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Operational improvements in secondary buyouts
Explained by changing skillsets of holding PE firms

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Preface and acknowledgements

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Abstract

In this thesis 184 buyouts, of which 77 secondary buyouts and 104 primary buyouts, from the UK that took place between January 2005 and March 2011 were analysed to see whether a change in skillset between the holding private equity firms influences operational performance improvement potential for secondary buyouts when compared to primary buyouts. From this analysis evidence was found for the assumption that SBOs can only perform equally well to primary buyouts when the new holding private equity firm can exploit a skillset the previous owned did not had the ability to. If there is no change in holding PE firms' skillsets most of the value creating potential could already be exploited by the previous owner leaving less gains for the new PE firm and causing underperformance for secondary buyouts when compared to primary buyouts.

Keywords private equity, buyouts, secondary buyouts, skillset, value creation

JEL G11, G14, G34

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Chapter 1. Introduction

Over the last few decades private equity (PE) has drawn more and more attention in research, the press and for investors. This is not surprising knowing that now-a-days PE is one of the most important sources of financing for companies all over the world. Between 1980 and 2004 the total capital committed to PE-funds rose with 12000% from \$5bn to \$300bn (Phalippou & Gottschalg, 2008). This amount kept growing and in 2014 the total capital committed to PE-funds even rose to \$495bn. The total global buyout value by PE-firms in 2014 was \$332bn¹.

The exit, the disinvestment of a company in the portfolio of a PE-firm, is an important process for the PE-firms due to the fact that most PE-funds have limited lifetime and need to turn their investments back into capital to pay off the investors. In 2014 the global aggregate value of PE-exits was \$428bn¹.

A secondary buyout (SBO)² is a leveraged buyout where a PE-firm, who had previously taken control of a target through a buyout, sells the target firm to another PE-firm (Wang, 2012). These secondary buyouts are observed to be an increasingly important exit for PE firms. As shown by Kaplan and Strömberg (2009), secondary buyouts (SBOs) have grown from 2% of the aggregate deal value in the first PE wave (1985 to 1989) to 25% by the second PE wave (2005 to 2007). Also in more recent years SBOs have shown to be increasing in both value and number. In 2014 the number of worldwide SBOs increased by 15%, and by value they increased a solid 18% over the same year³. However, despite of the increasing importance of secondary buyouts, SBOs and their performance compared to primary buyouts are still a controversial phenomenon in the research on private equity (Achleitner & Figge, 2014), what makes it one of the most promising research areas in this field (Cumming *et al.*, 2007; Wright *et al.*, 2009). The controversy in this topic is found in the facts that several researches have pointed out reasons why SBOs might show underperformance compared to primary buyouts (Bonini, 2010; Sousa, 2010; Wang, 2012), while on the other hand it is also argued that SBOs still might offer ample room for operational improvements under certain conditions and do not necessarily underperform compared to primary buyouts (Sousa, 2010; Wang, 2011

A reason that is adduced in literature as a potential explanation for why there might still be significant operating performance improvement potential in an SBO setting, is that that different skillsets among PE firms might allow for different operating performance improvement strategies between primary and secondary buyouts (Sousa, 2010; Wang, 2012; Achleitner &

¹ According to the Preqin 2015 Global Private Equity & Venture Capital Report

² The word 'secondary' might be somewhat deceiving as in current literature it is not very common to differentiate between further levels (tertiary etc.) of buyouts. Buyouts of a higher level are often also labelled 'as secondary buyout'. I will also use this broader definition when referring to secondary buyouts.

³ According to the Bain & Company Global Private Equity Report 2015

Figge, 2014). This would mean that PE firms with different skillset all can add value during different phases in the lifetime of a target company. For example, it might be possible that when a company first was in control of a domestic focussed PE firm and then is taken over by a PE firm with a broad international network, the new owner has the opportunity to still create growth, and thus value, by expanding the target company in geographical markets its previous owner did not had the possibility to. Other differences in skillset between PE firms in buyouts that are proposed in current literature to influence performance of SBOs are functional⁴ and industry experience, size, geographic reach and the PE firm's business network (Achleitner & Figge, 2014). However, extensive research on whether changes in skillset indeed play an important role in the performance of secondary buyouts is still missing in current literature.

In this thesis the performance of SBOs was analysed in a try to shed light on the topic of the performance of secondary buyouts compared to primary buyouts. This was done by, next to analysing the difference in performance itself, looking whether different skills sets among financial sponsors indeed can explain that SBOs still show continued operating performance improvement. For this reason the following research question was formulated for this thesis:

Research question: *"Can differences in skillsets among financial sponsors explain continued operating performance improvement in secondary buyouts?"*

In order to research whether differences in skillsets between financials sponsors can explain the rationale and performance of SBOs, two measurable transitions of characteristics between the primary and secondary holder were identified that could possibly be a source of operational performance improvements: (i) a change in geographical reach of the financial sponsor and (ii) a change in the performance and experience of the financial sponsor. There is looked at performance and experience combined as they are often strongly interrelated. As indicators of performance and experience of the buying and selling private equity firms the PE firms' age, fund size and recent fundraising were used.

To analyse the performance of SBOs with respect to changing skillset between the holding PE firms a dataset was used consisting of 184 buyouts, of which 77 secondary buyouts and 104 primary buyouts, that were completed between January 2005 and March 2011 and of which the targets were located in the United Kingdom at time of the buyout. For each of these buyouts there was looked at at the growth in the accounting operating performance measures: (i) total assets, (ii) fixed assets, (iii) sales, (iv) EBIT and (v) EBIT margin between the year prior to the buyout and the third financial year ending after the buyouts.

⁴ Individual private equity firms can have functional expertise in specific strategic areas or explicit focus on exploiting defined growth methods such as buy-and-build strategies.

For the analysis of this dataset a set of multivariate regressions was used with each of the operating performance measures as independent variables. The regressions used to analyse the performance of the secondary buyouts can be divided into three groups. The first set of regressions that is used is based on the total dataset of SBOs and primary buyouts in order to see whether there is a significant difference between SBOs and primary buyouts when looking at the previous mentioned operational performance measures. The second set of regressions is used to solely analyse the data of the SBOs. These regressions were set up to investigate whether SBOs for which there was a significant change in the skillset of the holding PE firms perform better than buyouts that did not experience such a change. The last used set of regressions was constructed to separately see how SBOs that did or did not experience a significant change in the skillsets of the holding PE firms after the buyout perform compared to primary buyouts.

By the means of this analysis evidence was found that, when looking at growth in sales, total assets and fixed assets, secondary buyouts do not perform differently when compared to primary buyouts. When looking at EBIT and EBIT margin growth the SBOs in the used dataset the even seem to outperform primary buyouts. Next to, this evidence was found for that when a buyout target is sold to a larger, older or more internationally focussed private equity firm this could positively influence the growth for several of the previous mentioned operational performance indicators. When comparing secondary buyouts that did or did not experience a change in skillset between the holding PE firms with primary buyouts evidence was found for that a change in skillset between the holding PE firms could explain continued operating performance improvements in secondary buyouts. This because SBOs that have experience such a change do not seem to perform differently when compared to primary buyouts, while SBOs that did not experience such a change seem to underperform when compared to primary buyouts. This was observed for the effect of a change in the holding PE firm's geographical reach, age and fund size on total assets growth, the effect of a change in geographical reach and size on fixed assets growth and the effect of a change in age on sales growth. Next to this, there is even some evidence found that suggests that targets in secondary buyouts from the used dataset which experienced a positive change in skillset between the holding PE firms seem to outperform primary buyouts when looking at EBIT and EBIT margin growth for the SBOs in the used dataset. However, further research is needed before it is possible to draw conclusions about whether the higher EBIT and EBIT margin growth is an direct effect of the buyout being an SBO, the change in skillset between the holding PE firms or other factors.

The main implication of the results found in this paper is that there is evidence for the assumption that SBOs can only perform equally well to primary buyouts when the new holding private equity firm can exploit a skillset the previous owned did not had the ability to. If there is

no change in holding PE firms' skillsets most of the value creating potential could already be exploited by the previous owner, leaving less gains for the new PE firm and causing underperformance when compared to primary buyouts.

However, this conclusion cannot yet be drawn solely on the findings from this thesis and more future research is needed to see whether a change in skillset between the holding PE firms could indeed help explaining why there still might be room for operational performance improvements in secondary buyouts. The main limitation of this thesis is that when comparing primary and secondary buyouts actually a joint hypothesis is tested. The primary and secondary buyouts in this sample also seem to differ when looking at firm characteristics. Therefore it cannot be fully concluded that the difference in operational performance improvements is fully due to the way targets are changed by SBOs, as changes in operational performance might also be caused by that PE firms participating in SBOs select different targets.

Chapter 2. Secondary buyouts and their performance

2.1 Value creation for buyouts in general

In order to look at the performance of secondary buyouts, one first has to understand how buyouts are assumed to create value in general. According to current literature, PE firms typically are expected to create value for their portfolio firms in various ways. The origination of the value created in buyouts is can be roughly divided into two main sources: Improving operating efficiency by disciplinary and motivational incentives, and the use of the private equity fund's internal expertise to improve capital terms, deal structure and strategy. In the following two paragraphs value created gained through these two sources will be further discussed.

Before looking at the findings of previous researchers, one thing must be noted. The composition of the different types of buyouts has significantly changed over the last two decades, and the majority of buyouts do not consists of public corporations anymore. Between 1980 and 2007, the total number of public-to-private transactions only accounted for 6.7% of all LBOs (Strömberg, 2008). As a result, findings from the classical studies on LBOs cannot always be applied to the current state of buyouts anymore as they often are based on data from public-to-private transactions (Wang, 2012). So do for example Guo et al. (2009) show that the importance of gains in operating performance has significantly decreased in more recent deals. Nonetheless, the mentioned research in the next two paragraphs is still relevant in understanding the different ways buyouts can create value.

2.1.1 Disciplinary and motivational incentives

A vast amount of researchers have found a significant improvement of the operational performance, mostly cost reduction, of firms after a buyout which is often accompanied by substantial organisational changes within the target firm (Jensen, 1989; Kaplan, 1989; Muscarella and Vetsuypens, 1990; Holthausen and Larcker, 1996; Weir and laing, 1998). Current literature provides two different views on these improvements. Firstly, several researches who looked at operational performance improvements in buyouts suggest that these gains not necessarily are caused by the buyouts themselves, but the performance improvements would also have occurred when the buyout did not take place. According to this view the buyout premiums are solely a result of information asymmetry about the future performance of the target firm (Baker and Wruck, 1989). Contrary to this view, other researchers such as Jensen (1989) and Palepu (1990) suggest that these operational improvements are the most important source of value creation in buyouts. They recognize these changes directly as an effect of the buyouts due to an elevated incentive for management to generate higher cash flow. These disciplinary and motivational incentives originate from changes in the organizational, corporate governance, leverage and ownership structure after the buyout and create value through a reduction of agency costs (Jensen, 1989). Currently, this last view is the most accepted one in the literature (Loos, 2006).

After a buyout the holding PE firm normally conducts changes in the ownership and corporate governance structure to provide incentives for management of the portfolio company to reduce agency costs by improved alignment of interests between the management and shareholders (PE firm) of the company (Jensen, 1989; Lichtenberg and Siegel, 1990). So do, on average, management stakes in the holding companies after a buyout significantly increase, which is suggested to directly decrease inefficiency by giving management a greater stake in any of their value-influencing actions and thus will lead to better operating and investment decisions (Palepu, 1990; Muscarella and Vetsuypens, 1990; Easterwood and Seth, 1993).

Also do private equity firms often radically transform and improve the previous corporate government structures compared to before the buyout (Thompson and Wright 1992). This, in combination with the increase in management owned equity and greater concentration of equity in the hand of active investors can positively motivate management. This positive motivation comes from reintroducing an entrepreneurial drive in the firm as a result of a more direct and open interaction between shareholders and management, which incentivises better monitoring and is less constrained with corporate bureaucracy and centralism (Craswell, Taylor and Saywell, 1997; Butler, 2001; Wright, 2001). Researchers who investigated this effect where highly motivated management is more willing to take profound decisions, including unpopular

and burdensome ones as firing employees or selling business units, have named this phenomenon “LBO fever” or “Buyout adrenaline” (Beaver, 2001; Samdani, Butler et al., 2001).

Besides improved motivation of management, changes in financing and governance structures also discipline management in their decisions. This too increases operating performance and thus creates value created in buyouts. The disciplinary effect originates from to the increase in management owned equity, as management finds itself with a significant un-diversifiable equity investment with their job security tied to the same company and an increase in financial leverage (Wright, Thompson et al., 1992). Also do debt providers to the company have strong incentives to monitor performance and management’s decisions to make sure they are able to meet the required debt repayments and interest costs. The financial covenant and debt requirements they set out for the company serve as a clear benchmark, constrain management actions and reduce agency costs by leading to a reduction of available free cash flow (Jensen, 1989; Baker and Montgomery 1994). Hence, debt can guide management to act in the best interest of the shareholders in a unique way that cannot be duplicated with optimally designed compensation packages (Opler and Titman, 1993). Another positive effect that arises from higher leverage and management participation is mentioned by Grossman and Hart (1982), who claim that the risk of default is considerably reduced by increased bankruptcy costs for managers. These include loss in value of their personal investments, but also other non-financial aspects such as loss of power, control and reputation. This can create an important incentive driver for management to work harder, dispose of prior privileges and make better decisions.

Next to improving margins by reducing costs, additional revenue growth is an important factor in operational superiority caused by buyouts according to the existing literature. This elevated revenue growth is suggested to be, as the improvements in operational performance, also partly originated from an improved performance of the management of the firm (Butler, 2001). So do PE firms, as noted, often incentivize management by an increased management ownership and higher leverage and do they set aggressive targets which cause a reduction of some of the perceived managerial inefficiencies (Anders, 1992). All these factors force management to work harder after the buyout or they risk losing their jobs (Baker and Wruck, 1989).

2.1.2 Private equity firm’s expertise

Besides the creation of value by motivational and disciplinary incentives induced by a buyout, PE firms can use a set of other specific skills and knowledge to create value for buyout firms by improving operating performance or deal pricing. This value creation can play a role during the investment period in the target firm, by for example rolling out buy-and-build strategies, but also during the acquisition and negotiation process. As shown by Haspeslagh and Jemison

(1991), the ability of the PE firm to capture value through acquisitions largely rests on the skills and knowledge of a small but highly experienced group of legal and financial experts and operating managers with well-developed expertise in analysis and deal-making. Due to this expertise are PE firms able to capture a lot of value by exploiting information asymmetries, capital market inefficiencies and their superior negotiation skills.

Superior negotiation skills are for example shown by the fact that during the 1990s private equity firms typically have paid lower prices for the acquisition of target companies than strategic buyers (Butler, 2001). PE firms are though negotiators and are often even seen to reduce previous offered prices during the due diligence process (Butler, 2001). Due to their capability of the relative cheaper acquisition of companies, PE firms can use multiple arbitrage to create value in a buyout process even before any concrete operational improvements have been executed. The superior negotiations skills of PE firms can be possible explained by the usually excellent network in the financial community and by the “acquisition learning curve” as PE firms tend to do significantly more acquisitions than strategic players (Anders, 1992).

Another source of value creation for PE funds based on their expertise is the possibility to use relatively cheaper debt in their target firms. Private equity firms can negotiate this relatively cheaper debt for their portfolio firms by using their, in general, extensive knowledge of capital market mechanisms during the acquisitions process which is gained by excellent contacts in the financial community and their reputation as high profile clients in the debt market. Also after the acquisition process the private equity firm can bring value by continuing to do negotiations for the portfolio company for the raising of capital with terms that would not have been possible on a stand-alone basis (Anders, 1992; Cotter and Peck, 2001).

The holding PE firm’s expertise and knowledge can also directly play a role in the creation of additional revenue growth. Private equity firms often play a significant role in advising their portfolio companies on strategic matters. Because of this, buyouts often are seen to be followed by improved business strategies originated from combining operational improvements and product cost awareness with higher product value and innovation (Gilbert and Strebels, 1987). Next to this strategic enhancement, the knowledge of the private equity firms can also increase revenue growth by exploiting their experience in add-on acquisitions. As shown in research, private equity firms can use their industry know-how to engage in buy-and-build strategies, which may lead to a consolidation in that market segment (Baker and Montgomery, 1994; Wright, 2001). Revenue growth can be realised in this way by the creation of synergies which could not have been generated on a standalone basis (Loos, 2006).

2.2 Value creation in secondary buyouts

The economic rationale of SBOs could be debated. Historically SBOs have been perceived as an exit method only used for distressed transactions as successful buyouts are expected to either exit through an IPO or a sale to a strategic player. Why PE firms participate in SBOs is a widely discussed topic and researchers are sceptical about how SBOs can create value for three reasons.

Firstly, assuming that the first PE investor in the company has effectively restructured the company and reduced agency costs by active monitoring, it is ambiguous how a secondary investor could use these same methods to improve performance further. Thus, providing that the primary buyout was a success, a secondary buyout should only be able to add minimal value to the target firm as the residual growth should be priced into the transaction. For this reason one would expect that PE investors would only engage in secondary buyouts when the previous investor did not fully utilise the value creating opportunities within the target (Bonini, 2015).

Secondly, in his research on the potential drivers of secondary buyouts, Wang (2012) shows that the condition of capital markets has a significant impact on secondary-buyout activities. PE firms seem to be more likely to exit through secondary buyouts when the equity market is 'cold' and when the debt market condition is favourable. An increase in SBOs in a 'cold' equity market implies that a SBO serves as an alternative exit when other exit routes, such as an IPO, are not as attractive. The influence of the debt market conditions could be explained by the possibility to create value for the private equity firm by adding more leverage to the target company after the takeover (Wang, 2012). With higher risk due to this increase in leverage, it is expected that the firm will show lower operating performance potential (Freelink and Volosovych, 2012).

At last, secondary buyouts seem to be priced at a higher premium than first time buyouts. On average, secondary deals are associated with more than 16% higher enterprise multiples. This premium cannot be explained by either the target company's characteristics, such as size or the acquirers' abilities to borrow, thus indicates that SBOs seem to be overpriced (Wang, 2012). Achleitner and Figge (2012) explain this by the fact that the acquiring PE firm purchases the firm from a seller with similar market timing and negotiations skills.

Despite scepticism about value creation in SBOs a significant increase in the number and total value of secondary buyouts has been observed over the last years. This observed growth in secondary buyouts is inconsistent with the expectation that there cannot be any additional value creation for SBOs. Based on this controversy several researchers have analysed the performance of secondary buyouts to see whether SBOs indeed seem to underperform compared to primary buyouts and try to give an explanation for the observed surge in SBOs. However, evidence gained by this research remains mixed. Some researchers claim that SBOs have limited

association with operational improvements and that they are mainly motivated by temporary market conditions, collusion and investor specific characteristics (Bonini, 2015). In previous research, Bonini (2010) found that the operating performance of companies is not meaningfully improved in an SBO when compared to industry benchmarks, while there is a significant improvement during the first buyout. Contrary to this view, several other researchers, such as Wang (2012) and Achleitner & Figge (2014) have not found SBOs to significantly underperform when compared to primary buyouts and thus state that there still is ample room for private equity firms to generate operating performance improvements in a secondary buyout.

2.2.1 Possible factors explaining value creation in SBOs

As discussed, researchers are sceptical about whether there still is room for value creation in secondary buyouts and how value could be created for the holding PE firms. Despite of the growing importance of SBOs, not much research has yet been conducted on this field and just a few researchers have looked into the performance of SBOs.

Volosovych and Fremlink (2012) looked at whether UK SBOs, on average, showed improvements in operating performance after the buyout between 1999 and 2008. They did this by looking at the change between the last full pre-buyout year and the year prior to the exit for four indicators of operating performance that represent profitability of sales and return on assets over the life of the buyout. They found that, in general, improvements in operational performance in secondary buyouts did not seem to be different from zero, implying that value creation in SBOs is not primarily driving by improvements in operating performance. This is in line with the findings of Wang (2012), who also found mixed results on increasing operating performance in SBOs. In her paper she looked at operating performance gains in the year prior to the buyout and the following three years for UK SBOs between 1997 and 2008.

As on average SBOs do not seem to show increases in operational improvements, one might wonder why PE firms engage in secondary buyouts and if there are any factors influencing the success of SBOs. There is no extensive concrete research on this field so far, but researchers have put two factors forward that could influence SBO performance and shed light on why PE firms buy firms from other PE firms. The first explanation is that the first holder of the portfolio firm could not extract all the value yet and was forced to sell its investment prematurely because of structural and opportunistic reasons. This comes from the fact that the lifetime of a private equity fund typically is restricted to 10 to 12 years (Kaplan and Schoar, 2005). This might force the holding firm to sell existing investments to other PE firms, despite the significant residual operational performance enhancement potential, in order to provide their limited partners with a stable cash flow (Stromberg, 2007) and to present a track record for the raising of new funds

(Sousa, 2010). For this reason PE firms might be on the look for opportunities to buy portfolio firms from other PE firms which have not fully exploited all operational performance improvement potential in the first buyout. This however would imply that the first deal was not completely successful and cannot explain why a first time buyout that has been successful would still give value creating opportunities for a second investor.

The second reason that is adduced in literature as a potential explanation why there might still be significant operating performance improvement potential in an SBO setting, is that that different skillsets among PE firms might allow for different operating performance improvement strategies (Sousa, 2010; Wang, 2012; Achleitner & Figge, 2014). These strategies can consist of different actions such as international expansion, industry consolidation, changes in strategy or the introduction of a new management team. The PE firm can play a substantial role in this as, for example, it might be possible that when a company first was in control of a domestic focussed PE firm and then is taken over by a PE firm with a broad international network, the new owner has the opportunity to still create growth, and thus value, by expanding the target company in geographical markets its previous owner did not had the possibility to. This would mean that PE firms with different skillset all can add value during different phases in the lifetime of a target company. Other examples of differences in skill between PE firms that proposedly could influence performance of SBOs are functional⁵ and industry experience, size, geographic reach and their business network (Achleitner & Figge, 2014).

Degeorge, Martin and Phalippou (2016) were the first to test whether complementary skills indicate a potential value creation possibility for SBOs. They did this by focussing on different educational (MBA or non-MBA) and career (ex-banker or ex-consultant) background for the managers of the private equity funds in their sample. Next to that, they looked at the PE funds themselves and differentiated between “margin growers” and “sales growers”, based on historical performance of these funds and between PE firms with a regional or global focus. They found evidence that complementary skills between PE investors indeed seem to be positively related to the value creation of the SBO. In their paper they measured value creation by looking at the gains on investment for both the seller and the buyer of the target firm in a SBO.

Further concrete evidence and research on the effect PE firms’ skillset on value creation in SBOs is however still lacking in the academic world. This thesis will contribute to the current literature by looking at the influence of differences geographical reach, size and experience of the PE firms on the performance of SBOs. It will differentiate from the paper of Degeorge, Martin and Phalippou (2016) by adding the previous mentioned additional factors that also could

⁵ Individual private equity firms can have functional expertise in specific strategic areas or explicit focus on exploiting defined growth methods such as buy-and-build strategies.

influence performance and by looking at operating performance improvements for SBOs instead of solely looking at investment returns to evaluate the value addition of secondary buyouts.

Chapter 3. The influence of PE characteristics on SBO performance

3.1 Changes in skillset

This thesis analyses the influence of changes in skillset between the primary and secondary holding PE firm on operational improvements in secondary buyouts. There is looked at operational performance as this is, as mentioned, an important source of value creation in buyouts. As discussed in the previous chapter there are several skills from PE firms that current literature suggests to possibly influence the performance of secondary buyouts. In this thesis there is focussed on three factors: (i) Geographical reach, (ii) experience and (iii) recent performance. There is explicitly looked at these factors as they are the most discussed in existing literature and they are relatively easy and accurately measurable. In this chapter the expected effect of these skills on operational performance will be discussed in more detail and the hypotheses, as used in this thesis, will be set.

3.2 Geographical reach

A transition of a holding company from a domestic orientated private equity firm to one with an international focus would allow the new owner of the company to be able to create additional operational performance improvement opportunities by having a broader geographic reach. This effect is excellently illustrated in the Com Hem case study by Strömberg (2013). In this case study he describes the secondary buyout of Com Hem, a Swedish cable television company. Com Hem was sold by the Scandinavia focussed PE firm EQT to the globally focussed PE firms Providence Equity and The Carlyle Group. EQT sold Com Hem because the company has grown too large for them and they did not have the network and experience to roll-out the company internationally. Carlyle and Providence are both international orientated PE firms that have previous experience with multinational television companies and could for this reason still realize potential growth for Com Hem. This is a good example of a buyout where the first holder could not implement the next strategy phase due to limitations in its geographical reach, but where the second holder did have this opportunity and thus operational performance growth still could be realised in an SBO.

Expansion of geographical reach between the holding PE firms is suggested in other research also to influence the success of a secondary buyout. Achleitner and Figge (2014) have put geographical reach forward as one of the differences in skillsets between PE firms that might imply that a second financial sponsor could still find additional operational value creation

potential. Degeorge, Martin and Phalippou (2016) have, as mentioned in the previous chapter, tested this for buyer and holder returns in secondary buyouts and found that a change in the geographical reach indeed seems to be related to investment returns. Other supporting evidence comes from Wright *et al.* (2005) who analyse cross-border deals in the venture capital (VC) market, which is very similar to the PE market (Wright & Robbie, 1998), and state that cross-border investments often are used for foreign market entries.

In line with this research it could be argued that there is indeed more room for operational performance improvements for portfolio companies in which a global orientated PE firm buys the target from a domestic orientated PE firm. For this reason the following hypotheses is drafted:

Hypothesis I: *“In an SBO additional operational performance improvements are realised when a portfolio company of a domestic focussed financial sponsor is sold to a financial sponsor with a more global reach”*

3.3 Experience and performance

Another financial sponsor characteristic that is argued to potentially influence operational performance improvements for SBOs is a change in fund experience and performance between the holding PE firms. If a firm was previously owned by a less experienced or performing financial sponsor and then was sold to a more experienced or better performing one, it can be expected that the new financial sponsor has a better chance of finding additional operational value creation potential, by exploiting their skillset obtained by their experience, to create value in ways which were not within reach of the previous owner of the company (Achleitner & Figge, 2014).

The value creation by the use of their more advanced skillset for more experienced and better performing PE firms can be explained by superior strategic and negotiations skills of PE firms due to the “acquisition learning curve”. Also could more experienced PE firms create additional operational performance improvement by the use of relatively cheaper debt and higher by using their, in general, more extensive knowledge of capital market mechanisms and their reputation as high profile clients in the debt market (Anders, 1992; Cotter and Peck, 2001).

In order to quantify the PE firms’ experience and performance, in line with other research, three different indicators were used. These indicators are: (i) PE firm age at time of the SBO (Kaplan & Schoar, 2005; Meuleman, Wright, Manigart & Lockett, 2009; Achleitner *et al.*, 2011), (ii) PE fund size (Kaplan & Schoar, 2005; Achleitner *et al.*, 2011) and (iii) PE firm’s recent fundraising (Schmidt, Nowak & Knigge, 2004; Achleitner *et al.*, 2011). As research shows, these three factors are shown to be related to the experience and performance of PE firms. Size is assumed to be

related to the experience of a PE firm and more experienced and better performing ones are shown to be able to raise larger amounts of investments for their funds (Kaplan & Schoar, 2005). Due to the previous mentioned reasons, it could be expected that a change in the holding PE firms' experience and performance could affect the performance of SBOs. This assumption will be tested by the following three hypotheses:

Hypothesis IIa: *"In an SBO additional operational performance improvements are realised when a portfolio company of a financial sponsor is sold to an older financial sponsor."*

Hypothesis IIb: *"In an SBO additional operational performance improvements are realised when a portfolio company of a financial sponsor is sold to a financial sponsor with a larger fund size."*

Hypothesis IIc: *"In an SBO additional operational performance improvements are realised when a portfolio company of a financial sponsor is sold to a financial sponsor which recently raised more funds."*

Chapter 4. Methodology and Data

4.1 Methodology

For the analysis of the influence of changes in private firms' skillsets on the performance of secondary buyouts several regressions were created. These regressions include dummies that indicate changes in skillset between the holding private equity firms before and after the buyout. In this subchapter the chosen regression and its variables will be elaborated on.

4.1.1. Measures of operating performance improvements

In order to determine the difference in operating performance improvements for SBOs that experienced a change in skillset of the secondary buyer several operating performance indicators were identified and analysed. The operating performance indicators used in this thesis are in line with the ones as used by both Wang (2012) and Achleitner & Figge (2014), which together roughly overlap the performance indicators as used by Achleitner *et al.* (2011) and Bonini (2014).

The operating performance indicators as used are accounting measures and divided in the drivers in which PE firms are expected to improve performance for their portfolio companies (Kaplan & Strömberg; 2009, Wright *et al.*, 2009), namely increase in size, profitability and operating cash flow. Additional growth in these factors is an indication of that the private equity firm adds value to the firm due to exploiting their skillset and setting disciplinary and

motivational incentives. An overview of the used value measurements in this thesis can be found in Table 1 below.

Table 1 - Different operating performance indicators used for analysing differences in secondary buyouts with and without changing skillset of the holding financial sponsors.

Measure	Category	Indicator
Operating performance	Size	Total assets Fixed assets Sales
	Operating cash flow and profitability	EBIT EBIT/ sales

The operating performance improvements for buyouts in this thesis are measured as the annualised percentage increase for every of these indicators for each buyout in the dataset. This annualised percentage increase is calculated for each of buyouts between the year prior to the buyout and the third financial year ending after the date of the buyout. Buyouts for which there was a negative EBIT in either one of these years were excluded from calculations. Several other researchers that have researched buyouts in a similar way used the increase between the holding date and the exit date (see for example Bonini, 2014 or Achleitner and Figge, 2014). However, as Birkinshaw and Bresman (2000) state in their paper and Loos (2006) in his book, for buyouts most of the operational performance improvements take place in the first three years after the buyout. As the used dataset does not contain the precise exit dates for the buyouts, the increase in the performance indicators between the year prior to the buyout and the third financial year ending after the date of the buyout is expected to be an appropriate measure for the total operational performance improvements during the buyout.

4.1.2. Measures of change in holding PE firm’s skillset

As discussed in the previous chapter, the skillset of the holding private equity firms will be measured on geographical reach and experience, of which the latter will be approached by looking at the size, the age and the recent fundraising of the relevant PE firm. These measures are used to see whether a change in these factors between the original and the new PE firm can help explain operational performance improvements in SBOs. For this reason it had to be determined whether there was a significant change in the holding PE firms’ skillsets for each of the secondary buyouts.

For determining a significant change in geographical reach between the PE firms in an SBO there had to be distinguished between international and domestic focussed PE firms. This qualification has been made based on information about the PE firm’s investment strategy and the portfolio

companies held over the last fifteen years⁶. Domestic focussed PE firms are, based on this information, defined as PE firms which explicitly state in their investment strategy or investment criteria that they solely invest in UK-based companies. For PE firms where this information was not available a PE firm was defined as domestic-orientated when more than 60% of their investments over the last fifteen years have been in companies located inside the UK. International focussed PE firms are defined as firms of which at least 40% of their investments over the last fifteen years has been in companies located outside of the UK. These definitions of international and domestic focus for PE firms are in line with the one used by Degeorge, Martin and Phalippou (2016) on seller and buyer returns. An example of a domestic-focussed PE firm used in the data sample is Lloyds TBS Development Capital and an example of an international-focused PE firm is 3i. For both these PE firm's their geographical orientation could be based on their investment strategy found on their websites.

Based on this investment focus an SBO with significant change in geographical reach of the holding PE firms is defined as a buyout where the target firm was bought by an international focussed PE firm from one with a domestic focus. Hence, only changes from domestic to foreign focussed PE firm, and not the other way around, are looked at in this thesis. This because as it is expected this will positively influence the post-buyout performance of SBO targets. It is ambiguous what the effect will be on the operational performance of a target in an SBO where an international focused PE firm sells a portfolio company to a one with a domestic focus.

For looking at the experience and performance of the PE firms there are, as mentioned, three indicators used. These are the size, age and recent fundraising of the relevant PE firm. The size of the PE firms is measured by the net asset value of the funds, which is the most appropriate and most used measure to indicate experience (Phalippou & Gottschalg, 2008; Achleitner *et al.*, 2011). For this measure a significant change in the PE fund size is defined as when a PE firm sells one of its portfolio companies to a PE firm with an at least 1.5 times higher net asset value. The information on the net asset value of the involved PE firms was found using the FactSet database and information from the PE firms' websites.

The age of a PE firm is measured as the number of years since the establishment of the firm and a significant change is defined as a transaction where the buyer is at least ten years older than the seller. Ten years were chosen as the average PE fund lifetime is ten years and an age difference of at least ten years would indicate a difference in experience of at least one fund generation (Phalippou & Gottschalg, 2008)

⁶ Information about the (historic) portfolio and investment strategy of the PE firms gathered through the Mergermarket and FactSet databases and the PE firms' websites

To differentiate between funds with a high amount of recent funds raised and ones with a low amount of funds raised the PEI300 database from Private Equity International was used. The PEI300 database is also used for the same purpose by several other researchers such as De Simon (2012) and Salehi-Sangari & Hellqvist (2014). This database consists of the three hundred PE firms that have raised the highest amount of funds over the last five years. The used definition of a significant change in the amount of funds raised by the firms is based on whether the buying and selling PE firm are part of one of these three hundred firms. When a PE firm that is not included in the PEI300 database sells a portfolio PE firm to a PE firm that is included in this database the change in the amount of recent fundraising is considered to be relevant. In Table 2 below a summary of the previous mentioned PE skillset measures and the definitions used for the research in this thesis can be found.

Table 2 - Different PE sponsor skillset measurements used for analysing operational performance improvements in secondary buyouts with and without changing skillset of financial sponsor.

Category	Measurements	Definition	Change indicator
Geographical reach	International or domestic focussed portfolio and strategy	Domestic focussed PE firms defined as financial sponsors that have a specific UK focus investment strategy or funds of which more than 60% of the acquisitions over the last 10 years were in the UK. International focussed PE firms defined as firms of which more than 40% of their portfolio companies held in the last 10 years were from countries other than the UK	If domestic focussed PE firm sells company to one with an international one
	Experience	PE firm size	Based on current net asset value of the PE funds
	PE firms age	Number of years since the establishment of the PE firm	If buying PE firm has a net asset value that is at least 1,5 times larger than the selling PE firm
	Recent fundraising	Based on the PEI300 database containing the three hundred largest PE firms based on their fundraising over the last five years	When buying PE firm is at least 10 years older than selling PE firm
			When firm that is not listed in the PEI300 list sells portfolio company to PE firm that is listed

4.1.3. Regressions and variables

In order to test the hypotheses, as stated in chapter three of this thesis, a set of multivariate regressions was used with each of the operational performance indicators chosen as independent variables. The regressions used per performance indicator can be divided into three groups. These three groups of regressions were created to give an as good as possible

answer to the question whether a change in the holding PE skillset influences the performance of an SBO and how this compares to primary buyouts.

The first set of regressions that is used is based on the total dataset of primary and secondary buyouts in order to see whether there is a significant difference between SBOs and primary buyouts when looking at the previous mentioned operational performance indicators. In order to do so, a SBO-indicator dummy was included in these regressions. This dummy-variable is zero for primary buyouts and one for secondary buyouts. With these regressions it could be analysed how the secondary buyouts perform compared to first time buyouts.

The second set of regressions is used to solely analyse the data of the SBOs. These regressions were set up to investigate whether SBOs for which there was a significant change in the skillset of the holding PE firms perform better than firms that did not experience this change. A separate regression was used for each of the previous mentioned operational performance indicators and for each of the skillset measurements, as each of the skillset measurements are strongly correlated. This set of regressions thus consists of a total of twenty five separate regressions⁷. For analysing the influence of a change in skillset on SBO performance dummies were used. These 'change in skillset dummies' are equal to one for SBOs where there was a significant positive change in skillset between the two holding PE firms and zero for SBOs where there was not.

The last used set of regressions was constructed to separately see how SBOs that did or did not experience a significant change in the skillsets of the holding PE firms after the buyout perform compared to primary buyouts. Separate regressions were used for each of the operational performance indicators and for each of the skillset measurements. For these regressions two dummy variables were created. The first dummy is equal to a value of one for SBO's that did experience a significant change in holding PE firms' skillset and zero for the other SBOs and primary buyouts. The second dummy equals one for SBOs that did not experience a significant change in the holding PE firms' skillset and zero for the other SBOs and primary buyouts. In this way it could be compared whether there is a significant difference between how these two groups of SBOs perform when they are compared to primary buyouts.

Furthermore, three additional variables were added to every one of the regressions in the previous three sets of regressions to control for specific effects in each of the different operational performance indicators. The specific effects for which these additional variables control are: (i) general industry growth, (ii) increase in leverage and (iii) size of the target

⁷ A separate regression for each of the operating performance indicators and each of the five PE skill set measurements.

company. This follows the research of Achleitner & Figge (2014) and Wang (2012). These effects need to be controlled for as they are also expected to influence the operating performance.

The first additional variables that were added are the median industry growth levels of the different performance indicators for the same timeframe as the specific buyout. These are added to the regressions as industry-specific effects can be controlled for by adding the industry median figures for all the individual performance indicators (Achleitner & Figge, 2014). To control for size effects a special size indication variable was added which is constructed by multiplying the total assets of the target firm with its revenue one year prior to the buyout. This variable is added to the regressions since the size of a target company can affect operating performance as that smaller companies are more likely to show larger percentage growth in accounting measures than larger ones (Achleitner, Braun, & Engel, 2011). The last additional variable that was added to the regressions is to control for a potential increase (or decrease) in leverage for the target firms. There has to be controlled for this, as researchers have shown (as discussed in chapter two) that PE firms also add value to their investments by increasing leverage, to find the increase that is truly solely due to a increase in skillset of the holding PE firms. The increase in leverage is measured as the percentage increase in the total debt over total assets for a year prior to the buyout to the first financial year ending after the buyout. For collecting the leverage data of the buyout targets a unique method was used. This method is further elaborated on in paragraph 4.1.4.

Next to the three previously mentioned variables, industry and SBO-cycle dummies were included in the regressions to account for industry-specific aspects as well as macroeconomic factors at the time of the deal, following Achleitner & Figge (2014) and Degeorge, Martin & Phalippou (2014). The SBO-cycle dummies were created similar to Strömberg (2007) to control for systematic time patterns in the buyout market. There has been distinguished between the periods 2005–2007 and 2008–2011.

For each of these regressions the variables that measure growth (thus the increase in operational performance indicators, industry benchmarks and increase in leverage) the compounded annualised return was first derived from the dataset. With these annualised returns logarithmic returns were calculated to be used in the regressions mentioned earlier. All the return data was winsorized at the 1% level to cope with potential data errors and outliers. The use of logarithmic returns and winsorizing of the data is in line with the approach of several other research in the field of (secondary) buyout performance, such as Achleitner & Figge (2014), Degeorge, Martin & Phalippou (2014) and Wang (2012).

4.1.4. Holding structure and leverage

In order to determine the level of increase in leverage for the buyouts a unique method was used. This method involved manually collecting information about the holding structures which were set up by the PE firms to acquire the buyout targets. These holding structures could be determined with ownership data from the Orbis database from Bureau van Dijk based on the BvD identification numbers gained from the deal database of Zephyr. For finding the correct holding structure there was looked at the newcos⁸ created to structure the deal by the acquiring private equity firms and potentially previous owners of the buyout target. To do so, there was manually looked at the ultimate shareholders and date of incorporation of all the previous and current owners of the target entities to determine the right newcos which indeed were created for the concerning buyout. As Orbis gathers its data from other databases the database used by Orbis for the holding information was also looked at. The most reliable data seemed to come from Jordans or from the company information (annual reports) itself. By using this method all the entities that were part of the holding structure of the target companies could be mapped.

After having found the complete holding structure that was used to acquire the firm, leverage data for all the relevant entities in the holding structure was gathered from Orbis. Based on this data the levels of leverage throughout all of these holding companies could be combined in order to come up with the right total leverage for the year prior to the buyout and the first financial year ending after the buyout to calculate the appropriate increase in leverage. Data that was collected consisted of, if available for the concerning entities, both consolidated and unconsolidated financials. For the target company itself (the company that actually got acquired) the consolidated accounts were preferred to make sure potential leverage in one of the sub-entities of the target was also accounted for. For the newcos the unconsolidated accounts were preferred as there would otherwise be the risk to double count debt. To come to the appropriate level of debt, the found levels of debt from all the entities were added to each other. If the preferred accounts were not available the others were used and checked against the deal value to see whether these levels of leverage were reasonable against data from other sources. For some of the deals the level of debt appeared to be higher than the total deal value. As this is not feasible in practice the consolidated account that was highest in the ownership chain appeared to be a better proxy for the true level of leverage and therefore the leverage from the consolidated account of this entity alone was used.

As example to demonstrate this method, one of the buyouts holding structure and debt levels, as used in the analysis, can be found worked out in Table 3 on the next page. In this table the

⁸ Term used for entities that are created solely for the purpose of holding portfolio companies of private equity firms.

holding structure used for the secondary buyout of Onex international is set out. In this buyout, Onex International, a manufacturer of hygienic disposables, was sold to Goldman Sachs by Candover Partners in December 2010. When looking at the target debt itself a decline of total debt of around 52% would have been observed. However, when incorporating the whole holding structure of Ontex International it is seen that part of the new debt is located in the newco ONV Topco. When also taking this debt in account we actually see that the level of debt has increased with circa 19%.

Table 3 - Example of method used to gain amount of leverage by looking at debt levels throughout the holding structure that was set up for the buyout. This example concerns the 2010 Ontex International deal. Debt levels are in million euros. The "Include" column indicates whether the debt levels of the corresponding entities were used in the calculation of the total debt. Level is the order of entities in the holding structure were level 0 is the target itself.

Level	Entity name	Type account	Debt 2009	Debt 2010	Include
0	Ontex International	Uncons.	608.4	292.6	1
1	ONV Topco	Cons.	675.7	N.A.	0
1	ONV Topco	Uncons.	0.7	431.0	1
2	Ontex I SARL	Uncons.	N.A.	N.A.	0
Total debt			609.0	723.7	

When looking at the total dataset similar differences in the observed levels of debt and leverage are found. As seen in Table 4 below, the debt gathered by using the method as described gives higher levels of debt than when just looking at the level of debt in the target entity itself. It can also be seen that when just looking at the target entity to determine the level of debt from the buyouts in the sample the increase in leverage and debt between the year prior to the buyout and the first financial year ending after the buyout is smaller than when looking at the debt levels from all of the entities in the holding structure. This suggest that when there was only looked at the target levels of debt the increase in leverage would have been underestimated.

Table 4 – Comparison of debt levels in the buyouts from the sample in the year prior to the buyout and the first financial year after the buyout for the debt in the complete holding structure and the debt solely in the acquired target itself. Debt levels are stated in million euros.

Variable	Debt in complete structure	Debt in target
Total debt		
Year prior to buyout	76.7	68.1
First FYE after buyout	85.7	70.1
Total debt/ Total assets		
Year prior to buyout	0.70	0.62
First FYE after buyout	0.81	0.66

As stated in before, in the regressions there has been looked at the increase in total debt over total assets. The total asset amount used in this calculation is solely the total assets amount as

found for the target firm itself. Thus the level of total assets found for other entities in the holding structure is ignored and was not included in the calculation.

4.2 Data analysis and sources

The regressions as stated in the previous subchapter were estimated by using a dataset that consists of a total of 77 secondary buyouts and 107 primary buyouts performed by 101 different private equity firms. The buyouts took place between January 2005 and March 2011 and the targets were located in the United Kingdom at time of the buyout. In this subchapter a further analysis of the sample will be given. There will also be elaborated on how and from which sources the data was gathered.

4.2.1. Buyouts

As stated, the dataset used in this thesis consists of a total of 184 buyouts, of which 77 secondary buyouts and 107 primary buyouts, which took place between January 2005 and March 2011. The data from these deals was gathered using the Zephyr database from Bureau van Dijk. All the deals that were retrieved from this database were manually checked by using the Mergermarket database to see whether they were in fact buyouts and whether it concerned a primary or secondary buyout as this data often seemed to be missing or incorrect in the Zephyr database. For the used dataset there were only buyouts included (i) with a known deal value of more than 5 million, (ii) where the buying PE firms bought a majority stake, (iii) where the target was located in the United Kingdom, (iv) and of which the vendor was known. Deals where the vendor was a venture capitalist firm were also excluded from the dataset.

When looking at the dates of the buyouts that were included in the dataset it is seen that most of the included buyouts (circa 71%) took place between 2005 and 2007. This peak in buyouts between 2005 and 2007 is consistent with the overall buyout cycle as observed in other research (Strömberg, 2008). When looking at both primary and secondary buyouts separately over time it is seen that the same pattern is observed for both these groups of buyouts. The relative number of SBOs that took place between 2005 and 2007 compared to the rest of the SBOs is even slightly higher (circa 80%). A graphical overview of the number of buyouts and secondary buyouts over the years can be found in figure 1 on the next page.

The buyout targets included in the dataset can be divided in eight separate industry divisions based on their SIC codes (see Table 5, which is located on the next page). The majority of the included buyouts occurred in the Services (65 buyouts), Manufacturing (47) and Finance, Insurance & Real estate (32) industry divisions, which together account for circa 80% of the total buyouts from the dataset. When comparing both SBOs and primary buyouts across industries it is seen that for both type of buyouts the three divisions mentioned before are the

most prevailing. Remarkable is that SBOs tend to occur more often in Manufacturing and Finance, Insurance & Real Estate than primary buyout and less in Construction, Wholesale and Services. Data about the SIC codes from the targets in the sample was gathered using the Orbis database from Bureau van Dijk.

Figure 1 - Number of buyouts and secondary buyouts in the used dataset plotted over time.

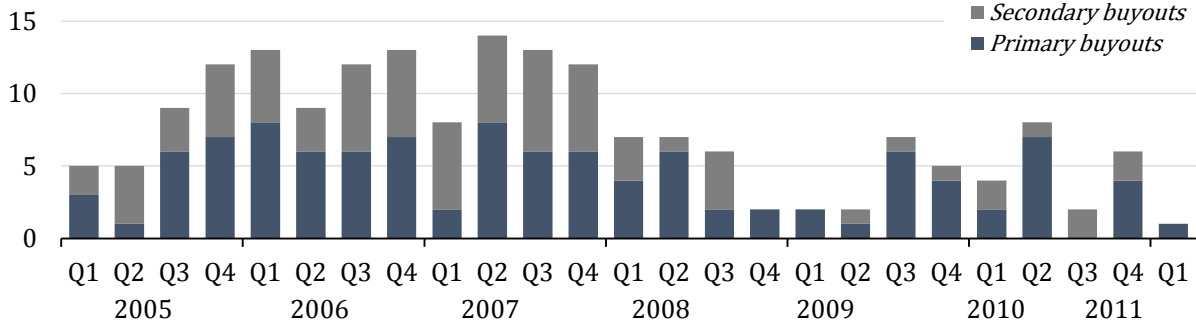


Table 5 - Number of primary and secondary buyouts (SBOs) included per industry division.
The grouping of industries is based on first two numbers of the target's SIC code.

SIC code	Industry division	# Primary BO	# SBOs	Total
10 - 14	Mining	1	1	2
15 - 17	Construction	5	1	6
20 - 39	Manufacturing	23	24	47
40 - 49	Transportation & Public Utilities	8	3	11
50 - 51	Wholesale Trade	6	0	6
52 - 59	Retail Trade	7	8	15
60 - 67	Finance, Insurance & Real Estate	14	18	32
78 - 89	Services	43	22	65

4.2.2. Operational performance indicators, size and leverage

The used data for the operational performance indicators, size and leverage comes from financials derived from the Orbis database from Bureau van Dijk. The financials could be retrieved from this database using the BvD identification numbers obtained from the Zephyr deal database. Both the unconsolidated and consolidated accounts were obtained for all the targets in the dataset. For the calculations of the growth rates the consolidated accounts for the targets where used. When these were not or partially not available the unconsolidated financials were used⁹. Before analysing the data the financials were winsorized at a 1% level. Looking at the mean values¹⁰ of the financials the year prior to the deal of primary and secondary buyouts (see Table 6 on the next page) it is seen that on average SBOs tend to be larger when looking at

⁹ As explained in paragraph 4.1.4, the level of leverage was gathered using a different method.

¹⁰ Mean numbers were only calculated for buyouts were there was data available. So were for example the buyouts included for calculating the mean debt only included in the calculation of mean leverage when there was also total assets data available.

total assets, fixed assets and EBIT, more profitable when looking at the EBIT margin and seem to have a higher level of debt and leverage. All of this is in line with expectations as SBOs tend to happen later in a firm's lifecycle than primary buyouts. The primary buyouts from the used sample only seem to be, on average, a bit larger in terms of revenue when compared to secondary buyouts.

Table 6 - Mean values of the different financials across SBOs, primary buyouts and the whole dataset at the financial year ending prior to the buyout. *Numbers are in million euros except EBIT/ Sales and leverage. Leverage is defined as Total Debt / Total Assets.*

Accounting measure	Secondary buyouts	Primary buyouts	Total dataset
Total assets	129.1	90.6	106.7
Fixed assets	66.7	47.4	56.1
Sales	117.5	119.7	118.8
EBIT	9.4	6.8	8.0
EBIT/ Sales	17.4%	12.1%	14.4%
Total debt	94.8	62.8	76.69
Leverage	0.76	0.66	.70

An overview of the mean annualised compound growth of the operating performance indicators between the year prior to the buyout and the third financial year after the buyout for secondary and primary buyouts is found in Table 7 below. The increase in leverage was measured between the year prior to the buyout and the first financial year after the buyout. As seen in this table, the growth rates are higher for primary buyouts when looking at total assets, fixed assets, leverage and sales. The lower growth in the level of total assets, fixed assets sales and leverage for secondary buyouts is in line with expectations as current literature suggests that most of the opportunities to improve operating performance will already be exploited during the first buyout. However, contrary to these expectations the secondary buyouts from the used dataset seem to show larger growth rates for EBIT and EBIT margin.

Table 7 - Mean values of the compound annualised growth for the different financials used. *The values in this table are set out across SBOs, primary buyouts and the whole dataset and were calculated for the period between the year prior to the buyout and the third financial year ending after the completion date of the buyout. Increase in leverage is calculated between year prior to the buyout and first financial year ending after the buyout*

Accounting measure	Secondary buyouts	Primary buyouts	Total dataset
Total assets growth	5.8%	7.5%	6.8%
Fixed assets growth	5.5%	6.4%	5.9%
Sales growth	5.3%	8.3%	7.0%
EBIT growth	14.0%	7.2%	10.3%
EBIT/ Sales growth	10.6%	2.3%	6.1%
Increase in leverage	18.3%	47.7%	34.9%

4.2.3. Skillset measurements

Information about the private equity firms and their funds involved in the buyouts from the dataset was gathered using data from Orbis, Mergermarket, Private Equity International (PEI) and their company websites. With the data from these sources the skillset measurement of the PE firms could be determined as described in paragraph 4.1.2. By using this method a unique dataset was created as all the gathered information was manually collected and compared in order to match the right skillsets to the right private equity firms.

There were a total of 101 different private equity firms involved as either buyer or seller in the 184 analysed primary and secondary buyouts from the dataset¹¹. Most of these PE firms were located in the UK, but several originated from other countries including: The United States, France, the Netherlands and Dubai. The average net asset value (fund size) of the PE firms was 3,716 million GBP and the average age of the PE firms was 25 years. In Table 8, which is found below, a summary of the distribution of skillset measurements across the 101 involved private equity firms can be found. A detailed overview of the 25 most recurring private equity firms in the buyouts from the used dataset and a few of their characteristics can be found in Appendix A.2.

Table 8 - Summary of skillset measurements of the 101 involved private equity firms in the buyouts from the used dataset. *Current fund size is in million pounds and based on the most recent available numbers. Whether the concerning PE firms are included/excluded in the PEI300 database is based on the most recent PEI300 ranking from May 2016.*

Skillset indication	Measurement	# PE firms
Geographical reach	International orientated	52
	Domestic orientated	49
Experience	Founding year	
	< 1980	14
	1980 - 1989	17
	1990 - 1999	21
	2000 - 2010	49
	Current fund size ¹	
	< 500	27
	500 - 1,999	33
	2,000 - 9,999	24
	> 10,000	17
	Included in PEI300	26
	Excluded from PEI300	75

1. Data about the current fund size that was found in other currencies was converted to GBP with the exchange rates from Thomson Reuters Datastream as of the 22nd of May 2016.

¹¹ When there were more than one PE firms involved on either the buy- or sell-side, the skillset of the PE firm with the largest shareholding was used as if this PE firm were the only involved PE firm

In Table 9, below, the distribution of the private equity firms from the used dataset across skillset measurements is shown. In this Table there has been made a distinction between PE firms involved in primary and secondary buyouts and whether the firm was on the buy- or sell-side of the transaction¹². Mentionable from this Table is that in SBOs there is a larger percentage of the largest PE firms (with a fund size of over 9,999 million GBP) involved than in secondary buyouts, especially on the sell-side. SBO sell-side PE firms also do more often seem to be larger in terms of recently raised funds based on the PEI300 ranking. When comparing the PE firms on the buy-side of both primary and secondary buyouts, it can be seen that in the used dataset the PE firms on the buy-side of secondary buyouts are on average more domestic orientated, larger and less often included in the PEI300 ranking. They also are more often among the youngest PE firms.

Table 9 - Overview of the distribution of private equity firms across skillset measurements for the 188 primary and secondary buyouts in the used dataset. *There is differentiated between buy- and sell-side PE firms where sell-side PE firms are the seller of a target and buy-side PE firms the buyer of the target. Current fund size is in million pounds. Percentages are as compared to corresponding total (sub-) sample size. Whether the concerning PE firms are included/excluded in the PEI300 database is based on the most recent PEI300 ranking from May 2016.*

Skillset indication	Measurement	Primary buy-side	SBO buy-side	SBO sell-side
Geographical reach	International orientated	60%	48%	55%
	Domestic orientated	40%	52%	45%
Experience	Founding year			
	< 1980	21%	18%	29%
	1980 - 1989	18%	17%	14%
	1990 - 1999	21%	19%	16%
	> 1999	40%	46%	41%
	Current fund size ¹			
	< 500	32%	23%	22%
	500 - 1,999	37%	42%	26%
	2,000 - 9,999	21%	21%	25%
	> 9,999	9%	14%	27%
	Included in PEI300	19%	26%	38%
	Excluded from PEI300	81%	74%	62%

1. Data about the current fund size that was found in other currencies was converted to GBP with the exchange rates from Thomson Reuters Datastream as of the 22nd of May 2016.

4.2.4. Other control variables and dummies

Other variables used for the regressions were the industry returns benchmark, SBO-cycle dummies and industry dummies. The SBO-cycle dummies were created as described in the previous paragraph. The industry dummies were based on the SIC divisions as described earlier in this chapter. The industry returns benchmarks were created by using median return data for

¹² Sell-side PE firms are the seller of a target, whether buy-side PE firms is the buyer of the target

the used performance indicators from all of the listed companies in Europe and the US for which there was data available in the same timeframe as each of the buyouts analysed. The data used to make these industry benchmarks was gathered using the database from Bloomberg and the Datastream database from Thomson Reuters. These industry returns benchmarks were matched to the timeframe of each of the buyouts in the sample and constructed separately for each of the corresponding operational performance indicators.¹³

Chapter 5. Findings

5.1 Results

Using the methodology and data as described in the last chapter, the buyouts were analysed to test how a change in the holding PE firms' skillset could affect operating performance in secondary buyouts. This chapter is divided in three paragraphs, each going into one of the three different groups of regressions as elaborated on in the previous chapter. In the first paragraph the difference in operational performance improvement between primary and secondary buyouts will be analysed. In the following paragraph there will be looked at whether SBOs in which there was a significant change in the holding PE firm's skillset perform differently when compared to SBOs for where there was not. In the last paragraph there will be elaborated on how the two groups of SBOs, the ones for which there was a significant change in the holding PE firm's skillset and the ones for which there was not, perform compared to primary buyouts when looking at operational performance improvements.

5.1.1 Operational performance improvement in primary versus secondary buyouts

To see whether there is a significant difference in the improvement of operational performance between primary and secondary buyouts when looking at the chosen operational performance indicators, regressions were estimated for the total dataset of secondary and primary buyouts as described in the previous chapter. A complete overview of the result of these regressions and the estimated coefficients for the used variables can be found in Table 10 which is located on the next page.

As seen in the results from Table 10, SBOs do not seem to perform significantly different when looking at growth in total assets, fixed assets and sales. For growth in EBIT and EBIT margin the found evidence even seems to suggest that SBOs outperform primary buyouts. This is a bit contradictory to what is suggested in other research, but in line with the data analysis from the previous chapter.

¹³ Thus for the regression with for example sales as dependent variable, the mean industry growth of sales over the same timeframe as the corresponding buyout is used as benchmark.

Table 10 – Results of first set of regressions. *This table summarises the results of the OLS regressions on the determinants of various operating performance measurements using a sample of 107 primary buyouts and 77 secondary buyouts. Operating performance measures and the growth in the same industry are in percentage increase between the year prior to the buyout and the third financial year ending after the buyout. The mean industry growth benchmark is separately determined for each of the operating performance indicators and matched per buyout for the corresponding timeframe. Increase of leverage is measured between the year prior to the buyout and the first financial year ending after the buyout. For variables definitions please see Appendix A.1. Numbers in the upper rows represent the regression coefficients. The superscripts *, **, and *** indicate the p-values of respectively the 10%, 5%, and 1% significance levels. Beneath the coefficients the standard errors are reported in parentheses.*

Variables	Log(Total Assets growth +1)	Log(Fixed Assets growth +1)	Log(Sales growth +1)	Log(EBIT growth +1)	Log(EBIT Margin growth +1)
SBO Dummy	-0.009 (0.022)	-0.006 (0.032)	-0.006 (0.02)	0.088** (0.016)	0.099** (0.037)
Log(Mean industry growth +1)	0.338* (0.193)	0.245 (0.519)	0.911*** (0.308)	0.191** (0.083)	0.343 (0.443)
Log(Increase in Leverage +1)	0.128** (0.074)	0.367*** (0.032)	0.173** (0.077)	0.306*** (0.114)	0.125 (0.115)
Log(Target size)	-0.009* (0.005)	-0.011 (0.013)	-0.022** (0.009)	-0.002 (0.014)	0.023* (0.013)
Industry Dummies	Yes	Yes	Yes	Yes	Yes
SBO-cycle Dummies	Yes	Yes	Yes	Yes	Yes
Constant	0.151* (0.082)	0.143 (0.138)	0.266*** (0.097)	0.056 (0.153)	-0.279* (0.158)
Included Observations	131	124	132	99	99
Adjusted R-squared	0.146	0.106	0.179	0.129	0.111

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

However, this observation needs to be interpreted carefully as the higher growth in EBIT and EBIT margin for the secondary buyouts in this dataset cannot simply be attributed to the fact that these buyouts are secondary buyouts. As showed in the previous chapter, the primary and secondary buyouts also differ in firm characteristics. Therefore these regressions actually test a joint hypothesis. Namely, whether SBO targets show different operational performance improvements and whether PE firms that are active in SBOs select different targets. This latter could mean that the difference in operational performance improvements could be a result of differing firm characteristics between targets in primary and secondary buyouts. Next to this, there might be several omitted variables which also influence the EBIT and EBIT margin growth for these specific secondary buyouts or the growth in EBIT and EBIT margin could have been

affected by the chosen timeframe or by fact that these regressions are based on a relatively small dataset. Thus, before drawing an exact reason for the EBIT and EBIT margin to be higher for the SBOs in the used dataset when compared to primary buyouts further research is needed.

Industry benchmarks seem, as expected, to be in general positively correlated to increases in the operating performance indicators for the used buyouts. The only exemptions for this are the coefficients found for fixed assets and EBIT margin. Next to this, an increase in leverage also gives the expected positive coefficients with respect to all operating performance indicators. The estimated coefficients for increase in leverage are all significant, except for the growth in EBIT margin. The size variable, which looks at the effect of the size of the target company, gives values in line with expectations as the size seems to be negatively correlated to the growth of the chosen operating performance indicators. The negative coefficients for the target's size are found to be significant for growth in total assets and sales. For the regression on EBIT margin growth the effect of size is also found to be significant for the buyouts in the used sample, however the effect is positive.

5.1.2 Influence of changing skillset on operational performance improvement in SBOs

The second set of regressions was estimated to analyse whether, within the group of secondary buyouts in the used dataset, SBOs that have experienced a change in the skillset between the new and previous holding PE firm perform different when compared to SBOs that did not experience such a change. The results can be found in Table 11 on page 34 and 35.

When looking at the dummy variables that indicate a significant change in skillset between the holding PE firms in SBOs it is seen that, in line with expectations, the fast majority of the corresponding coefficients is positive. The only coefficients for which this doesn't seem to be the case are the coefficients estimated for the effect of an increase in past fundraising between the two holding PE firms on sales growth and for the effect of a sale to an older PE firm for the EBIT margin growth. However, these negative coefficients are not found to be significant. When looking at the other estimated coefficients it is found that a positive change in geographical range between the two holding PE firms seems to positively and significantly influence the growth in total assets, fixed assets and EBIT of the target firms for the stated timeframe. Next to this it is found that for SBOs where the target company is sold to an older PE firm there is a significantly higher growth observed in the total assets and sales of the target. The sale of the target company to a PE firm with a larger fund size seems to significantly and positively influence the growth observed in the total and fixed assets of the target company. Whether the target company is sold to a PE firm that has recently raised more money for its funds does not seem to influence a single of the selected operating performance indicators significantly.

The mean industry growth benchmarks are all, in line with expectations, found to positively influence the growth on the selected operating performance indicators for SBOs. The coefficients however only seem to be significant for the regressions looking at the sales growth and for most of the regressions that looking at total assets and EBIT growth. The growth in fixed assets and EBIT margin is not found to be significantly related to these industry benchmarks.

An increase in leverage for the target company between the first year prior to the (secondary) buyout and the first financial year ending after the buyout is found, also in line with expectations, to positively influence the growth of the chosen operational performance indicators. This effect is found to be significant for all of the regressions looking at the effect on the growth of the fixed assets and EBIT and for most of the regressions looking at growth in the EBIT margin.

When looking at the effect of the size of the target company in the year prior to the buyout on the growth of the chosen operating performance indicators it is seen that larger target companies, as predicted, show lower levels of growth for most operating performance indicators than smaller target companies. The only performance indicator that does not seem to be negatively influenced by the size of the target firm in the EBIT margin. However, these coefficients are not found to be significant. When looking at the significance of the other coefficients the size effect only seem to significantly and negatively influence the sales growth in three of the estimated regressions. For the other performance indicators the effect of the size of the target firm is not found to be significant.

5.1.3 Primary and secondary buyout compared with change in skillset

The third set of regressions was estimated in order to see how the two groups of SBOs that did or did not experience a change in skillsets of the holding PE firms over the buyout perform when compared to first time buyouts. In order to do so there were, as further elaborated on in the previous chapter, two dummy variables created. The first dummy equals a value of one for SBO's that did experience a significant change in holding PE firms' skillset and zero for the other SBOs and primary buyouts. The second dummy equals one for SBOs that did not experience a significant change in the holding PE firms' skillset and zero for the other SBOs and primary buyouts. The results for the estimation of the coefficients for these regressions can be found in Table 12 on page 36 and 37.

Looking at the coefficients estimations for the two types of dummies, which indicate whether there was a change in skillset between the holding PE firms, it can be seen that, in line with predictions, the dummies that indicate a change in skillset in general have higher coefficients than the dummies that indicate that there was no change in skillset. The only exceptions are,

consistent with the findings in the previous group of regression and seen in Table 11, the dummies looking at the effect of a change in recent fundraising on sales growth and the effect of a change in age on EBIT margin growth. Interesting results are found when looking at the significance of the effect of a change in geographical reach, age and fund size on total assets growth, the effect of a change in geographical reach and size on fixed assets growth and the effect of a change in age on sales growth. When looking at these coefficients and their significance it can be seen that while, in line with the results of comparing the whole group of SBOs as in the first set of regressions, SBOs that did experienced a change in the skillset of the holding PE firms do not seem to perform differently than primary buyouts. However, SBOs that did not undergo such a change seem to underperform when compared to primary buyouts.

Other significant coefficients were found for the effect of a change in geographical reach on EBIT and EBIT margin growth and for a change in recent fundraising on EBIT margin growth. The coefficients found here show evidence for the fact that SBOs, which did undergo a change in skillset for their holding PE firms, seem to outperform primary buyouts, while SBOs that did not undergo such a change do not seem to perform differently when compared to primary buyouts. This is, as also discussed for the coefficients found for EBIT and EBIT margin in the first set of regressions, slightly contractionary to the predictions of current literature. However, before assuming there is a direct relation between SBOs and superior operating performance when looking at EBIT and EBIT margin more research is needed. This because, as explained in the discussion of the results of the first set of regressions in paragraph 5.1.1, this set of regression actually tests a joint hypothesis and differences in operational performance between primary and secondary buyouts could also be caused by the fact that there are differences in firm characteristics between firms involved in primary of secondary buyouts. Next to this there also could be omitted variables or the results are influenced by the chosen timeframe and used buyouts in the sample.

The estimations of the other variables, next to the previously discussed dummies related to changes in PE skillset for SBOs, which were used in these regressions, are comparable to the results as found for the first group of regressions. This is in line with expectation as the effect of the both dummies included in the regressions discussed in this paragraph (one for SBOs that experiences change in holding PE skillsets and one for SBOs that did not) combined should more or less correspond to the effect of the SBO dummy as included in the first set of regressions. For this reason are the sign and significance of these variables in line with the results as described in the second paragraph of this chapter and found in Table 10 and not discussed again in this paragraph for this set of regressions.

Table 11 - Results of second set of regressions. This table summarises the results of the OLS regressions on the determinants of various operating performance indicators using a sample of 77 secondary buyouts. Dummies are included to see whether a change in holding private equity skillset indicators after the secondary buyout influences operating performance improvement. The operating performance indicators and the mean industry growth benchmarks are in percentage increase between year prior to the buyout and the third financial year after the buyout. PE firm size is based on net current asset value of funds and fundraising on PEI300 ranking. The mean industry growth benchmark is separately determined for each of the operating performance indicators and matched per buyout for the corresponding timeframe. Increase of leverage is measured between year prior to the buyout and the first financial year ending after the buyout. For variables definitions please see Appendix A.1. The numbers in the upper rows represent the regression coefficients. The superscripts *, **, and *** indicate the p-values of respectively the 10%, 5%, and 1% significance levels. Beneath these coefficients the standard errors are reported in parentheses.

Variables	Log(Total Assets Growth + 1)					Log(Fixed Assets Growth + 1)					Log(Sales Growth + 1)					Log(EBIT Growth + 1)					Log(EBIT Margin Growth + 1)				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Buyer is more international focused PE firm		.080** (.034)				.106* (.055)					.022 (.036)						.083* (.049)					.049 (.052)			
Buyer is older PE firm			.060* (.033)				.040 (.054)						.045* (.026)					.023 (.087)						-.052 (.098)	
Buyer is larger PE firm				.077** (.032)				.058* (.030)						.012 (.034)					.028 (.046)						.064 (.051)
Buyer has larger recent fundraising					.030 (.036)					.009 (.060)					-.013 (.037)					.069 (.049)					.063 (.066)
Log(Mean industry growth +1)	.481* (.264)	.393* (.215)	.281 (.293)	.356* (.194)	.418** (.178)	.547 (.982)	.296 (.967)	.419 (1.002)	.486 (.982)	.510 (1.020)	.940** (.481)	.910** (.486)	.915** (.487)	.924** (.487)	.957** (.484)	.115 (.373)	.143* (.081)	.175** (.055)	.163* (.091)	.121 (.379)	.222 (.547)	.421 (.536)	.293 (.548)	.278 (.613)	.286 (.559)
Log(Increase in Leverage +1)	.137 (.186)	.097 (.179)	.154 (.182)	.137 (.178)	.104 (.190)	.615** (.296)	.578* (.290)	.637** (.299)	.625** (.296)	.609** (.303)	.285 (.192)	.228 (.193)	.313* (.182)	.289 (.193)	.307* (.185)	.773*** (.241)	.842*** (.242)	.799** (.250)	.800** (.249)	.873*** (.249)	.515** (.273)	.585** (.264)	.523 (.272)	.529* (.271)	.573** (.048)
Log(Size)	-.009 (.013)	-.009 (.013)	-.010 (.154)	-.011 (.013)	-.009 (.013)	-.010 (.022)	-.009 (.021)	-.011 (.022)	-.010 (.022)	-.010 (.22)	-.014 (.014)	-.015* (.009)	-.014* (.008)	-.014 (.011)	-.013* (.008)	-.002 (.018)	-.003 (.019)	-.004 (.019)	-.003 (.019)	-.002 (.019)	.010 (.021)	.010 (.020)	.009 (.021)	.011 (.021)	.010 (.021)

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

Table 11 - Results of second set of regressions - Continued. This table summarises the results of the OLS regressions on the determinants of various operating performance indicators using a sample of 77 secondary buyouts. Dummies are included to see whether a change in holding private equity skillset indicators after the secondary buyout influences operating performance improvement. The operating performance indicators and the mean industry growth benchmarks are in percentage increase between year prior to the buyout and the third financial year after the buyout. PE firm size is based on net current asset value of funds and fundraising on PEI300 ranking. The mean industry growth benchmark is separately determined for each of the operating performance indicators and matched per buyout for the corresponding timeframe. Increase of leverage is measured between year prior to the buyout and the first financial year ending after the buyout. For variables definitions please see Appendix A.1. The numbers in the upper rows represent the regression coefficients. The superscripts *, **, and *** indicate the p-values of respectively the 10%, 5%, and 1% significance levels. Beneath these coefficients the standard errors are reported in parentheses.

Variables	Log(Total Assets Growth + 1)					Log(Fixed Assets Growth + 1)					Log(Sales Growth + 1)					Log(EBIT Growth + 1)					Log(EBIT Margin Growth + 1)				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SBO-cycle Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.056 (.082)	.069 (.142)	-.086 (.146)	-.103 (.143)	-.053 (.149)	-.082 (.241)	-.099 (.235)	-.103 (.244)	-.111 (.242)	-.079 (.244)	.172 (.153)	.168 (.154)	.147 (.153)	.164 (.156)	.170 (.154)	.150 (.205)	.191 (.206)	.181 (.214)	.176 (.212)	.177 (.208)	-.034 (.231)	.005 (.223)	.012 (.232)	-.004 (.231)	-.018 (.233)
Included Observations	58	58	58	58	58	57	57	57	57	57	58	58	58	58	58	46	46	46	46	46	46	46	46	46	46
Adjusted R-squared	.063	.161	.126	.182	.131	.089	.149	.098	.159	.089	.134	.139	.161	.136	.141	.201	.259	.208	.210	.240	.092	.182	.126	.128	.104

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

Table 12 – Results of third set of regressions. This table summarises the results of the OLS regressions on the determinants of various operating performance indicators using a sample of 107 buyouts and 77 secondary buyouts. Dummies are included to see how secondary buyouts that did or did not experience a change in holding private equity skillset indicators perform differently when compared to primary buyouts. Operating performance indicators and mean industry growth benchmarks are in percentage increase between year prior to the buyout and the third financial year after the buyout. PE firm size is based on net current asset value of funds and fundraising on PEI300 ranking. The mean industry growth benchmark is separately determined for each of the operating performance indicators and matched per buyout for the corresponding timeframe. Increase of leverage is measured between year prior to the buyout and the first financial year ending after the buyout. For variables definitions please see Appendix A.1. The numbers in the upper rows represent the regression coefficients. The superscripts *, **, and *** indicate the p-values of respectively the 10%, 5%, and 1% significance levels. Beneath these coefficients the standard errors are reported in parentheses.

Variables	Log(Total Assets Growth + 1)				Log(Fixed Assets Growth + 1)				Log(Sales Growth + 1)				Log(EBIT Growth + 1)				Log(EBIT Margin Growth + 1)			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
SBO with more internationally focused buyer	.018 (.023)				.032 (.036)				.010 (.032)				.113** (.049)				.105** (.041)			
SBO without more internationally focussed buyer	-.063** (.031)				-.080* (.045)				-.015 (.025)				.040 (.045)				.063 (.051)			
SBO with older buyer		.020 (.026)				.012 (.039)				.017 (.022)				.099 (.082)				.053 (.082)		
SOB without older buyer		-.040* (.024)				-.025 (.040)				-.027* (.016)				.073 (.087)				.103 (.091)		
SBO with larger buyer			.034 (.027)				.026 (.026)					-.001 (.027)			.052 (.044)				.092 (.058)	
SBO without larger buyer			-.043* (.025)				-.032* (.020)					-.013 (.029)			.023 (.044)				.036 (.045)	
SBO with buyer with lager recent fundraising				.003 (.024)				.003 (.036)				-.019 (.032)				.104** (.041)				.126 (.052)
SBO without buyer with lager recent fundraising				-.032 (.031)				-.025 (.047)				-.006 (.025)				.058 (.047)				.068 (.062)
Log(Mean industry growth +1)	.308 (.193)	.247 (.193)	.284 (.194)	.314* (.192)	.151 (.511)	.203 (.522)	.223 (.518)	.204 (.525)	.894*** (.310)	.859*** (.310)	.904*** (.310)	.919*** (.309)	.178** (.081)	.198** (.083)	.192** (.083)	.171** (.083)	.456 (.441)	.380 (.443)	.373 (.442)	.366 (.449)
Log(Increase in Leverage +1)	.123* (.072)	.135* (.073)	.131* (.072)	.123* (.074)	.362*** (.106)	.371*** (.108)	.369*** (.107)	.364*** (.108)	.172** (.077)	.179** (.077)	.173 (.077)	.175** (.077)	.312*** (.114)	.304** (.115)	.305** (.114)	.315** (.115)	.138 (.114)	.125 (.115)	.0126 (.115)	.130 (.116)
Log(Target Size)	-.010* (.006)	-.009 (.006)	-.009 (.006)	-.010* (.006)	-.011 (.012)	-.010 (.013)	-.011 (.012)	-.011 (.013)	-.022** (.009)	-.022** (.009)	-.022** (.009)	-.022** (.009)	-.001 (.014)	-.002 (.014)	-.001 (.014)	-.001 (.014)	.024 (.014)	.023** (.014)	.024* (.014)	.024 (.014)

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

Table 12 – Results of third set of regressions - Continued. *This table summarises the results of the OLS regressions on the determinants of various operating performance indicators using a sample of 107 buyouts and 77 secondary buyouts. Dummies are included to see how secondary buyouts that did or did not experience a change in holding private equity skillset indicators perform differently when compared to primary buyouts. Operating performance indicators and mean industry growth benchmarks are in percentage increase between year prior to the buyout and the third financial year after the buyout. E firm size is based on net current asset value of funds and fundraising on PEI300 ranking. The mean industry growth benchmark is separately determined for each of the operating performance indicators and matched per buyout for the corresponding timeframe. Increase of leverage is measured between year prior to the buyout and the first financial year ending after the buyout. For variables definitions please see Appendix A.1. The numbers in the upper rows represent the regression coefficients. The superscripts *, **, and *** indicate the p-values of respectively the 10%, 5%, and 1% significance levels. Beneath these coefficients the standard errors are reported in parentheses.*

Variables	Log(Total Assets Growth + 1)				Log(Fixed Assets Growth + 1)				Log(Sales Growth + 1)				Log(EBIT Growth + 1)				Log(EBIT Margin Growth + 1)			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SBO-Cycle Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	.158* (.091)	.151 (.091)	.150* (.090)	.158 (.093)	.153 (.136)	.142 (.138)	.114 (.138)	.152 (.139)	.269*** (.097)	.268*** (.097)	.266** (.097)	.262** (.098)	.054 (.153)	.058 (.154)	.054 (.154)	.052 (.154)	-.287 (.156)	-.275* (.157)	-.285* (.157)	-.282 (.159)
Included Observations	131	131	131	131	124	124	124	124	132	132	132	132	99	99	99	99	99	99	99	99
Adjusted R-squared	.137	.112	.137	.098	.144	.111	.117	.108	.182	.190	.180	.181	.146	.131	.132	.136	.142	.124	.126	.112

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

5.2 Verification of hypotheses

In this paragraph the validity of the hypotheses, as stated in the third chapter of this thesis, will be examined using the found results as described in the previous paragraphs.

Hypothesis I: *“In an SBO additional operational performance improvements are realised when a portfolio company of a domestic focussed financial sponsor is sold to a financial sponsor with a more global reach”*

As shown with the second set of regressions used in this thesis, evidence has been found for targets from secondary buyouts in which there was a significant increase in the holding PE firm’s geographical reach to show significant higher growth in the operating performance indicators of total assets, fixed assets and EBIT in the three years following the buyout. No significant evidence has been found for a higher growth in sales and EBIT margin.

Evidence was also found for SBO targets that did not experience a positive change in the geographical reach of their holding PE firms to underperform when compared to primary buyouts when looking at total assets and fixed assets growth, while SBO targets that did experience such a change do not seem to perform differently when compared to primary buyouts on the same measures. Next to this, SBO targets in the used dataset that have experienced a positive change in the geographical reach of their holding PE firms even seem to perform better than primary buyouts when looking at EBIT and EBIT margin growth. There is no evidence that these two groups of SBOs and primary buyouts seem to perform differently when looking at sales growth.

Hypothesis IIa: *“In an SBO additional operational performance improvements are realised when a portfolio company of a financial sponsor is sold to an older financial sponsor.”*

When comparing SBOs where the target company was sold to older PE firms to SBOs in which this did not happen, it was found that this first group of SBOs seem to show significant higher growth in total assets and sales in the three years following the buyout. Significant evidence for that SBOs where targets companies were sold to older PE firms perform differently when looking at growth in fixed assets, EBIT and EBIT margin was not found.

When compared to primary buyouts, it is found that SBOs which did not experience a positive change in the age of the holding PE firms show significant lower growth in total assets and fixed assets, while firms that did undergo such a change appear to do not perform differently compared to primary buyouts. There is no evidence that these two groups of SBOs and primary buyouts perform differently when looking at growth in fixed assets, EBIT or EBIT margin.

Hypothesis IIb: *“In an SBO additional operational performance improvements are realised when a portfolio company of a financial sponsor is sold to a financial sponsor with a larger fund size.”*

Evidence has been found for the assumption that SBOs in which the target was bought by a PE firm with a larger total fund size seem to perform better than SBOs which did not experience such a change when looking at the growth in total assets and fixed assets for the target company in the three years following the buyout. No evidence was found that these two groups of secondary buyouts seem to perform differently when looking at growth in sales, EBIT or EBIT margin.

Comparing the operational performance of SBOs with primary buyouts, when looking at changes in fund size between the holding PE firms, gives evidence that SBOs for which there was a positive change in fund size between the holding PE firms do not seem to perform differently compared to primary buyouts when looking at the growth in total assets and fixed assets in the three years following the buyout. However, SBOs that did not experience such a change seem to underperform when compared to primary buyouts compared on these operational performance indicators. There was no evidence found that there is a difference in operational performance improvement between these two groups of SBOs and primary buyouts when looking at growth in sales, EBIT and EBIT margin.

Hypothesis IIc: "In an SBO additional operational performance improvements are realised when a portfolio company of a financial sponsor is sold to a financial sponsor who recently raised more funds."

When comparing secondary buyouts where there was an increase in recent raised funds between the holding PE firms no evidence has been found that these SBOs perform better compared to SBOs that did not experience such a change.

If these two groups of SBOs are compared to primary buyouts no significant difference in operational performance is found when looking at growth in total assets, fixed assets, sales and EBIT margin. When looking at the buyouts in the used dataset it is found that SBOs which experienced a positive change in the recent fund raised between the holding PE firms show higher growth in EBIT margin than primary buyouts. Firms that did not experience such a change do not seem to perform differently than primary buyouts.

Chapter 6. Conclusion

6.1 Answer on research question

The increasing number of secondary buyouts that has been observed over the last few years has been look at with scepticism among academics and practitioners. As it is expected that during the first buyout most of the feasible operational performance improvements have been exploited, it is not clear how secondary buyouts can still boost the target company's

performance. With the analysis in this thesis it is tried to shed light on a possible reason why there still could be room for operational performance improvements in secondary buyouts. This was done by focussing on secondary buyouts for which a change in skillset between the previous and new holder of the target company was observed, and analysing whether this change in skillset could help explain continued operational performance improvement. For this reason the following research question, as stated in the introduction, was formulated:

“Can differences in skillsets among financial sponsors explain continued operating performance improvement in secondary buyouts?”

This thesis provides the first comprehensive analysis of the effect of a change in skillset between the holding PE firms before and after the secondary buyout on operational performance improvements to answer this question. By means of this analysis there was evidence found for that a change in skillset between the holding PE firms can possibly help to explain operational performance improvement potential. This evidence was found by the observation that secondary buyouts in the used dataset of which the buyer was an older, more internationally focussed or larger PE firm do not seem to underperform compared to primary buyouts for several of the chosen operational performance indicators. This while secondary buyouts that did not experience such a change seem to underperform compared to primary buyouts on these operational performance indicators. This observation, which was found for the buyouts in this dataset, could be an indication for that there still might be room for operational performance improvement in SBOs when the buyer has more extensive skillset than the previous owner. This would mean SBOs can only perform equally well to primary buyouts when the new holding private equity firm can exploit a skillset the previous owner did not have the ability to. If there is no change in holding PE firms' skillsets most of the value creating potential could already be exploited by the previous owner leaving less gains for the new PE firm and causing underperformance when compared to primary buyouts. However, this conclusion cannot yet be drawn solely on the findings in this thesis and more future research will be needed to see whether a change in skillset between the holding PE firms could indeed help explaining why there still might be room for operational performance improvements in secondary buyouts.

6.2 Limitations and suggestions for future research

The method and dataset, as used for the analysis in this thesis, are subject to a number of limitations. The main limitation of this thesis is that when comparing primary and secondary buyouts actually a joint hypothesis is tested. As showed in chapter 4, the primary and secondary buyouts in this sample also differ when looking at firm characteristics. Therefore it cannot be fully concluded that the difference in operational performance improvements is fully due to the

way SBOs change the target, as this might also be caused by that PE firms active in SBOs select different targets.

Besides this limitation, the used dataset focusses only on buyouts in the UK in a relative short timeframe. This could mean that the findings from this analysis might not be consistent when looking at buyouts from other countries or for another timeframe. Next to this, the dataset used in this thesis is somewhat small when looking at the total number of buyouts. For this reason it might be interesting to test whether the results found in this thesis will also hold for applying the same methodology to a larger number of buyouts, buyouts from countries other than the UK and for buyouts that took time during another period in time. It might also be interesting to see whether the prediction that a change in skillset between the holding PE firms in secondary buyouts can explain operational performance improvement still will hold when looking at other performance indicators than the ones used in this thesis.

Another limitation of this thesis is that there is solely focussed on operational performance improvements. It might also be interesting to see what the effect of a change in skillset between the holding private equity firms in secondary buyouts is on other factors such as the returns for the private equity firms themselves, measured by for example IRR or cash flow. An answer on this could give a more complete view on the way secondary buyouts create value by incorporating other factors such as pricing, which could be affected by better negotiation skills of the buying PE firm.

Something else that might be interesting to look at in future research is the, in this dataset, observed superior performance of secondary buyouts compared to primary buyouts when looking at growth in EBIT and EBIT margin. Future research might contribute to see whether this is also observed when using another methodology or when looking at another dataset. As stated before, there might be several omitted variables which also influence the EBIT and EBIT margin growth for these specific secondary buyouts or the growth in EBIT and EBIT margin could have been affected by the by the chosen timeframe or by the used dataset. For this reason further research is needed to give an appropriate explanation for why EBIT and EBIT margin growth seems to be higher for the SBOs in the used dataset when compared to primary buyouts before drawing conclusions.

At last, there might be other variables that could explain continued operational performance improvement in secondary buyouts that were omitted in the method used in this thesis. Further research on which factors, beside the factors examined in this analysis, influence operational performance in SBOs could give a more precise view on the performance of SBOs or give evidence to alter some of the conclusions drawn from the results found in this thesis as the inclusion of these omitted factors could influence the outcome of the studied effects.

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Appendix

A.1. Overview and description of used variables and dummies

Table A.1 – Overview and description of used variables and dummies. This table presents the variable definitions for the relevant variables as discussed in this chapter and used in this thesis. FYE stands for financial year ending, SBO for secondary buyout, EBIT for earnings before interest and tax and PE for private equity

Variable	Description
<i>Value drivers</i>	
Total assets growth	The target company's compound annual total assets growth, achieved between the year prior to the investment and the third FYE after the deal completion date. The value is winsorized at the 1% level. For the regressions logarithmic returns are used.
Fixed assets growth	The target company's compound annual fixed assets growth, achieved between the year prior to the investment and the third FYE after the deal completion date. The value is winsorized at the 1% level. For the regressions logarithmic returns are used.
Revenue growth	The target company's compound annual revenue growth, achieved between the year prior to the investment and the third FYE after the deal completion date. The value is winsorized at the 1% level. For the regressions logarithmic returns are used.
EBIT growth	The target company's compound annual EBIT growth, between the year prior to the investment and the third FYE after the deal completion date. The value is winsorized at the 1% level. For the regressions logarithmic returns are used.
EBIT margin growth	The target company's compound annual EBIT margin growth, between the year prior to the investment and the third FYE after the deal completion date. The value is winsorized at the 1% level. For the regressions logarithmic returns are used.
<i>SBO dummies</i>	
SBO dummy	Dummy that equals one for SBOs and zero for other buyouts.
Geographical reach dummy	Dummy that equals one for a significant positive change in geographical reach between the involved PE firms in an SBO and zero for other SBOs.
Age dummy	Dummy that equals one for a significant positive change in age between the involved PE firms in an SBO and zero for other SBOs.
Size dummy	Dummy that equals one for a significant positive change in fund size between the involved PE firms in an SBO and zero for other SBOs.
Fundraising dummy	Dummy that equals one for a significant positive change in the amount fundraised between the involved PE firms in an SBO and zero for other SBOs.
Skillset change dummy	Dummy that equals one for SBOs that experienced significant change in the relevant skillset measurement and zero for other SBOs
<i>Control variables</i>	
Target size	The target firm's size measured by multiplying total assets with revenue for year prior to the buyout
Increase in leverage	The target company's compound annual increase in leverage, between the year prior to the investment and the first FYE after the deal completion date. The value is winsorized at the 1% level. For the regressions logarithmic returns are used.

Table A.1 – Overview and description of used variables and dummies – Continued. This table presents the variable definitions for the relevant variables as discussed in this chapter and used in this thesis. *FYE* stands for financial year ending, *SBO* for secondary buyout, *EBIT* for earnings before interest and tax and *PE* for private equity

Variable	Description
Industry total assets growth	Median total assets growth rate of public companies with the same SIC code division classification from year prior to the investment and the third FYE after the deal completion date. The variable is winsorized at the 1% level.
Industry fixed assets growth	Median fixed assets growth rate of public companies with the same SIC code division classification from year prior to the investment and the third FYE after the deal completion date. The variable is winsorized at the 1% level.
Industry Revenue growth	Median fixed assets growth rate of public companies with the same SIC code division classification from year prior to the investment and the third FYE after the deal completion date. The variable is winsorized at the 1% level.
Industry EBIT growth	Median EBIT growth rate of public companies with the same SIC code division classification from year prior to the investment and the third FYE after the deal completion date. The variable is winsorized at the 1% level.
Industry EBIT margin growth	Median increase in EBIT margin rate of public companies with the same SIC code division classification from year prior to the investment and the third FYE after the deal completion date. The variable is winsorized at the 1% level.
<i>Control dummies</i>	
SBO-cycle dummies	SBO-cycle dummies were created similar to Strömberg (2007) to control for systematic time patterns in the buyout market. There has been distinguished between the periods 2005–2007 and 2008–2011.
Industry dummies	Industry dummies based on SIC code division classification of the target companies

A.2. Overview of the 25 most recurring private equity firms

Table A.2 –Short summary of some characteristics of the 25 most recurring private equity firms in the 184 buyouts from the used dataset. Fund size in millions of GBP. Active in number of deals measured for primary buyout buy-side and secondary buyout buy- and sell-side.

PE House	Founding year	Current fund size	International orientated	Active in # of deals
Barclays Private Equity	2005	2,000	Yes	17
3i	1945	13,500	Yes	16
Lloyds TBS Development Capital	1981	2,000	No	11
Dunedin Capital	2009	400	No	7
Close Brother Growth	1878	10,000	No	7
Gresham LLP	1999	450	No	6
Phoenix Equity Partners Ltd	2001	500	No	6
ECI Partners LLP	1976	1,600	Yes	6
Caird Capital LLP	2010	600	No	5
Sovereign Capital Partners	2001	920	Yes	5
Graphite Capital LLP	2001	1,500	No	5
NBGI Private Equity	2000	200	Yes	4
Alchemy Partners LLP	1997	500	Yes	4
Key Capital Partners LLP	2007	250	No	3
Kaupthing	2001	300	No	3
Change Capital Partners	2003	400	Yes	3
European Capital	2002	900	No	3
Exponent Private Equity	2004	1,000	No	3
ABN AMRO Capital	2001	1,300	No	3
Duke Street Capital	1988	2,600	No	3
Beringea	1980	30	No	2
RJD Partners Ltd	2001	250	No	2
Rutland Partners LLP	2000	300	No	2
Primary Capital ltd	1994	400	No	2
Maven Capital	2008	400	No	2