or Net Operating Profit Less Adjusted Taxes is defined as $\text{EBIT} \cdot (1 - \tau)$	Operational Profitability

Source: (Koller *et al.*, 2010)

Barber and Lyon (1996) favours the use of operational income measures over earnings for two reasons. First, earnings can be obscured by special items, tax considerations, and minority interests. Hence, operational income measures are a cleaner measure than earnings for the sake of measuring the productivity of operational assets. Second, corporate events, in our case sponsor transactions, results in changes of the capital structure of the buyout companies, which alters interest expense and net earnings. Out of the operational income measures, EBITDA is considered the most relevant operational income measure because of

the tendency to use multiples of last-twelve-month EBITDA to express deal values and the amount of leverage a business can manage (Bergström *et al.*, 2007). Furthermore, operational improvements ultimately have an impact on EBITDA growth, which can be further split into sales growth and EBITDA margin expansion (Achleitner *et al.*, 2010).

While improvements in working capital management do not necessarily improve EBITDA or sales, reductions in working capital is a source of free cash flow, which drives valuations. Similar to Bergström *et al.* (2007), we define networking capital (NWC) as non-cash current assets less short-term payables.

To measure operational profitability across industries we use Return on Invested Capital (ROIC) in order to take both operating margins and capital efficiencies into account (Bergström *et al.*, 2007). ROIC is preferred over Return on Equity (ROE) and Return on Assets (ROA) as ROE and ROA are measured as net income over either equity or total assets, meaning they are sensitive to different capital structures and discretionary accounting policies across industries (Bonini, 2013). ROIC is defined as Earnings Before Taxes and Interest (EBIT) less operational cash taxes (τ), divided by fixed assets plus non-cash current assets less short term payables (i.e. fixed assets + net working capital).

When choosing to examine above-mentioned metrics, three problems are acknowledged: (i) scaling with assets, (ii) bolt-on acquisitions and (iii) recognition of goodwill. First, we acknowledge that measures scaled by asset bases, in our case ROIC, might be impacted by discretionary accounting policies such as operating leases and other off-balance sheet items. Kaplan (1984) recognizes this problem and adjusts asset values by examining footnotes from financial statements. This action is out of scope for our buyout sample since the unlisted companies we examine are not required to disclose footnotes detailed enough for the required adjustments to be made. We acknowledge this problem, but since we measure operational performance for the same companies in both rounds, it should not create a systematic bias as long as the company maintains similar accounting policies across ownership rounds.

Second, bolt-on acquisitions are considered a key value driver for private equity investors, but can potentially distort accounting measures. The problem could be taken care of by making pro-forma adjustments, i.e. subtract the added sales, margins and assets that arise from the acquisitions. However, as bolt-on acquisitions are a key value driver of private equity and can be considered a substitute for organic growth (Bergström *et al.*, 2007) we

choose not to make adjustments, as long as the bolt-on acquisitions' cost structures and accounting policies are similar to those of the buyout companies.

The third problem is goodwill recognition, resulting from bolt-on acquisitions when the acquired company's assets are re-valued to purchase price (Bergström *et al.*, 2007). Goodwill recognition will have a downward effect on ROIC since it increases the invested capital base for the buyout companies that have performed bolt-on acquisitions. The bias that arises can be adjusted for by excluding goodwill from invested capital. However, such exclusion would create another bias since the purchase price of the bolt-on acquisitions is based off of the acquired companies recognizable assets and future contribution to operational performance.

4.2 Choice of proxies

To test our hypotheses regarding the determinants of operational performance in SBOs we construct proxy variables. A proxy itself is often of limited interest, but it is highly correlated with the unobservable variable of interest and can therefore take its place in the regression (Wooldridge, 2009).

According to the “low-hanging fruit” hypothesis the scope for operational improvements in SBOs is adversely affected by operational improvements made in the previous round. As the “low-hanging fruit” hypothesis suggests that the scope for easily realizable operational improvements is limited, it is the *total level* of excess operational improvements in the first round that is of interest. Thus, we use excess operational performance measured over the full duration of the first period as our proxy. For reasons outlined in section 2.4, excess operational performance is a superior proxy compared to the duration of the holding period in the first round.

Constructing a proxy for “forced sells” is problematic for two reasons. First, there are multiple reasons why a seller may exit an investment prematurely. Second, the reasons why a seller would perform a “forced sell” are difficult to capture empirically. Acknowledging these difficulties we focus on one particular type of “forced sells”, namely, when a buyout company is divested because the fund is nearing the end of its life. To capture the effect of a “forced sell” in the case of the fund closing down, we construct a dummy variable which takes the value one if the buyout company is exited one year prior to the closing of the fund or later. This proxy is inspired by Arcot *et al.* (2013) who use the time prior to the closing of a fund as a component in their “sell-pressure index”. In cases when the closing year can not

be determined it is assumed to be 10 years after the fund was raised.² Some sponsors do not operate using funds and consequently deals exited by these sponsors are not classified as "forced sells".³ If a deal is syndicated, i.e. the buyout company is backed by multiple sponsors, we look at the lead sponsor⁴ when determining whether the divestiture is to be considered "forced" or not.

In order to ensure consistent classifications of sponsor type, we set up criteria for each of our two classifications. To qualify as large, a sponsor has to fulfil two criteria: (i) its accumulated assets under management have to exceed € 5B and (ii) it has to have at least one fund with committed capital in excess of € 2B. In cases where these criteria are met during the time window of our sample, the sponsor is considered large from that point on. Subsequently, only deals entered after a sponsor is classified as large are viewed as being owned by a large sponsor. The criterion for large is based off of Boucly's (2011) observation that large, multinational firms typically have between € 3 and € 5B in AUM. Since we use *accumulated AUM* as a proxy, we choose the high end of Boucly's spectrum as the threshold to be considered a large sponsor. This threshold has additional support from Bonini (2013) who says that sponsors with accumulated AUM € 5B typically have experience in running at least five funds. The second criteria is chosen to ensure that PE sponsors that have accumulated AUM over a long period, but have no experience of raising large funds, are excluded from the sample. The sponsors classified as large are disclosed in Table D2 in Appendix D.

To distinguish specialized sponsors from normal sponsors we use criteria similar to Gompers (2005). Gompers use the fraction of investments that a private equity sponsor has made in a specific industry as a proxy for specialization.⁵ In accordance with Cressy *et al.* (2007) we view specialization as a binary trait meaning it can be captured by a dummy variable. A sponsor is specialized if it has invested in excess of 50% of total investments in a particular industry. Subsequently, a target is classified as specialized if it is acquired by a specialized sponsor and belong to the industry that the sponsor in question specializes in. The sponsors classified as specialized are disclosed in Table D3 in Appendix D.

² The assumption of a ten-year fund life is based off of discussions with Per Strömberg, Department of Finance, The Stockholm School of Economics.

³ Examples of sponsors that do not operate using a fund structure include Bure Equity and Ratios.

⁴ The lead sponsor is the sponsor with the largest equity stake in the buyout company.

⁵ As data on the fraction of investments made in a certain industry at the time when the investments were made, data on the current fraction of investments made in a certain industry was used instead.

Data on the fraction of total investments made in a specific industry was gathered from Mergermarket and was calculated by dividing the total deal value per industry by total amount invested for each sponsor. The closing year of a fund, as well as AUM and fund sizes were determined using the databases Argentum⁶ and Bison.⁷

4.3 Statistic methods

We use panel data, in which the performance for the same company is collected for both the first and second round. The use of panel data is superior to the use of cross-sectional data as the delicate issue of industry size matching can be avoided, thus providing cleaner and less equivocal inferences (Bonini, 2013; Richard *et al.*, 2009).⁸ However, as panel data requires data for two consecutive periods it limits the sample size. Another problem is that the second round of PE-ownership is seldom completed, meaning that the first and second period are not immediately comparable. There are three ways to solve this problem. First, observations containing SBOs that have not been realized can be dropped. Although this is the best alternative in theory, excluding companies that have not been realized severely reduces the sample size. Second, the performance the first two years of each round can be compared. This approach is adopted by Bonini (2013). However, Achleitner and Figge (2012) argue that although Bonini's method "captures the "low-hanging fruit effect", it cannot be used to adequately assess the actual realised performance over the total holding period". Third, annualized data can be used. This method ensures a large sample size while allowing for long-term effects on operational performance to be evaluated.

4.3.1 Test of H_1 – Event study and Student's *t*-test

To test our first hypothesis we perform an event study. The event study method has been used frequently in previous literature (Alemany and Martí, 2005; Bergström *et al.*, 2007) and is useful for explaining excess operational improvements, i.e. operational improvements that are in excess of expected improvements. According to Barber and Lyon (1996), measuring the change in excess operational performance, as opposed to the level of excess operational performance at a certain point in time, is a superior method for detecting excess operational performance. Moreover, as discussed by Bergström *et al.* (2007), operational improvements can be attributed to macro factors and industry factors. As we want to evaluate sponsors

⁶ Argentum is a database which provides fund-specific information on Nordic funds; <http://www.argentum.no/en/Market-Database/#/fundmanagers>

⁷ Bison is a database which provides fund-specific information on international funds; <https://www.bison.co/>

⁸ Despite using panel data we are not in a position where we can use panel data methods. However, panel data is still desirable as it increases the strength of *t*-tests and removes concerns of inter-industry variation.

ability to improve operations rather than their skill in capturing value by investing in certain industries, looking at excess operational performance is appropriate.

To compare the two rounds of PE ownership we adopt an approach similar to that of Bergström *et al.* (2007) but modify it to suit annualized data. The event windows correspond to the first and second round respectively. Each operational performance metric (OP) is treated separately and for each measure the annualized change in excess operational performance (EOP) is calculated. $OP_{entry,i}$ is the chosen performance metric for buyout company i at entry and $OP_{exit,i}$ is the chosen performance metric for buyout company i at exit. $\overline{OP}_{peers,entry,i}$ is the mean value of the chosen performance metric for the peer group of buyout company i at entry and $\overline{OP}_{peers,exit,i}$ is the mean value of the chosen performance metric for the peer group of buyout company i at exit. Changes in margins are calculated as follows:

$$EOP_{annualized,i} = \Delta OP_{annualized,i} - \Delta \overline{OP}_{peers,annualized,i}$$

where

$$\Delta OP_{annualized,i} = \left[1 + (OP_{entry,i} - OP_{exit,i}) \right]^{\frac{1}{months\ held}} - 1$$

and

$$\Delta \overline{OP}_{peers,annualized,i} = \left[1 + (\overline{OP}_{peers,entry,i} - \overline{OP}_{peers,exit,i}) \right]^{\frac{1}{months\ held}} - 1$$

In accordance with Alemany and Martí (2005), we distinguish between calculating excess operational performance for margins and growth measures. Changes in growth measures are calculated as follows:

$$EOP_{annualized,i} = \left(\frac{OP_{exit,i}}{OP_{entry,i}} \right)^{\frac{1}{months\ held \div 12}} - \left(\frac{\overline{OP}_{peers,exit,i}}{\overline{OP}_{peers,entry,i}} \right)^{\frac{1}{months\ held \div 12}}$$

For the peers we use the mean operational performance ($\overline{OP}_{peers,i}$). The convention is to use the median operational performance of peers if five or more peers are used, as the median is less sensitive to extreme values (Barber and Lyon, 1996). However, as we use three peers, the median risks becoming misleading and the mean is a more appropriate measure given that extreme values are absent.

When testing if the annualized EOP in the first round exceeds that of the second round, Student's t-test for matched pairs is used.⁹ As the t-test for matched pairs makes use of the fact that excess operational performance has been measured on the same statistical unit in adjacent time periods, the test is more powerful than a conventional t-test (Newbold *et al.*, 2009). To perform the t-test, the difference in excess operational performance between the first and second round is calculated.

$$\Delta EOP_{annualized,i} = EOP_{PBO,annualized,i} - EOP_{SBO,annualized,i}$$

The hypothesis that there is no difference between the two rounds is tested against a one sided alternative¹⁰ that PBOs have higher excess operational performance.

$$H_0: \Delta EOP_{annualized} \leq 0$$

$$H_1: \Delta EOP_{annualized} > 0$$

The following decision rule is applied to determine if H_0 should be rejected or not.

$$t = \frac{(\overline{\Delta EOP_{annualized}}) - 0}{\rho(\Delta EOP_{annualized}) \div \sqrt{n}} > t_{n-1,\alpha}$$

4.3.2 Test of H_2, H_3 and H_4 – Linear regression model

To determine which variables have an impact on the excess operational improvements of SBOs we specify a linear regression model. Jenkinson and Sousa (2014) successfully use a linear regressions model to explain the improvements of SBOs. However, our specifications of the model differ from that of Jenkinson and Sousa (2014). In total we run three separate specifications of the model for each respective operational performance measure. The models used are the result of an iterative process where a number of models were tested to find the one which provide the best fit to the data. Models were evaluated based on adjusted R-squared (imposing a penalty on additional variables with poor explanatory powers). The two model that consistently returned the highest adjusted R-squared was specification (i). Having tested a number of different specifications we can confidently state that the choice of model specification does not impact our results.

⁹ Student's t-test is a parametric test meaning that the population distribution has to be normally distributed. To ensure this we plot the sampling distributions of all variables and make a qualitative assessment of whether the underlying population is normally distributed or not.

¹⁰ With the exception of sales growth which is tested against a two sided alternative in accordance with the less stringent view. In the two-sided case the specification is as follows: $H_0: \Delta EOP_{annualized} = 0$, $H_1: \Delta EOP_{annualized} \neq 0$.

Below a general case of specifications (i) and (ii) is outlined. For a complete exhibit of all model specifications see Appendix A. The general case is as follows:

$$EOP_{SBO,annualized,i} = \alpha + \beta_1 EOP_{PBO,not\ annualized,i} + \delta_2 Forced_i + \delta_3 Specialized_i + \delta_4 Large_i + \tau_i + \pi_i + \varepsilon_i$$

where $EOP_{SBO,annualized,i}$ is the annualized excess operational performance of firm i in the SBO-round. $EOP_{PBO,not\ annualized}$ is the excess operational performance in the previous round and aims to capture the effects of the “low-hanging fruit” hypothesis. Note that the proxy used to capture the effect of “low-hanging fruit” is defined as the excess operational performance over the full duration of the first round; $EOP_{PBO,not\ annualized,i} = \Delta OP_{PBO,i} - \Delta \overline{OP}_{PBO,peers,i}$. *Forced* is a dummy variable capturing if the buyout company i was sold within one year prior to the funds closing.¹¹ *Specialized* and *Large* are dummies capturing if the sponsor in question is specialized or large. In addition to the dependent variables capturing the effects outlined in our hypotheses, we include a number of interaction (τ_i) and control variables (π_i). The reasons for including these variables are outlined below.

Interaction variables

In some instances the partial effect explained by an explanatory variable differs dependent on yet another explanatory variable. For instance, the effects of a “forced sell” may differ between companies backed by a large sponsor and the average company in the population. In order to control for this possibility we include interaction terms. Controlling for interaction effects gives more precise estimates of coefficients as the partial effects of different subgroups are not entangled (Woolridge, 2009). In some instances the statistical significance of the interaction terms can be questioned, as the underlying sample is small.

In specification (ii) we also include an interaction term between the explanatory variable for “low-hanging fruit” and the sponsor specific dummy *Large*. Including this dummy allows us to test if the slope of the “low-hanging fruit” variable differs for the group of buyout companies that are owned by large sponsors. A positive interaction between *Large* and $EOP_{PBO,not\ annualized,i}$ would suggest that an otherwise negative effect of high levels of operational improvements in the first round are less pronounced for large sponsors.

¹¹ When running robustness checks we test alternatives definitions of the *Forced* dummy, but the choice of proxy does not have an impact on our results. *Forced* dummies with a cut of at zero and two years prior to the funds closing were tested. See Appendix C.

Control variables

In addition to interaction terms we also include two control variables. The reason for including these control variables stem from the fact that we have annualized our measure of excess operational performance in the second round. Research has suggested that operational improvements in PBOs are the most pronounced in the first 2 to 3 years after the buyout (Wiersema and Libeskind, 1995). Although similar tests have not been conducted on SBOs we acknowledge that improvements may be the most pronounced the first years. If this is the case, the performance of buyout companies for which we only have data on the first years will be exaggerated causing an upward bias in annualized EOP for SBOs.¹² In order to control for this we include the holding period in the second round to distinguish between actual differences in performance and differences in performance that are due to a non-linear value creation pattern. The need to control for this factor remains despite the fact that the mean holding periods for SBOs in our sample exceeds that of the PBOs (53 months for PBOs, compared to 60 months for SBOs, table 5.1) as it is the presence of non-realized deals rather than the overall holding period of SBOs that gives rise to this bias. For realized SBOs the full set of data is available. To control for a systematic difference between observations for which the full set of data is available we include a dummy to indicate if a SBO has been realized or not.

Many researchers control for industry differences and market conditions in their models (Jenkinson and Sousa, 2014; Wang, 2012). We do not include these sorts of controls as we have already controlled for these factors exogenously of the model. Market conditions are controlled for through the use of peer groups. Differences between industries that remain after having introduced peer groups are indirectly controlled for through the use of a panel data set.

4.3.3 The special case of NWC as a percentage of Sales

Specifications involving NWC as a percentage of sales differ compared to the specifications used for the other measures. The reason for treating NWC as a percentage of sales differently stem from research. Previous research suggests that improvements in NWC are made during the first two years of the holding period (Baker and Wruck, 1989; Smith, 1990). As improvements in NWC are not made continuously, using annualized data would be misleading as improvements in NWC are not contingent on the duration of the holding period.

¹² This is also true for the tests where the performance of PBOs is compared to that of SBOs. However, unrealized SBOs do not cause a problem in that instance as their presence make it more difficult to reject H_0 .

Therefore we do not use annualized data when performing t-tests or running regressions involving NWC as a percentage of sales.¹³

4.3.4 Treatment of outliers

The final sample of 92 deals contains outliers.¹⁴ To increase the explanatory power of our model and ensure that outliers do not skew the results, some are dropped. This is done manually on a measure-by-measure basis. Each excess operational performance measure (EOP) is plotted using a box-plot and outliers are identified. The outliers are then tracked in order to understand the underlying reason why they deviate. If the reason for an observation deviating is outside the explanatory scope of our model the deal is dropped in all tests involving that particular EOP.¹⁵

4.4 Assembling the theoretical framework

The theoretical framework was assembled using databases such as *Business Source Premier*¹⁶ and *Google Scholar*¹⁷. As research on secondary buyouts is based off of previous research on primary buyouts we began by gathering academic articles on LBOs in general. Key searches consisted of the words LBO, or PE coupled with one of the following: value creation, operational performance, operational improvements or operations.

Once we had a general understanding of LBOs we focused our efforts around SBOs. As the library on SBOs is still limited we used general key words and did not specify operations in our searches. Key searches were PE combined with one of the following; second, SBO and financial buyout. From there we proceeded by going through the reference lists of the articles we found. Doing this we found a number of interesting working papers, that were not present in the databases.

The use of working papers can be problematic as working papers are neither finished nor peer reviewed. However, many of these working papers are extensively cited by other authors. Also, many of the authors responsible for these papers have published articles on other aspects of LBOs previously, further increasing the credibility of these working papers.

¹³ I.e. $\Delta EOP_{annualized,i}$ is replaced by $\Delta EOP_{not\ annualized,i}$ in the t-test, and $EOP_{SBO,annualized,i}$ is replaced by $EOP_{SBO,not\ annualized,i}$ in the regressions.

¹⁴ Outlier is defined as any point more than 1,5 IQR (interquartile) below the first quartile or above the third quartile.

¹⁵ This method of treating outliers was developed through discussions with Per-Olov Edlund, Department of Economic Statistics, the Stockholm School of Economics.

¹⁶ Business Source Premier is a search engine for published articles; <http://www.ebscohost.com/academic/business-source-premier>

¹⁷ Google Scholar is a search engine for published articles; <http://scholar.google.co.uk/>

5. Data

5.1 Data collection

The self-constructed dataset of SBOs and corresponding PBOs is one of the most valuable contributions of this paper. To our knowledge only Bonini (2013) is in possession of a similar dataset. Furthermore, a similar dataset has never been compiled for the Nordic region.

From an initial sample of 262 deals we end up with a final sample comprising 92 deals. 99 observations were dropped because transaction dates were missing or because the deal was not PE-backed. An additional 71 observations were dropped because accounting data for the required years was missing.

The dropped observations include observations from all countries and deals from different points in time. Also, whether financial information was available or not does not appear to be correlated with the size of the company in question.

5.1.1 Selecting the buyout sample

Data on Nordic SBOs performed between 2000 and 2011 was collected using the Mergermarket¹⁸ and Zephyr databases¹⁹. Each deal was matched to its respective PBO and evaluated to ensure that it fulfilled our criteria. The following criteria were used:

1. The buyout company is Nordic²⁰
2. The holding period exceed 18 months for both owner rounds
3. Sponsors in neither round are venture capital investors
4. Sponsors have an equity stake of at least 50% during both rounds
5. Consolidated accounts are available at entry and exit of both rounds
6. Sales at the initial point of entry exceed €5 million
7. The buyout company does not operate in the financial sector²¹
8. The company does not go bankrupt in the second holding period

These criteria were applied to ensure that companies in our sample were comparable in terms of accounting and economic environments for the full duration of PE ownership.

¹⁸ Mergermarket is a database which provides historical data for M&A transactions; <http://www.mergermarket.com>.

¹⁹ Zephyr is a Bureau van Dijk resource which provides data for M&A transactions; <https://zephyr.bvdinfo.com>

²⁰ Nordic Companies refer to companies with their place of domicile in one of the Nordic countries (Sweden, Denmark, Norway, Finland and Iceland) at the point of entry.

²¹ Financial companies are excluded as they apply different accounting standards.

Mergermarket does not distinguish between different types of financial buyers and hence we had to clear the sample of deals sponsored by funds which did not comply with our definition of PE.²² This was done manually by examining a descriptive summary for each transaction (including type of buyer and seller) provided by Mergermarket. If a sponsor in either round qualified as a venture capital sponsor, the observation was dropped in accordance with criteria (3).

Another issue was the lack of disclosure of initial entry dates in Mergermarket and Zephyr. Factiva²³, Retriever and Google were used to try to provide clarity on entry dates. If the entry date could not be established the observation was excluded from the dataset in accordance with criteria (5).

In accordance with criteria (8) we excluded SBOs that went bankrupt, as the performance of SBOs would otherwise be understated when compared to PBOs. Including bankrupt SBOs would have lead to a bias when comparing them to PBOs, because by definition selected PBOs have survived in order to become SBOs.

5.1.2 Assigning peer groups

The peer groups used to calculate the excess operational performances were gathered with the help of the databases Retriever²⁴ and Orbis²⁵. In accordance with previous research, peers were matched to the buyout companies based on official industry classifications and sales (Kaplan, 1989; Bergström *et al.*, 2007). In addition to these criteria, an additional five criteria were applied resulting in the following list of requirements for peers:

1. At least three companies in each peer group
2. Peers have the same NACE²⁶ code as the PE owed buyout company
3. Peers have sales of 20% to 500% of the buyout company at the exit year
4. Peers are Nordic companies
5. Consolidated accounts are available at entry and exit of both rounds
6. Peers are not owned by a PE sponsor
7. Peers did not go bankrupt during the time considered

²² See Definitions and delimitations.

²³ Factiva is a news archive; <https://global.factiva.com/>

²⁴ Retriever is a database which provides financial reports for Swedish companies; <http://web.retriever-info.com>

²⁵ Orbis is a Bureau van Dijk resource which provides accounting data for European companies; <https://orbis.bvdinfo.com/>

²⁶ Nomenclatur générale des activités économique dans les Communautés Européennes (General Industrial Classification of Economic Activities within the European Communities)

In some cases criteria (1) could not be fulfilled. In such instances we made adjustments to criteria (2) and (3). First the sales limit was adjusted upwards or downwards. Second the NACE code was adjusted to the three or two-digit level. Only in two instances were additional criteria violated. The first exception involved the large pharmaceutical company Nycomed for which criteria (4) could not be met as enough peers of sufficient size were not available in the Nordic region. The second exception involved healthcare service companies. For this group of companies a majority of peers are also PE owned. Consequently, criteria (4) and (6) were violated.

Often buyout companies had a 4-digit NACE code of 7010 – Activities of head office/holding company. In such instances, we used the NACE of the primary operational subsidiary as a basis for choosing peers. This approach is in line with that of Gilstring and Andersson (2009).

As the sample firms are subject to a survivorship bias, criteria (7) was applied when choosing peers. By applying this criterion we reduce the survivorship bias of buyout companies as they are compared to peers subject to the same bias.

5.1.3 Collecting accounting data

The primary source of accounting data for peers and buyout companies was the Orbis database. If consolidated accounts were not available through Orbis, the Retriever database was used instead. In cases where the databases did not provide sufficient disclosure or the financial statement of interest was missing we contacted the company's investor relations department.

For each company in our sample we downloaded financial statements for three points in time: the entry date of the primary buyer, the exit date of the primary buyer and the exit date of the secondary buyer. Note that the exit date of the primary buyer coincides with the entry date of the second buyer. For secondary buyouts that had not been exited we downloaded financial statements for the last available year. An advantage of gathering the dataset manually was that we went through all consolidated financial statements and calculated key ratios in a consistent manner.

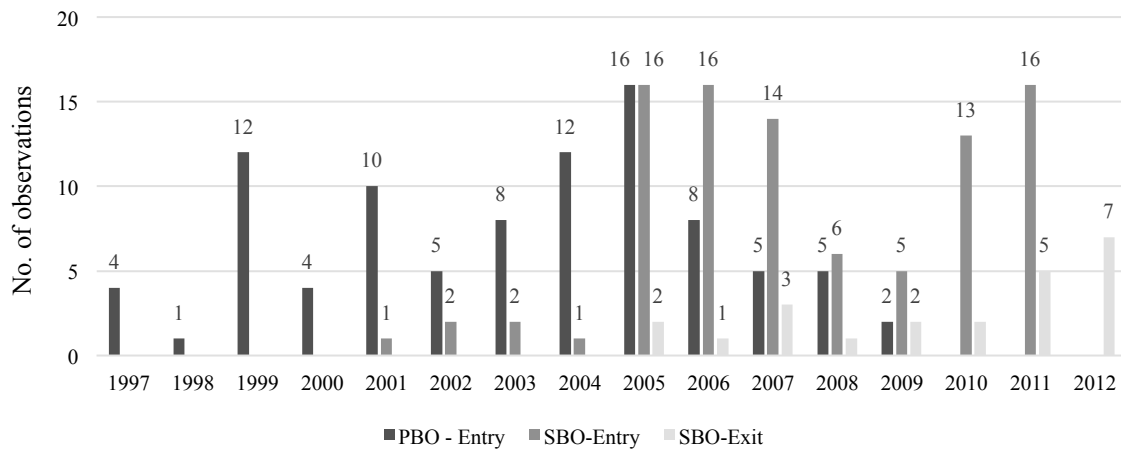
In many instances, buyout companies changed names and company structures through their sponsors' use of different holding companies. Name changes increased the difficulty in getting consistent accounting data since consolidated data had to be gathered from different entities in different years. To gain an understanding of the complicated corporate structures,

Google and Factiva were used to map the ownership structures of the buyout companies. In some instances data was not available through Orbis. For instance, Orbis often lacked data from years prior to 2000. However, we were often able to collect data through other sources and therefore we are confident that this did not create a bias towards more recent deals. In some instances Orbis lacked data on more recent deals. This raises concerns as of whether the availability of accounting data in Orbis is random or if certain types of deals are overrepresented. To limit the impact of this concern we tried to collect data on missing deals through other sources, but we acknowledge this as a potential problem.

5.2 Descriptive statistics

Our final sample consists of 92 SBOs and corresponding PBOs. The sample stretches from 1997 to 2012, but the SBOs take place between 2000 and 2011. For a list of the buyout companies included in the sample, see Table D1 in Appendix D. The buyout sample's distribution over time can be seen in Figure 5.1. PBO entries are clustered around two intervals, one from 1999 to 2000 and the other from 2004 to 2006. SBOs, on the other hand, are most common from 2005 to 2007 and from 2010 to 2011. SBOs clusters appear to be correlated with PBO clusters, with a lag of approximately 5 years. We observe that the maximum holding period in the buyout sample is 136 months or 11 years, while the minimum is 18 months. We also observe that the average holding period for SBOs (60 months) is longer than the average holding period of PBOs (53 months). Moreover, we can observe a material decrease in the number of observations during the financial crisis of 2008/2009. This decrease is consistent with previous data which suggests that LBOs are correlated with market conditions (Strömberg, 2008). We also observe that there is a migration from non-large/non-specialized sponsors in the first round to large/specialized sponsors in the second round. Ownership by large sponsors increases from 21 to 28 transactions, and ownership by specialized sponsors increases from 3 to 9 transactions. These findings are consistent with Bonini's (2013) findings.

Figure 5.1 - Sample Distribution: PBO and SBO Entry/Exit Years



In our sample of 92 buyouts, 49 are buyout companies incorporated in Sweden, 20 in Finland, 17 in Norway and 6 in Denmark. The sample is skewed towards the Swedish market due to our criteria of fully available consolidated financial statements as Sweden has better disclosure of financial statements.

Table 5.1 – Descriptive statistics of the buyout sample

		Primary Buyout	Secondary Buyout	Large PBO	Large SBO	Specialized PBO	Specialized SBO
No. of observations	Total sample	92	92	21	28	3	9
	Swedish target	49	49	14	17	1	3
	Danish target	6	6	1	0	0	0
	Norwegian target	17	17	4	7	0	4
	Finnish target	20	20	2	4	2	2
Holding period (months)	Mean	53	60	49	58	47	65
	Max	136	129	104	106	66	105
	Min	18	21	21	21	22	36
Forced Sells	t-1	14	-	3	-	0	-
Tertiary Buyout	Total sample	-	8	-	6	-	2
Realized SBOs	Total sample	-	26	-	8	-	4

The table presents descriptive statistics for the each type of buyout (PBO, SBO, Large and Specialized). *No. of observations* is the total number of observations for each buyout type both in the total sample and for each Nordic country. *Holding period* is total number of months that the buyout company is owned by the sponsor. *Forced sell* refers to how many of the PBOs were classified as forced, i.e. sold later than 1 year before the fund closed down. *Tertiary buyout* refers to how many of the secondary buyouts that are owned for the third time by a sponsor. *Realized SBOs* refers to the group of SBOs that have been realized.

Other notable observations include that there are 8 tertiary buyouts in our sample of SBOs and that 26 of the SBOs are realized to date. Another observation is that the sample is much larger compared the samples of previous studies on SBOs in the same region. Bergström (2007) had a sample of 14 SBOs and Nyrén & Åsbrink (2009) had a sample of 22 SBOs.

Table 5.2 – Descriptive statistics of the difference in operational performance measures between entry and exit

		Primary Buyout	Secondary Buyout	Large PBO	Large SBO	Specialized PBO	Specialized SBO
EBITDA Margin Expansion (Excess)	Mean	0,0149	0,0025	0,0257	0,0139	0,0622	-0,0203
	Median	0,0125	-0,0026	0,0011	0,0011	0,0249	-0,0133
	Std. Dev.	0,0807	0,0552	0,0916	0,0634	0,0955	0,0927
	Min	-0,2754	-0,1106	-0,1583	-0,1106	-0,0089	-0,1647
	Max	0,2667	0,1456	0,2667	0,1397	0,1707	0,1456
EBITDA Margin Expansion^{annualized} (Excess)	Mean	0,0061	-0,0010	0,0084	0,0029	0,0305	-0,0077
	Median	0,0035	-0,0024	-0,0009	0,0010	0,0045	-0,0071
	Std. Dev.	0,0232	0,0147	0,0283	0,0167	0,0503	0,0191
	Min	-0,0464	-0,0343	-0,0301	-0,0343	-0,0015	-0,0343
	Max	0,0885	0,0438	0,0881	0,0438	0,0885	0,0227
EBITDA CAGR (Excess)	Mean	0,1938	-0,0083	0,1064	0,0796	0,1837	-0,0530
	Median	0,0622	-0,0127	-0,0375	0,0145	0,1289	0,0360
	Std. Dev.	0,7638	0,2823	0,4694	0,4115	0,1082	0,2920
	Min	-0,4670	-0,4670	-0,4644	-0,3942	0,1140	-0,4670
	Max	6,3486	1,6387	1,6387	1,6387	0,3083	0,3250
Sales CAGR (Excess)	Mean	0,0430	0,0214	0,0159	0,0062	0,0710	-0,0190
	Median	0,0123	0,0027	0,0024	0,0005	0,0271	-0,0512
	Std. Dev.	0,2012	0,1381	0,2177	0,1137	0,1135	0,1188
	Min	-0,4863	-0,3153	-0,3153	-0,3153	-0,0141	-0,1540
	Max	0,6790	0,7993	0,6790	0,2893	0,1999	0,2153
ROIC expansion (Excess)	Mean	0,0441	-0,0573	0,0346	-0,0127	-0,2489	-0,0126
	Median	0,0066	-0,0570	0,0042	-0,0272	-0,2489	-0,0882
	Std. Dev.	0,1705	0,1882	0,2093	0,1685	0,2904	0,1636
	Min	-0,4543	-0,3975	-0,4543	-0,2968	-0,4543	-0,1321
	Max	0,4911	0,3819	0,4203	0,3819	-0,0436	0,2704
ROIC expansion^{annualized} (Excess)	Mean	0,0142	-0,0008	0,0078	0,0162	-0,0575	0,0007
	Median	0,0035	-0,0108	-0,0031	-0,0035	-0,0575	-0,0146
	Std. Dev.	0,0558	0,0613	0,0734	0,0640	0,0636	0,0691
	Min	-0,1283	-0,1644	-0,1283	-0,0949	-0,1025	-0,0949
	Max	0,2432	0,1814	0,1624	0,1814	-0,0126	0,1212
Reduction of NWC % of Sales (Excess)	Mean	-0,0022	-0,0011	-0,0010	-0,0021	NA	0,0110
	Median	-0,0102	-0,0006	-0,0094	-0,0066	NA	0,0079
	Std. Dev.	0,0458	0,0463	0,0439	0,0513	NA	0,0552
	Min	-0,0853	-0,0894	-0,0673	-0,0894	NA	-0,0617
	Max	0,0922	0,0922	0,0675	0,0913	NA	0,0913

The table presents operational performance measures for the total sample for each type of buyout: This is the whole sample meaning no observations have been dropped (i.e. raw data). *EBITDA Margin expansion (annualized)* measures the annualized change in margin between entry and exit relative to peers. The interpretation of *ROIC expansion (annualized)* is identical. *EBITDA CAGR* measures the compounded annual growth rate of EBITDA between entry and exit relative to peers. The interpretation of *Sales CAGR* is identical. *Reduction of NWC % of Sales* measures the change in net working capital as a percentage of sales between entry and exit for the whole buyout period.

6. Empirical Results and Analysis

Consistent with our first hypothesis we find that SBOs underperform PBOs in all measures except sales growth and reductions in NWC as a percentage of sales. This underperformance can largely be explained by the “low-hanging fruit” hypothesis. We also find evidence that SBOs owned by large sponsors achieve higher levels of operational improvements than the average SBO. Specialized sponsors, on the other hand, show no such tendencies. Furthermore, we note that a “forced sell” has no significant impact on the level of operational improvements achieved in the second round. The conclusions we make are robust, however,

the results of robustness tests are reported separately in Appendix C. All measures in this section are quoted as excess of peers unless otherwise stated.

6.1 Differences in excess operational performance

Table 6.1 shows the results for the difference in excess operational performance between PBOs and SBOs. We find significant evidence at the 3% level that PBOs outperform SBOs in terms of EBITDA CAGR by 8,56%. When examining the constituents of EBITDA growth - EBITDA margin expansion and sales growth - we find that PBOs outperform SBOs in terms of annualized EBITDA margin expansion by 0,64%, significant at the 2% level. However, there is no significant evidence of a difference between PBOs and SBOs in terms of sales growth. In the case of ROIC expansion, PBOs outperform SBOs by 2,32% annually, significant at the 2% level. When considering changes in net working capital expressed as a percentage of sales, there is no evidence of any differences between PBOs and SBOs.

Table 6.1 – Results of Student's t-test with regards to operational improvements

Owner Round	N	Mean	Std.Dev	Significance Level	Specification
Primary Buyout					
EBITDA CAGR	86	7,73%	39,49%	4%	one-sided
EBITDA Margin Expansion annualized	84	0,61%	2,30%	2%	one-sided
Sales CAGR	89	3,66%	19,28%	17%	two-sided
ROIC Expansion annualized	78	4,53%	17,35%	1%	one-sided
Net Working Capital % of Sales	86	-0,78%	10,37%	24%	one-sided
Secondary Buyout					
EBITDA CAGR	80	-0,83%	21,48%	9%	one-sided
EBITDA Margin Expansion annualized	86	-0,04%	1,65%	41%	one-sided
Sales CAGR	89	1,77%	13,86%	23%	two-sided
ROIC Expansion annualized	85	-3,56%	27,71%	4%	one-sided
Net Working Capital % of Sales	89	-0,83%	10,00%	21%	one-sided
Difference between PBOs and SBOs					
Δ EBITDA CAGR	80	8,56%	48,56%	3%	one-sided
Δ EBITDA Margin Expansion annualized	84	0,64%	2,80%	2%	one-sided
Δ Sales CAGR	89	3,13%	22,91%	20%	two-sided
Δ ROIC Expansion annualized	78	2,32%	9,66%	2%	one-sided
Δ Net Working Capital % of Sales	86	-0,50%	14,94%	21%	one-sided

The table presents operational performance measures and significance levels for the test sample. Observations have been dropped and the sample used does not comprise the whole sample. *EBITDA Margin expansion (annualized)* measures the annualized change in margin between entry and exit relative to peers. The interpretation of *ROIC expansion (annualized)* is identical. *EBITDA CAGR* measures the compounded annual growth rate of EBITDA between entry and exit relative to peers. The interpretation of *Sales CAGR* is identical. *Reduction of NWC % of Sales* measures the change in net working capital as a percentage of sales between entry and exit for the whole buyout period.

In conclusion, these findings suggest that the scope for EBITDA margin expansion is limited in SBOs, while opportunities for continued growth may remain. Hence, the results are consistent with Wang (2012) and Bonini (2013), who found that SBOs underperform in terms of EBITDA growth. The literature has been divided in terms of SBO sales growth; Achleitner & Figge (2012) find that growth is higher for SBOs compared to PBOs, whereas Bonini (2013) and Boucly *et al.* (2011) find that the opposite is true. We observe that sales growth is higher for PBOs than SBOs, but the difference is not statistically verifiable.

The results with regards to ROIC are consistent with Bonini's (2013) findings that PBOs achieve excess returns on investment, whereas SBOs do not. A possible explanation for these findings can be that SBOs to a larger extent pursue "buy-and-build"-strategies, in which sponsor make bolt-on acquisitions that increase invested capital through the recognition of goodwill (Hammer *et al.*, 2014).

Contrary to Bonini (2013), we do not observe a significant difference in the reduction of NWC as a percentage of sales between the first and second round. Also the mean reduction in each round is immaterial (-0,83% and -0,50% respectively). These findings are surprising, as previous research has suggested that reductions in working capital are one of the main ways of creating operational value in LBOs (Baker and Wruck, 1989; Samdani *et al.*, 2001; Smith, 1990).

6.2 "Low-Hanging Fruit" hypothesis

Table B1 to B5 in Appendix B shows results from the regressions. The "low-hanging fruit" coefficients²⁷ are significant for every specification of the model and for every measure except for sales growth. If we look at EBITDA growth in specification (ii) a negative coefficient of -0,021 implies that a total EBITDA growth of 50% in the first round reduces EBITDA CAGR in the second round by 1,1 percentage units.²⁸ Considering that EBITDA CAGR is an annualized measure this is a substantial effect. Similarly, an improvement in ROIC by 5% in the first period reduces the annualized improvement in ROIC in the second round by 0,47 percentage units.²⁹ Again the economic significance is substantial. With respect to EBITDA margin expansion, we find that an improvement in EBITDA margin in

²⁷ i.e. coefficients of the form $OP_{PBO, not annualized, i}$

²⁸ $(-0.021 * 0.5) * 100 = 1,1$ percentage units

²⁹ $(-0.093 * 0.05) * 100 = 0,47$ percentage units

the first round by 5% reduces the annual EBITDA margin expansion in the second round by 0,21 percentage units.³⁰

The fact that the “low-hanging fruit” proxy is not significant for sales growth but for all other measures suggests that the “low-hanging fruit” hypothesis apply to efficiency improvements but that the effect is less pronounced for growth. This view is consistent with Wang (2012) and Achleitner & Figge’s (2012) predictions, which we have referred to previously as the less stringent view of the “low-hanging fruit” hypothesis. However, our results are contradictory to Jenkinson and Sousa’s (2014) results, which suggest that the “low-hanging fruit” effect applies to sales growth as well as efficiency measures. The difference between our and Jenkinson & Sousa’s results can potentially be explained by the use of different proxies. Jenkinson and Sousa use the duration of the first holding period as a proxy for growth in the first round; implicitly assuming that a longer holding period corresponds to greater growth. However, the duration of holding periods can be adversely affected by market conditions and industry-specific variation, which in turn have an impact on sales growth.

In conclusion we provide evidence for the less stringent view of the “low-hanging fruit” hypothesis and cement the “low-hanging fruit” effects’ importance in explaining why the scope for operational improvements is lower in SBOs.

6.3 “Forced Sell” hypothesis

The fact that the “low-hanging fruit” variable has a significant impact on performance suggests that there is potential for the “forced sell” hypothesis. If a buyer of a “forced sell” can enter a company before the previous owner has realized all the easily available value creation levers there should be greater potential for operational improvements in the second round.

As the “forced sell” hypothesis is an exception to the abovementioned “low-hanging fruit” hypothesis it cannot be evaluated whilst controlling for operational performance in the first round of ownership. Therefore we introduce a new specification, (iii), where the variable capturing the effects of “low-hanging fruit” is excluded. The results show that the “forced sell” dummy has a significant positive impact only on EBITDA growth (Table B1 in Appendix B) . However, the interaction term between forced and large has a significant negative impact on EBITDA growth. In a regression where the interaction term is excluded the “forced sell”

³⁰ $(-0.042 \times 0.05) \times 100 = 0,21$ percentage units

dummy is no longer significant.³¹ The insignificance of the forced-sell dummy is puzzling considering the strong support of the "low-hanging fruit" hypothesis.

One explanation of the inconclusive results with regard to "forced sells" is that a sponsor may sell a buyout company late for other reasons than those outlined by the "forced sell" hypothesis. When examining the data we find that the first round holding period of the buyout companies classified as "forced sells" greatly exceeds that of the general PBO sample (73 months compared to 49 months for non-forced sells). This suggests that the deals captured by the proxy are deals that have been held for a long time. Applying Jenkinson and Sousa's (2014) logic the long holding period suggests that the sponsor have made large improvements to operations. However, despite the long holding period operations do not appear to have been drastically improved; deals classified as "forced sells" have an EBITDA CAGR in the first round below that of the general PBO sample (- 1,1% compared to 7,7% for non-forced sells). In sum, these findings suggest that the "forced sell" sub-sample is affected by the presence of deals that underperform in the first round despite having undergone operational changes. For instance a firm may have improved operations but made a strategic bet that did not pay off, causing the buyout company to underperform its peers. These deals become "forced" either because the sponsors struggle to sell them since they have inherently underperformed, or because they delay a sale because they are hoping that their strategic bet will pay off. The existence of such companies in the "forced sell" sample skew the results, because although they are classified as "forced" they offer the same scope for operational improvements as the average SBO.³²

In conclusion, the "forced sell" proxy is diluted by the existence of poor deals for which the scope for additional operational improvements is no greater than that of the average SBO. Hence, the performance effects of hastily exited buyout companies for which there is scope for additional operational improvements cannot be separated. We conclude that deals can be forced for a number of reasons and that looking at time of exit alone, is not sufficient in singling out the proposed positive effect of a "forced sell".

6.4 "Sponsor Characteristics" hypothesis – Specialized

Results with regard to the effects of specialized sponsors are inconclusive. For all measures except ROIC the coefficients have a negative sign indicating that sponsors have a negative

³¹ This specification of the model is unfortunately not disclosed in Appendix B.

³² The existence of these deals and the fact that they change hands between sponsors is an interesting topic, but outside the scope of this thesis.

impact on performance. However, in no instance are the results statistically significant at conventional levels. The insignificant results are most likely the result of a limited sample size (N=9). Interestingly there is a migration from non-specialized to specialized sponsors in the second round; only three sponsors are specialized in the first round whereas nine are specialized in the second round (Table 5.1). Although this migration is not statistically verifiable it suggests that specialized firms believe they can add additional operational value to companies in a second round of PE ownership.

6.5 “Sponsor Characteristics” hypothesis – Large

Table B1 to B5 in Appendix B show that SBOs owned by large sponsors have a significantly higher level of operating improvements in terms of all measures except sales growth and NWC as a percentage of sales. We find evidence at the 10% significance level that large sponsors’ SBOs outperform the average SBO in terms of EBITDA CAGR by 14 percentage units (specification (ii), Table B1). In terms of annualized EBITDA margin expansion we find that large sponsors significantly outperform non-large by 1 percentage unit, significant at the 5% level (specification (ii), Table B2). Similarly, for ROIC we find that large sponsors outperform non-large by 3 percentage units on an annual basis, significant at the 10% level (specification (ii), Table B4).

The results on EBITDA CAGR are consistent with our hypothesis that large sponsors outperform the average buyout in terms of operational improvements. There are two explanations why large sponsors could achieve greater operational improvements; (i) large sponsors achieve greater improvements regardless of round and (ii) large sponsors outperform in the second round because they are better suited to operate SBOs.

The first explanation would imply that, similar to the general sample, PBOs made by large sponsors achieve greater operational improvements than SBOs made by large sponsors. In other words, SBOs made by large sponsors underperform to the same extent as the average SBO when compared to a PBO made by a large fund. The second explanation, on the other hand, suggests that the outperformance of SBOs owned by large sponsors is due to the fact that large sponsors circumvent the logic of “low-hanging fruit” and are able to make additional efficiency gains.

Data in Table 5.2 suggests that PBOs owned by large sponsors outperform SBOs owned by large sponsors by 2.68%. This supports the first explanation. There are multiple reasons why a large sponsor could outperform regardless of round. One such explanation is that large

sponsors are better at picking the right deals. This could in turn be explained by the fact that many large sponsors have proprietary sourcing to a larger extent than small sponsors, which rely on corporate finance advisers to suggest potential targets (Teten and Farmer, 2010).

Another potential explanation of why large sponsors outperform their smaller peers is that their excess performance is the result of a biased selection process. The question to ask oneself is: Are large funds successful because they are large or has their ability to deliver superior returns from the onset allowed them to become large? If funds become large because they are successful and not the other way around this may explain part of large funds' outperformance. To avoid a systematic bias, our proxy only allows for a sponsor to be considered large once it has raised a large fund. A large fund is typically raised once the sponsor has a proven track record of successful deals and therefore, to ensure that this previous success does not skew our analysis, we only take into consideration deals conducted once the fund has met the large fund criterion of € 2 B.

The second explanation indicates that as firms grow they require different skills from their sponsors (Bergström *et al.*, 2007; Degeorge *et al.*, 2013). For instance a firm may outgrow its sponsors in the first round but for sponsors that are more experienced in running large companies there are still operational improvements to be made. For instance large sponsors may have access to secondary levers such as experience in M&A activities allowing them to achieve synergy effects from bolt-on acquisitions to a greater extent. To test the validity of the second explanation we turn to specification (ii) where an interaction variable between large and the "low-hanging fruit" proxy is included. The interaction variable captures the difference in the "low-hanging fruit" effect between the sub sample of deals performed by large sponsors and the remainder of the original sample. If the transition from a small sponsor to a large sponsor facilitates further operational improvements the sign of the new interaction term will be positive. The resulting interaction term is not statistically significant for any measure, but has the right sign for all measures except ROIC. This suggests that large operational improvements in the first round do not impact SBOs bought by large sponsors to the same extent as the average SBO. This suggests that, *ceteris paribus*, large sponsors are able to make greater efficiency improvements in SBOs than the average sponsor.

If large sponsors are able to defy the "low-hanging fruit" hypothesis, it indicates that for some combinations of sponsors and buyout companies, SBOs make sense in terms of operating performance. If this is the case it is partial evidence of Jensen's initial prediction

that PE is a viable long-term governance form (Jensen, 1989). Jensen's idea is further strengthened by the fact that there appears to be a transition from small domestic funds to large sponsors in the second round. A similar movement has been identified by Bonini (2013), however it was not statistically verified. Further support is given by the fact that large sponsors own a majority of the tertiary transactions in our sample.

The explanations provided above are not mutually exclusive. The fact that there is evidence of both explanations suggests that the outperformance of SBOs owned by large sponsors is explained by greater efficiency improvements regardless of round as well as an ability to use secondary levers to limit the negative impact by high levels of operating improvements in the first round.

The fact that large sponsors show improvements in EBITDA margins rather than sales growth is puzzling. Cressy *et al.* (2007) have suggested that sales growth is the principal way in which large sponsors add value as their global reach helps facilitate global expansion for the buyout company. Furthermore, our results on the effects of “low-hanging fruit” suggest that sales growth is the area where the potential for improvements in SBOs is the largest. Against this background we identify three explanations as of why our results contradict the notion that large sponsors primarily provide an increased scope for sales growth and do not improve margins; (i) SBOs in our sample have higher initial sales than the PBOs (as a consequence of the construction of our data set) and although their percentage growth in sales does not exceed that of PBOs the growth in absolute terms may be higher³³, (ii) as buyout companies grow big many pursue “buy-and-build” strategies - with the help of bolt on acquisitions – which improves margins as synergies are realized and competitors disappear, (iii) as buyout companies reach a critical size there might be increasing economies of scale in many types of businesses, expressing themselves as improvements in margins.

In conclusion, our results on large sponsors are contradictory. Consistent with our hypothesis large sponsors are able to add more value to an SBO than the average sponsor. However, contrary to previous research we find that large sponsors add value by improving EBITDA margins rather than growing sales.

³³ This explanation applies even if we look at growth in excess of market growth. The reason why other researchers may not be affected by this effect is that they match their SBOs to PBOs based on size as they do not use a panel data set.

Table 6.2 – Summary of results and hypotheses

Hypotheses	Support
Hypothesis 1: SBOs achieve lower excess operating performance than PBOs	Yes
<i>SBOs achieve lower EBITDA CAGR than PBOs</i>	Yes
<i>SBOs achieve lower EBITDA Margin Expansion than PBOs</i>	Yes
<i>SBOs achieve lower Sales CAGR than PBOs</i>	Yes
<i>SBOs achieve lower ROIC expansion than PBOs</i>	Yes
<i>SBOs achieve lower reduction in NWC as % of Sales than PBOs</i>	No
Hypothesis 2: Operational improvements in the first round adversely affect the level of excess operational improvements achieved in the second round	Yes
<i>Positive EBITDA CAGR in PBOs has negative effect on SBO EBITDA CAGR</i>	Yes
<i>EBITDA margin expansion in PBOs has negative effect on SBO annualized EBITDA margin expansion</i>	Yes
<i>Sales growth in PBOs has no effect on SBO sales CAGR</i>	Yes
<i>Positive ROIC expansion in PBOs has negative effect on SBO ROIC expansion</i>	Yes
<i>Positive reductions in NWC % of Sales in PBOs has negative effect on NWC % of Sales in SBOs</i>	Yes
Hypothesis 3: SBOs resulting from “forced sells” have higher excess operational improvements compared to non-forced sells	No
<i>SBOs resulting from forced sells have higher EBITDA CAGR than non-forced sells</i>	No
<i>SBOs resulting from forced sells have larger annualized EBITDA margin expansion than non-forced sells</i>	No
<i>SBOs resulting from forced sells have similar Sales CAGR as non-forced sells</i>	No
<i>SBOs resulting from forced sells have larger annualized ROIC expansion than non-forced sells</i>	No
<i>SBOs resulting from forced sells have larger reductions in NWC % of sales than non-forced sells</i>	No
Hypothesis 4: SBOs owned by specialized/large sponsors have higher excess operational improvements compared to non-large/non-specialized	Yes/No
<i>SBOs owned by large/specialized sponsors have higher EBITDA CAGR than those that are not</i>	Yes/No
<i>SBOs owned by large/specialized sponsors have higher annualized EBITDA margin expansion than those that are not</i>	Yes/No
<i>SBOs owned by large/specialized sponsors have higher SalesCAGR than those that are not</i>	Yes/No
<i>SBOs owned by large/specialized sponsors have higher annualized ROIC expansion than those that are not</i>	Yes/No
<i>SBOs owned by large/specialized sponsors have larger reductions in NWC % of Sales than those that are not</i>	Yes/No

The * indicates that EBITDA CAGR is significantly positive for forced sells before removing the interaction dummy between forced and large.

7. Conclusion

This paper has sought to fill the gap in previous literature on the question of what determines SBO operational performance. In doing so the operational performance of SBOs was compared to that of PBOs. We conclude that the performance of SBOs is significantly lower than that of PBOs. This underperformance is largely explained by the absence of easily realizable operational improvements in the second round.

Consistent with our first hypothesis, we find evidence that PBOs outperform SBOs in terms of operational performance. When we examine the constituents of operational performance we find that improvements in margins and profitability measures decline in SBOs whereas

there is no significant difference in sales growth between SBOs and PBOs. We conclude that the scope for efficiency improvements is limited in SBOs while opportunities for continued growth may remain. Contrary to previous research, we find no evidence of any significant changes in NWC as a percentage of sales between the first and the second round.

With regard to the second hypothesis we provide evidence in favor of the less stringent view of the “low-hanging fruit” hypothesis. In accordance with the less stringent view all coefficient, except the coefficient for sales growth, have a statistically significant negative impact on operational performance in the second round. We also establish that “low-hanging fruit” has a substantial economic impact and thereby cement its importance in determining the scope for operational improvements in SBOs.

Contrary to what the “forced sell” hypothesis suggests, we find no significant evidence that buyout companies purchased through “forced sells” outperform in terms of operational improvements. The insignificant results are explained by the existence of poorly performing deals for which the scope for additional operational improvements in the second round is limited. The positive performance effects of hastily exited buyout companies for which there is scope for additional operational improvements cannot be separated. We conclude that deals can be forced for a number of reasons and that looking at time of exit alone is not sufficient in singling out the proposed positive effect of a “forced sell”.

Consistent with the “sponsor characteristics” hypothesis we find that SBOs owned by large sponsors outperform the average SBO. We provide two reasons why SBOs owned by large sponsors outperform in terms of operational performance; (i) large sponsors achieve greater efficiency improvements regardless of round and, (ii) large sponsors can use secondary levers to limit the impact of the negative “low-hanging fruit” effect. The two explanations are not mutually exclusive and most likely both explanations have an impact on SBO performance. We also find that, contrary to previous research, large sponsors create value by improving EBITDA margins rather than growing sales.

Results with regard to the effects of specialized sponsors are inconclusive. For a majority of measures the coefficients are negative indicating that specialized sponsors have a negative impact on the performance of buyout companies. However, in no instance are the results statistically significant.

In sum we paint a bleak picture of SBO but there are also strokes of light; our results show evidence that large sponsors can provide opportunities for continued operational improvements in the second round. However, the understanding of the mechanisms through which large sponsors add value in the second round are limited. Against this background, qualitative studies of the *modus operandi* of larger sponsors, especially with regard to secondary value creation levers, is an interesting topic for future research. Moreover, to further investigate the determinants of SBO performance we recommend future research on other geographical regions. The Nordic PE market is mature which may reduce the generalizability of our results and therefore evidence from other markets could provide interesting insights. We want to encourage future research because additional insights on the determinants of SBO performance will prove valuable to limited and general partners alike.

“Imagine the buyout company as an apple tree on a field. A little boy is the lucky owner and picks as many apples as he can possibly reach. A couple of high-hanging apples drop down every day, yet he knows that it is only a matter of time before they become overripe and thus decides that he wants to sell the apple tree to someone who can use it better and can share some apples with him. There are three people interested in the apple tree, all preparing their claims. The first person in line is a tall man and says “I see that you have reaped all the low-hanging fruit. But I’m tall and can reach the high-hanging fruit and will share some apples with you”. The second person is an athletic boy and says “There does not seem to be any low-hanging fruit left, but I can climb up the tree and will share some apples with you”. The third person is much like the apple tree owner and says “I don’t really have a plan on how to reach the high hanging fruit, but some of them could fall down and in that case I can share some apples with you”. The apple tree owner thinks long and hard and says “If you are just waiting for the fruit to come down, I could do it myself”. He then turns to the second person and says “It sounds like a good idea, but I have no evidence of you being able to climb the tree and pick the high-hanging fruit”. Last, he turns to the first person “I see that you are tall and I believe that you will be able to reach the high-hanging fruit, therefore the tree is yours”.

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Appendices

Appendix A – The Model

Model Specifications

Below follow the model specifications for all models used in this thesis. The models outlined below are general cases and depending on which metric is used as the dependent variable, variables denoted OP assume the values of the relevant metric.

When running regressions on NWC as a percentage of sales the model specifications differ somewhat from what is outlined below. This difference stem from the fact that values used for NWC have not been annualized. Consequently, $OP_{SBO,annualized,i}$ is replaced by $NWC_{SBO,not\ annualized,i}$. Also, since we do not use annualized figures for the dependent variable, controlling for the duration of the holding period in the second round is not necessary. Therefore the $HoldingP_{SBO,i}$ variable is excluded.

Specification (i)

$$OP_{SBO,annualized,i} = \alpha + \beta_1 OP_{PBO,not\ annualized,i} + \delta_2 Forced_i + \delta_3 Forced_i * Large_i + \delta_4 Large_i + \delta_5 Specialized_i + \delta_6 Large_i * Specialized_i + \delta_7 Realized_i + \delta_8 HoldingP_{SBO,i} + \varepsilon_i$$

Specification (i)

$$OP_{SBO,annualized,i} = \alpha + \beta_1 OP_{PBO,not\ annualized,i} + \delta_2 OP_{PBO,not\ annualized,i} * Large_i + \delta_3 Forced_i + \delta_4 Forced_i * Large_i + \delta_5 Large_i + \delta_6 Specialized_i + \delta_7 Large_i * Specialized_i + \delta_8 Realized_i + \delta_9 HoldingP_{SBO,i} + \varepsilon_i$$

Specification (iii)

$$OP_{SBO,annualized,i} = \alpha + \delta_4 Forced_i + \delta_5 Forced_i * Large_i + \delta_6 Large_i + \delta_7 Specialized_i + \delta_8 Large_i * Specialized_i + \delta_9 Realized_i + \delta_{10} HoldingP_{SBO,i} + \varepsilon_i$$

Note that the interpretation of $Forced_i$ differs between specification (i) – (ii) and (iii). In (iii) $Forced_i$ captures the impact of a forced sell. In specification (i) - (ii) the $Forced_i$ variable captures the effects of a ”forced sell” after controlling for the ”low-hanging fruit” hypothesis.

Table A1 – Variables for Regression

Variable	Type	Dummy Variable	Explanation
$EOP_{SBO, \text{ annualized}, i}$	Dependent Variable	No	Annualized excess operating performance for the SBO
$EOP_{PBO, \text{ not annualized}, i}$	Explanatory Variable	No	Excess operating performance for the PBO
$EOP_{PBO, \text{ not annualized}, i} * Large_i$	Explanatory Variable	No	Interaction term between excess operating performance for PBOs and $Large_i$
$Forced_i$	Explanatory Variable	Yes	Captures the effect of a forced sell on the dependent variable. The interpretation of this differs depending on whether $EOP_{PBO, \text{ not annualized}, i}$ is included or not
$Forced_i * Large_i$	Explanatory Variable	Yes	Interaction term capturing the incremental effect of $Forced_i$ on companies owned by a large sponsor
$Large_i$	Explanatory Variable	Yes	Captures the effect on the dependent variable of having a large sponsor in the second round
$Specialized_i$	Explanatory Variable	Yes	Captures the effect of a specialized sponsor on the dependent variable
$Large_i * Specialized_i$	Explanatory Variable	Yes	Interaction term capturing the incremental effect of a sponsor being both large and specialized
$Realized_i$	Control Variable	Yes	The effect on the dependent variable if the SBO has been realized
$HoldingP_{SBO_i}$	Control Variable	No	Control variable capturing the effect on the dependent variable of the holding period of the second round increasing by one month

Overview of variables used in regression

Appendix B – Regression Results

Table B1 – Dependent Variable: EBITDA Compounded Annual Growth Rate

Variables	(i) EBITDA G SBO, annualized, i	(ii) EBITDA G SBO, annualized, i	(iii) EBITDA G SBO, annualized, i
$EBITDA_{G_{PBO, \text{ not annualized}, i}}$	-0,02000* (0,01134)	-0,02086* (0,01138)	- -
$EBITDA_{G_{PBO, \text{ not annualized}, i}} * Large_i$	- -	0,0053642 (0,03585)	- -
$Forced_i$	0,1129648 (0,07064)	0,1124937 (0,07116)	0,12040* (0,07038)
$Forced_i * Large_i$	-0,24443** (0,11311)	-0,24262** (0,11613)	-0,24868** (0,11425)
$Large_i$	0,13847* (0,07271)	0,13556* (-0,07688)	0,15041** (0,07336)
$Specialized_i$	-0,0766358 (0,13079)	-0,0768831 (0,13165)	-0,0627704 (0,13509)
$Large_i * Specialized_i$	0,1755017 (0,15934)	0,1763481 (0,16249)	0,1569039 (0,16724)
$Realized_i$	0,0761448 (0,05935)	0,075143 (0,05923)	0,0821413 (0,06082)
$HoldingP_{SBO_i}$	-0,0013963 (0,0010)	-0,0014277 (0,00097)	-0,0011282 (0,00095)
Constant	0,0169244 (0,07822)	0,0199801 (0,07651)	-0,0221832 (0,07067)
Observations	74	74	74
R-squared	0,2107	0,2110	0,1802
Robust standard errors in parentheses *** p<0.025, ** p<0.05, * p<0.1			

This table represents the regression with annualized EBITDA Margin Expansion in the secondary buyout as the dependent variable. The explanatory and control variables can be found in table A1.

Table B2 – Dependent Variable: Annualized EBITDA Margin Expansion

Variables	(i) EBITDA M SBO, annualized, i	(ii) EBITDA M SBO, annualized, i	(iii) EBITDA M SBO, annualized, i
EBITDA M PBO, not annualized, i	-0,03937* (0,01998)	-0,04297* (0,02243)	- -
EBITDA M PBO, not annualized, i * Large i	- -	0,1023115 (0,09668)	- -
Forced i	0,0046757 (0,00546)	0,0045339 (0,00554)	0,0044506 (0,00530)
Forced i * Large i	0,0112717 (0,00983)	-0,0009352 (0,00987)	-0,0020682 (0,00988)
Large i	0,00902** (0,00434)	0,00791* (0,00461)	0,00899* (0,00428)
Specialized i	-0,0052426 (0,00806)	-0,0055267 (0,00810)	-0,004406 (0,00844)
Large i * Specialized i	0,0112717 (0,00983)	0,0082983 (0,00935)	-0,0003914 (0,01153)
Realized i	0,0036919 (0,00388)	0,0039004 (0,00397)	0,0040366 (0,00395)
Holding P SBO, i	-0,00012* (0,00006)	-0,00012* (0,00515)	-0,0001051 (0,00006)
Constant	0,002949 (0,00521)	0,0031153 (0,00515)	0,0013844 (0,00516)
Observations	83	82	85
R-squared	0,1873	0,1694	0,1360
Robust standard errors in parentheses *** p<0.025, ** p<0.05, * p<0.1			

This table represents the regression with EBITDA CAGR in the secondary buyout as the dependent variable. The explanatory and control variables can be found in table A1, where EOP in the PBO in this case is EBITDA Growth.

Table B3 – Dependent Variable: Sales Compounded Annual Growth Rate

Variables	(i) Sales G SBO, annualized, i	(ii) Sales G SBO, annualized, i	(iii) Sales G SBO, annualized, i
Sales G PBO, not annualized, i	-0,0148871 (0,01730)	-0,0073901 (0,01973)	- -
Sales G PBO, not annualized, i * Large i	- -	0,0584008 (0,43173)	- -
Forced i	-0,0005189 (0,02086)	-0,008677 (0,02114)	0,0025852 (0,02653)
Forced i * Large i	-0,0902084 (0,05890)	-0,0717995 (0,04942)	-0,0967279 (0,06056)
Large i	-0,0109122 (0,02280)	-0,0105012 (0,02339)	-0,0153376 (0,02151)
Large i * Specialized i	0,12871*** (0,0480)	0,13217*** (0,49824)	0,13282*** (0,04703)
Specialized i	-0,0684894 (0,04581)	-0,06799*** (0,04591)	-0,0727057 (0,04567)
Realized i	0,1287063 (0,02450)	-0,399317 (0,02511)	-0,04761** (0,02413)
Holding P SBO, i	0,0001558 (0,00039)	0,001797 (-0,00040)	0,0002592 (0,00036)
Constant	0,0083976 (0,03160)	0,0041138 (0,03281)	0,0068504 (-0,02763)
Observations	78	78	83
R-squared	0,1915	0,2086	0,1824
Robust standard errors in parentheses *** p<0.025, ** p<0.05, * p<0.1			

This table represents the regression with Sales CAGR in the secondary buyout as the dependent variable. The explanatory and control variables can be found in table A1.

Table B4 – Dependent Variable: Annualized Return-on-Invested-Capital Expansion

Variables	(i) ROIC SBO, annualized, i	(ii) ROIC SBO, annualized, i	(iii) ROIC SBO, annualized, i
ROIC PBO, not annualized, i	-0,10393** (0,03463)	-0,08657** (0,04276)	-
ROIC PBO, not annualized, i * Large i	-	-0,0716357 (0,05301)	-
Forced i	0,00100328 (0,03406)	0,0017281 (0,03460)	-0,0001958 (0,03510)
Forced i * Large i	-0,0305048 (0,03959)	-0,0298501 (0,03991)	-0,0383646 (0,04113)
Large i	0,02961* (0,01618)	0,03069* (0,01622)	0,04238** (0,01807)
Specialized i	0,0374177 (0,03663)	0,0357282 (0,03711)	0,0583319 (0,03428)
Large i * Specialized i	-0,0562142 (0,03931)	-0,04486982 (0,01481)	-0,12283** (0,04537)
Realized i	-0,0075298 (0,01462)	-0,0003115 (0,00031)	-0,0057779 (0,01598)
Holding P SBO, i	-0,0003438 (0,00031)	0,0003155 (0,00031)	-0,0004211 (0,00032)
Constant	0,0162986 (0,02463)	0,0126006 (0,02503)	0,0144828 (0,02699)
Observations	75	75	78
R-squared	0,1926	0,1936	0,1503
Robust standard errors in parentheses *** p<0.025, ** p<0.05, * p<0.1			

This table represents the regression with annualized ROIC expansion in the secondary buyout as the dependent variable. The explanatory and control variables can be found in table A1.

Table B5 – Dependent Variable: Reduction in Net Working Capital as percentage of Sales

Variables	(i) NWC SBO, not annualized, i	(ii) NWC SBO, not annualized, i	(iii) NWC SBO, not annualized, i
NWC PBO, not annualized, i	-0,28296*** (0,10840)	-0,40540** (0,13054)	-
NWC PBO, not annualized, i * Large i	-	0,34376* (0,19212)	-
Forced i	-0,0071193 (0,02265)	-0,0133341 (0,02355)	0,0071836 (0,02407)
Forced i * Large i	-0,0370705 (0,02265)	-0,0332046 (0,04231)	-0,0578164 (0,04913)
Large i	0,00531 (0,02366)	0,0096297 (0,02380)	0,0084657 (0,02394)
Specialized i	-0,004479 (0,02274)	-0,0096682 (0,02614)	0,0078701 (0,01587)
Large i * Specialized i	0,0535994 (0,04007)	0,042165 (0,04802)	0,0268591 (0,04216)
Realized i	0,0028584 (0,02087)	0,0067697 (0,02015)	-0,0075807 (0,02093)
Constant	-0,0036025 (0,01104)	-0,0051121 (0,01077)	0,0002657 (0,01212)
Observations	79	79	79
R-squared	0,1306	0,1658	0,0274
Robust standard errors in parentheses *** p<0.025, ** p<0.05, * p<0.1			

This table represents the regression with Net Working Capital as % of Sales in the secondary buyout as the dependent variable. The explanatory and control variables can be found in table A1.

Appendix C – Robustness tests

Difference between SBOs and PBOs

To ensure the validity of our results we perform additional tests using alternative methods. Student's t-test is complemented by the non-parametric Wilcoxon (Mann-Whitney) signed rank test. The Wilcoxon signed rank test is robust to the normality assumption underlying Student's t-test. The signed rank test returned significance levels similar to those generated by Student's t-test.

Table C1 – Results from Wilcoxon signed rank test

Variable	N	Mean	Std. Dev	Significance Level
Δ EBITDA M annualized, i	83	0,64%	2,80%	2%
Δ EBITDA G annualized, i	74	11,18%	48,56%	3%
Δ Revenue G annualized, i	85	2,13%	2,62%	21%
Δ ROIC annualized, i	79	2,14%	9,66%	3%
Δ NWC not annualized, i	56	-0,50%	9,90%	65%

The table presents operational performance measures and significance levels for the test sample. Observations have been dropped and the sample used does not comprise the whole sample. *EBITDA Margin expansion (annualized)* measures the annualized change in margin between entry and exit relative to peers. The interpretation of *ROIC expansion (annualized)* is identical. *EBITDA CAGR* measures the compounded annual growth rate of EBITDA between entry and exit relative to peers. The interpretation of *Sales CAGR* is identical. *Reduction of NWC % of Sales* measures the change in net working capital as a percentage of sales between entry and exit for the whole buyout period.

Linear regression model

To test the sensitivity of the "forced sell" dummy we perform additional tests using alternative proxies. In total three different dummy variables are used to classify a "forced sell". The first dummy classifies all deals exited later than two years prior to the closing of the fund as forced. The second dummy classifies all deals exited the same year as the fund closes as forced. In the final dummy all deals exited later than one year prior to the closing of the fund are classified as forced. The choice of dummy has no material impact on the results.

We also perform additional tests of the "low-hanging fruit" hypothesis. Using the same approach as Sousa (2013) we construct groups for each operational measure based performance in the first round. The first group had a low excess operational performance in the first round and the second group had a high excess operational performance in the first round. According to the "low-hanging fruit" hypothesis the group with a low operational performance in the first round will outperform the other group in the second round. To test this hypothesis we use Welch's t-test to see if the difference between the two groups is statistically different from zero against a one sided alternative. Welch's t-test was used as the two samples are no longer matched and because equal variances for the two samples cannot

be assumed. The results from Welch's t-test are consistent with the results from the regression model.

Table C2 – Welch's Test of differences between first and second group

Difference between First and Second Group	N	Mean	Std.Err.	Significance Level
Δ EBITDA Margin _{low 1st - high 1st}	79	0,71%	0,35%	2%
Δ EBITDA CAGR _{low 1st - high 1st}	73	9,31%	4,77%	3%
Δ Sales CAGR _{low 1st - high 1st}	82	0,92%	2,08%	33%
Δ ROIC _{low 1st - high 1st}	82	3,36%	1,49%	1%
Δ NWC % of Sales _{low 1st - high 1st}	82	3,08%	0,02%	7%

The Δ signifies that the difference in operational performance between the first and second group is measured. The first group has a low level of operational improvements in the first round and the second group has a high level of operational improvements in the second round.

Appendix D – Transaction sample

Table D1 – Buyouts included in our sample

Sample Firm	Country	PBO Entry Year	First Round PE Owner	PBO Exit Year	Second Round PE Owner	Realized	SBO Exit Year
Ahlsell Sverige AB	Sweden	1999	Nordic Capital	2005	Cinven, GS Capital Partners	YES	2012
Aibel AS	Norway	2004	Candover, 3i	2007	Herkules	YES	2012
Aleris Holding AB	Sweden	2005	EQT	2010	Investor	NO	-
Alignment Systems AB	Sweden	2001	3i, Accent	2006	FSN Capital	YES	2012
Alimak Hek Group AB	Sweden	2001	3i, Ratos	2006	Triton	NO	-
Almondy AB	Sweden	2005	Smedvig	2008	Segulah	NO	-
Alo AB	Sweden	2002	3i	2011	Altor	NO	-
Ambea AB	Sweden	2005	3i	2010	Triton	NO	-
Anticimex AB	Sweden	2001	Nordic Capital	2005	Ratos	YES	2012
Aspen AB	Sweden	2007	Valedo	2010	CapMan	NO	-
Atos Medical AB	Sweden	2005	Nordic Capital	2011	EQT	NO	-
Attendo AB	Sweden	2005	Bridgepoint	2006	IK Investment Partners	NO	-
Aura Light International AB	Sweden	2000	Bridgepoint	2006	FSN Capital	NO	-
Aurajoki Oy	Finland	1999	Capman	2005	Taito Capital	NO	-
Balco AB	Sweden	2003	3i	2010	Segulah	NO	-
Bergteamet AB	Sweden	2009	Accent	2011	Polaris	NO	-
Bravida AB	Sweden	1999	Procuritas	2006	Triton	YES	2012
Com Hem AB	Sweden	2005	Carlyle, Providence	2011	BC Partners	NO	-
Com Hem AB	Sweden	2003	EQT	2005	Carlyle, Providence	YES	2011
Constructor Finland Oy	Finland	2004	Profita	2007	Altor	NO	-
Coor Service Management AB	Sweden	2005	3i	2007	Cinven	NO	-
Corbel Oy	Finland	2008	Sentica Partners	2011	Valedo	NO	-
CPSColor Group Oy	Finland	2000	IK Investment Partners	2008	Nordic Capital	NO	-
CTEK Sweden AB	Sweden	2008	FSN Capital	2011	Altor	NO	-
Disab Vacuum Technology AB.	Sweden	1999	Sjatte AP-fonden, Baltic Rim Fund	2007	Active Capital	NO	-
Dometic International AB	Sweden	2001	EQT	2005	BC Partners	YES	2009
Dometic International AB	Sweden	2005	BC Partners	2009	Investcorp	YES	2011
Dometic International AB	Sweden	2009	Investcorp	2011	EQT	NO	-
Elixia Nordic AS	Denmark	2006	Norvestor	2011	Altor	NO	-
Empower Oy	Finland	2003	3i, Profita	2007	AAC	NO	-
Enerpoint Oy	Finland	2003	Profita	2011	AAC	NO	-
Envac Centralsug	Sweden	2001	3i, Ratos	2005	Stena Adactum	NO	-
Esperi Care Oy	Finland	2005	Unicus	2010	CapMan	NO	-
Euroflorist Sverige AB	Finland	2004	Accent	2007	Litorina Kapital	NO	-
Exotic Snacks AB	Sweden	2007	Segulah	2011	Credelity Capital	NO	-
Falck A/S	Denmark	2004	Nordic Capital	2011	Kirkbi, Lundbeckfond Invest	NO	-
Findus AB	Sweden	1999	EQT	2006	CapVest	YES	2012
Firecon Group Oy	Finland	2005	Helmet Business Mentors	2010	Volund	NO	-
Flexlink AB	Sweden	1997	EQT	2005	AAC	YES	2011
Frosunda LSS AB	Sweden	2007	Polaris	2010	HgCapital	NO	-
Get AS	Norway	2005	Candover	2007	GS Capital Partners, Quadrangle	NO	-
Handicare AS	Norway	2003	AAC	2005	Herkules	YES	2010
Handicare AS	Norway	2005	Herkules	2010	Nordic Capital	NO	-
Saunatec	Finland	1999	Sponsor Capital	2006	AAC	NO	-
HusCompagniet A/S	Denmark	2006	Axcel	2011	FSN Capital	YES	2013
Huurre Group OY	Finland	1998	Bridgepoint	2003	Kaupthing hf	NO	-
Ilva A/S	Denmark	2003	Advent	2008	Kaupthing hf	NO	-

Inflight Service Europe AB	Sweden	2005	CapMan	2009	Triton	NO	-
Inmeta Crayon ASA	Norway	2008	CapMan	2011	Norvestor	YES	2013
Inredningsglas Skandinavien AB	Sweden	2007	Accent	2010	CapMan	NO	-
Intelecom Group AS	Norway	2008	Awilhelmsen Capital, Kistefos	2010	Herkules	NO	-
JD Stenqvist AB	Sweden	1999	EQT	2003	Triton	YES	2007
Jernia AS	Norway	2001	NorgesInvestor	2005	Canica	NO	-
Jotul AS	Norway	2004	Accent, Selvaag Invest	2006	Ratos	NO	-
Karelia Yhtymä Oyj	Finland	2000	3i, CapMan	2007	Hartwall Capital	YES	2012
Keycast Oy	Finland	2005	Vaaka Partners	2007	The Riverside Company	NO	-
Komas Oy	Finland	2002	Midinvest Management	2006	CapMan	NO	-
Kongsberg AutomotiveASA	Denmark	1999	IK Investment Partners	2001	FSN Capital	YES	2005
KVD Kvarndammen AB	Sweden	2007	Sjätte AP-fonden	2010	Ratos	NO	-
Lekolar AB	Sweden	2004	Procuritas	2007	3i	NO	-
LGT Logistics	Sweden	2005	Litorina Kapital	2009	Axcel	NO	-
Lumene Oy	Finland	2003	CapMan, Wartsila	2010	Langholm Capital	NO	-
Mainio Vire Oy	Finland	2004	MB Funds	2011	HgCapital	NO	-
Molnlycke Health Care AB	Sweden	1997	Nordic Capital, 3i, Bure Equity	2005	Apax	YES	2007
Molnlycke Health Care AB	Sweden	2005	Apax	2007	Investor, MS Principal Investments	NO	-
Multicom Security AG	Norway	2001	IK Investment Partners	2005	GMT Communications	NO	-
Nille AS	Norway	2006	Herkules	2011	BC Partners	NO	-
NVS Installation AB	Sweden	2002	Segulah	2006	Triton	YES	2008
Paroc Group Oy	Finland	2002	Argan Capital	2006	Triton	NO	-
Paroc Group Oy	Finland	1999	IK Investment Partners	2002	Argan Capital	YES	2006
Pelly Intressenter AB	Sweden	1999	Procuritas	2006	Litorina Kapital	NO	-
Perstorp Group	Sweden	2001	IK Investment Partners	2005	PAI Partners	NO	-
Phadia AB	Sweden	2004	Silverfleet Capital, Triton	2006	Cinven	YES	2011
Plantasjen ASA	Norway	2001	EQT	2006	Apax	NO	-
PlymoVent AB	Sweden	2000	Litorina Kapital, MVI Partners	2006	Rabo Investments	NO	-
Q-MATIC Sweden AB	Sweden	2004	3i, Litorina Kapital	2007	Altor	NO	-
RenoNorden AS	Norway	2008	Norvestor	2011	Accent, CapVest	NO	-
Roxar ASA	Norway	2003	Lisme	2005	FlowInvest ASA	YES	2009
Sanitec Oy	Finland	2001	BC Partners	2005	EQT	NO	-
SDI Media AB	Sweden	2004	Warburg Pincus	2008	Elevation Partners	NO	-
Sefina AB	Sweden	2006	Rutland Partners	2007	Preato Capital	YES	2010
Semantix AB	Sweden	2006	Accent	2009	Litorina Kapital	NO	-
Suomen Asiakastieto Oy	Finland	2006	GMT Communications	2008	Investcorp	NO	-
Nycomed	Norway	1999	Nordic Capital	2002	Credit Suisse FB, Blackstone	YES	2005
Nycomed	Norway	2002	Credit Suisse FB, Blackstone	2005	Nordic Capital	YES	2011
Textilia AB	Sweden	1997	Bure Equity	2008	Litorina Kapital	NO	-
Thule AB	Sweden	1999	EQT	2004	Candover	YES	2007
Thule AB	Sweden	2004	Candover	2007	Nordic Capital	NO	-
Viking SeaTech	Norway	2006	Inflexion	2009	HSBC Private Equity	YES	2013
Visma ASA	Norway	2006	HgCapital	2010	K.K.R	NO	-
Wonderland AS	Denmark	2004	Foinco Invest	2006	Herkules	NO	-
VSM Group AB	Sweden	1997	IK Investment Partners	2005	K.K.R	NO	-

This table represents the buyouts of the data sample of our thesis. Entry- and exit- years reported as in Mergermarket, Zephyr or press releases refers to year of announcement. PE first round owner is the lead- or co-investors of the first buyout transaction while PE second round refers to the lead- or co-investors of the first buyout transaction of the second buyout transaction. If the second PE owner has divested its SBO investment fully, the year the investment was realized is reported in the realized column.

Table D2 – Sample of Large sponsors

Sponsor	Headquarter	Large from Year
3i	UK	2003
Advent	USA	-
Apax	UK	-
BC Partners	UK	-
Blackstone	USA	-
Bridgpoint	UK	2000
Candover	UK	-
Carlyle Group	USA	-
Cinven	UK	-
CVC Capital	UK	-
EQT	Sweden	2004
GS Capital Partners	USA	-
Hellman & Friedman	USA	-
HgCapital	UK	2000
IK Investment Partners	Sweden	2007
Investcorp	Bahrain	-
Investor	Sweden	-
K.K.R	USA	-
Morgan Stanley PIA	USA	-
Nordic Capital	Sweden	2005
Providence	USA	-
Warburg Pincus	USA	-

This table represents the large sponsors that have bought either a PBO or a SBOs included in the sample. *Headquarter* refers to where the sponsor has its headquarters. If a sponsor has not been large for all, *Large from Year* shows from which year that the sponsor fulfilled the criteria to be considered large.

Table D3 – Sample of Specialized sponsors

Sponsor	Headquarter	Sector Specialization	Sector % of Total Deal Value
Argan Capital	UK	Industrial & Services	71%
CapVest	UK	Consumer	87%
GMT Communications	UK	Media & Communications	93%
Langholm	UK	Consumer	54%
Mid-Europa Partners	UK	Telecom	91%
Neqst	Sweden	Technology	100%
Nordic Capital	Sweden	Healthcare	62%
Paine & Partners	USA	Agriculture	55%
Providence	USA	Media & Communications	77%
Quadrangle	USA	Media & Communications	96%
Summit Partners	USA	Technology & Services	83%

This table represents the specialized sponsors that have bought either a PBO or a SBOs included in the sample. *Headquarter* refers to where the sponsor has its headquarter. *Sector specialization* refers to which sector the sponsor has specialization in. *Sector % of Total Deal Value* refers to the degree of specialization by the sponsor, which is calculated by total amount invested in the sector divided by total amount investments in all sectors.