



# **Secondary buyouts**

## **The effect of the characteristics of private equity houses and its professionals**

*Master thesis Financial Economics*

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## ABSTRACT

In this thesis, a total of 1,168 deals, of which 354 were secondary buyouts, within the European Union that took place between 2012 and 2016 were analysed to see whether a change in characteristics of the private equity houses or its professionals influences the operating performance of secondary buyouts compared to primary buyouts. From this analysis evidence was found that there were certain characteristics that positively impact the operating performance post-buyout for the secondary buyout. Interestingly, it can, based on the analysis, also be argued that not having certain changes in characteristics will lead to underperformance of the secondary buyout compared to the full sample of deals.

Keywords: private equity, secondary buyouts, operating performance, primary buyouts, value creation, buyouts

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## 1. Introduction

Private equity is an alternative asset class that invests in non-publicly traded companies. A private equity house normally invests money of its investors through funds with a limited time window (see chapter 2.1.). The first private equity deals were conducted in the 1980s. Over the years private equity investments have grown tremendously in terms of size and overall importance to the economy, evident from the numbers of the last 20 years. According to the Preqin pro database there were a total of 450 deals in the year 2000 in the European Union with an aggregate deal value of \$ 39.5bn. This number has grown over the years to 1,933 deals in 2019 with an aggregate deal value of \$ 121.2bn.

An important part of an investment for private equity houses (“PE’s”) is the exit of a portfolio company as it is the moment the invested money returns to the private equity house and thus it is also the moment when investors see concrete results/returns of the money they invested. There are three main exit options to choose from. First, the portfolio company can be brought to the public market by means of an IPO. Secondly, the company can be sold to a company in a trade sale. Thirdly, the company can be sold to another private equity house in a secondary exit.

Especially the last-mentioned type of exit has grown in popularity as means of exit. In percentage terms, the number of secondary buyouts (“SBO’s”) as means of exit grew from almost non-existent two decades ago to over 50 percent in 2018. This increase is likely driven by the fact that the number of private equity houses has also grown substantially over the recent years. As private equity houses normally only hold portfolio companies for a number of years and the increase in the number of private equity houses also increases the competition for other exit types of deals, it is a logical consequence that the amount of SBO’s have gone up (Eschenröder, 2020). With this increase of importance also the coverage by academic literature expanded, especially on the operating performance increasing potential.

There are two schools of thought with regards to the operating performance increasing potential, also known as value creation potential, and secondary buyouts. On the one hand there is the school that argues that further value creation is not possible in a secondary buyout as the first private equity house (the selling party) has already pulled all the value creation levers available. Others argue that there is still value creation potential as the buying party might differ in terms of characteristics compared to the selling party and thus it might be that

the buying party has different value creation levers to pull or is merely better at pulling the value creation levers than the selling party due to these differences in characteristics.

The second reasoning is the focus of this paper. The characteristics that might differ between buyer and seller that have been researched can be divided into private equity house characteristics and private equity professional characteristics. Previous literature has researched these characteristics separately or did not focus specifically on SBO's or the effect on operating performance. This paper is thus the first attempt to research both the influence of private equity house and private equity professional characteristics on operating performance and thus the value creation potential of secondary buyouts. The research question has been formulated as:

*“Do specific private equity house and/or professional characteristics explain the operating performance differences between secondary and primary buyouts?”*

To answer the research question, data on the buyout deals have been collected through the Preqin Pro database, which have been matched with the Orbis database to collect the relevant financial variables. A total of 1,168 deals have been identified in the period 2012 until 2016. Of these 1,168 deals, 354 were secondary buyouts. For these secondary buyouts, data on the private equity houses and professionals have been hand-collected.

A total set of three regressions have been used to answer the research question. The first set of regressions discovers that there is no real reason to suggest that secondary buyouts underperform primary buyouts (“PBO's”) in terms of operating performance. The second set of regressions researches the characteristics of private equity house and professionals on the total dataset of primary and secondary buyouts. It finds no evidence that particular switches in characteristics leads to over-performance, but it does show that not having certain switches in characteristics might lead to underperformance (compared to the total sample of primary and secondary buyouts). For instance, having no switch in educational background and career-path shows to have the most robust negative effect on operating performance. The third and last set of regressions researches if certain types of secondary buyouts, read secondary buyouts with certain changes in characteristics, do outperform other secondary buyouts in general. There is evidence to assume that the age and size of the private equity house

positively impact the operating performance after the buyout, as well as education of the professional. These results are however not robust enough to conclude this.

The paper is structured as follows. First, a literature review is covered in the next chapter, chapter 2. After the methodology of the regressions is discussed. In chapter 4, the data collection methods and an overview of the data used is presented. Chapter 5 includes the results of all the three sets of regressions and a verification of the hypotheses. After, the conclusions of these regressions are discussed in chapter 6. Finally, chapter 7 includes the bibliography and chapter 8 the appendixes.

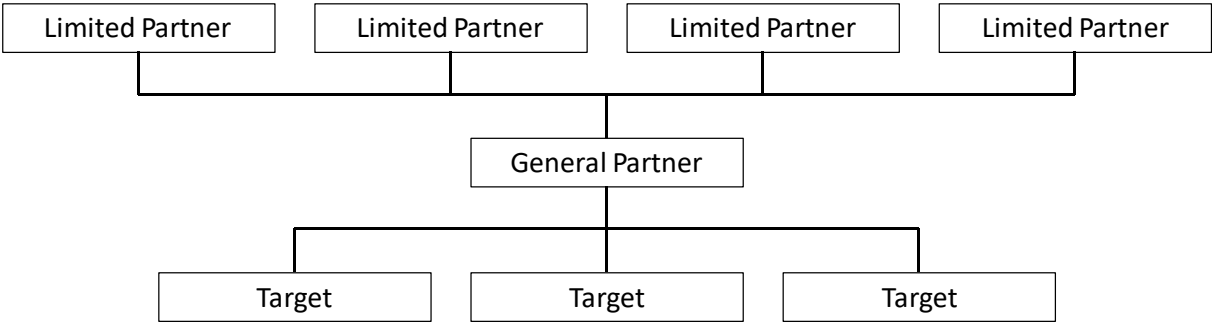
**2. Literature review**

In terms of literature review, this paper first covers private equity in general. Afterwards, value creation in buyouts is covered in a chronological manner in section 2.2. Lastly, value creation in secondary buyouts is covered in section 2.3. which is the main focus of the paper.

**2.1. Private equity**

Private equity houses are specialized investment companies that use money of investors to buy private companies or take public companies private (Kaplan & Stromberg, 2009). This is mainly done through a leveraged buyout, which is the process of a private equity house acquiring a firm using a relatively large portion of debt financing and a relatively small portion of equity.

Private equity houses typically raise funds through closed-end funds that are organized as limited partnerships with a finite lifespan (Metrick & Yasuda, 2007). As illustrated in figure 1 below, there are typically three types of parties involved in the structure. Limited partners (“LPs”) are the investors in the private equity house. These LPs mainly consists of pension funds or high net worth individuals. The general partner (“GP”) is the private equity house itself and invests on behalf of the LPs into the target firms.



**Figure 1: Example structure of a private equity house with regards to its investors and investments**

With the increase in private equity investments over the recent years, the topic has also attracted substantial attention from the media, policymakers as well as academics (Eschenröder, 2020). The academic debate whether private equity creates value and/or is beneficial is being held since the inception of private equity in the 1980s. Several academic articles show positive performance of LBOs (Bull, 1989; Groh & Gottschlag, 2006). Others find that private equity funds are equal to those of the S&P500 index based on risk-adjusted returns net of fees (Kaplan & Schoar, 2005; Philappou & Gottschlag, 2003; Philappou, 2009).

Other academic research shows underperformance of private equity owned companies (Vinten, 2007; Desbrières & Schatt, 2002).

Exiting portfolio companies is one of the most critical parts of the investment process for the private equity house and its performance. Possible exits are: bringing the company to the public market (“IPO”), sale to another private equity house (“secondary exit”) and sale to another company (“trade sale”) (Jenkinson & Sousa, 2015). The choice between these three exit types is influenced by a few factors. First, research suggests that private equity houses take advantage of “windows of opportunity” i.e. exiting through an IPO when the equity capital market is “hot” (Jenkinson & Sousa, 2015). Second, an exit in the form of secondary exit is more likely to happen when the debt capacity of the portfolio company is higher. Third, the amount of undrawn capital commitments of private equity houses (also known as dry powder) and debt capital markets liquidity increases the chance of the exit being a secondary exit (Achleitner et al, 2012).

Some researchers and private equity professionals view secondary exits as “passing the parcel” deals, implying that the real value of the company is only revealed “once the music stops” when the company is eventually sold in a trade sale or IPO. These critics base their argument on the statement that the first private equity firm should already have added all the value possible that a private equity house can add (and thus view private equity houses as homogeneous in terms of value creation abilities) (Jenkinson & Sousa, 2015). This ability of buyers in a secondary exit to create additional value is the main subject of this paper. The rest of the literature review will consequently first cover the value creation in buyouts in general in subsection 2.2. After which the value creation in secondary buyouts will be covered in subsection 2.3.



## **2.2. Value creation in buyouts**

To get a clear understanding of how private equity houses create or capture value one has to understand the three key developments the buyout market has experienced since the 1980s. Private equity houses in general first focused solely on value capturing, later financial engineering got popular as a way to create value. More recently, value creation through operational and strategic improvements gained ground (Haddad et al, 2017).

### **2.2.1. Value capturing**

Value capturing is the process of generating returns independent of changes in the underlying operational performance of the portfolio company. This technique is also commonly classified as financial arbitrage (Gottschlag & Berg, 2005). Financial arbitrage can be conducted in multiple ways. Firstly, the price paid for the portfolio company is typically influenced by public market multiples, hence the buyer might benefit from this exogenous effect. Accurately predicting future values of these public multiples can positively impact returns and is also known as multiple arbitrage or multiple riding (Schlegel, 2019). Secondly, inside information on the target, such as the knowledge that the target has a heavily overfunded pension plan, can also be an important value capturing method (Opler, 1992). Thirdly, superiority in deal making capabilities can capture value in the acquisition and divestment process (Baker & Smith, 1998). Examples of this superiority are having proprietary deal flow and optimizing the exit value through having a more extensive network of potential buyers (Wright, Wilson, & Robbie, 1996). Fourthly, value can be captured by optimizing the corporate scope and getting rid of the conglomerate discount effect. This effect entails that the sum-of-parts is worth more than the company as whole. Value can therefore be captured by asset stripping the company (Magowan, 1989).

The above-mentioned ways of capturing value has been used on a large-scale from the early days of leveraged buyouts during the 1980s (Bowman & Singh, 1993). When the buyout industry matured the focus of private equity houses shifted from value capturing to value creation driven by the fact that value capturing does not necessarily lead to better operating performance of the firm and thus not lead to real gains of value (Kitcing, 1989). In the early stages of this shift the focus was mainly on financial engineering.

### 2.2.2. Value creation: financial engineering

The goal of financial engineering is to optimize the capital structure, as well as minimizing the after-tax cost of capital for the portfolio company (Gottschlag & Berg, 2005). In other words, in a buyout the private equity house tries to use as much debt as is reasonable to do so to purchase the company. There are three main reasons for the private equity house to use this financial engineering in the form of using a high amount of debt to purchase the target. Firstly, in general the cost of debt is lower than the cost of equity and thus the house uses less costly capital to buy the target. Secondly, the interest on the debt introduces a tax-shield (as will be further discussed below). Thirdly, the private equity house and its investors are interested in the equity returns, hence when the target is bought with more debt it needs less equity and thus the potential percentage gains on this equity are higher. The use of leverage to purchase a target is presently one of the most widely applied levers by private equity houses to create value.

Additionally, Private equity professionals possess great financial knowledge and thus can support management with negotiating bank loans, bond underwritings, sub-ordinated debt underwritings and equity offerings (Anders, 1992). The expertise and network in the financial industry of the private equity professionals enables the portfolio company to attract funding at terms that the firm would not have been able to secure on its own (Kaufman & Englander, 1993).

Financial engineering also comes in the form of reducing corporate tax paid by the portfolio company as previously mentioned. An increase in leverage can be viewed as a source of value creation as it will result in a reduction of tax payments (Singh, 1990; Long & Ravenscraft, 1993). Also, introducing accelerated depreciation on assets may lead to value creation (Kaplan, 1989; Baker & Smith, 1998). It must however be noted that since the increased focus on financial engineering, tax policies have been reformed. These reforms have removed a lot of the value creation opportunities of these techniques (Baker & Smith, 1998). Because of these reforms the focus of financial engineering today lays more on the above-mentioned point of supporting management with negotiating the terms on debt and equity funding.

After the focus on value capturing and later value creation by means of financial engineering the industry found other ways of creating value. The private equity houses started to acknowledge that they, next to value capturing and financial engineering, could also add value

by supporting the portfolio companies with strategy and operation enhancements (Bernstein & Sheen, 2016).

### 2.2.3. Value creation: operational enhancements

Literature shows that private equity-backed companies outperform competitors in terms of operating performance (Muscarella & Vetsuypens, 1990; Ames, 2003; Harris & Kaplan, 2014). In addition, Guo et al (2011) shows that operating enhancement recently became one of the key value creation drivers of buyouts. These enhancements can be separated into three distinct levers.

#### Governance engineering

Governance engineering entails setting clear disciplinary and motivational incentives to ensure the interests of portfolio company' management and private equity house are aligned, as well as improving information flow to ensure proper and more rapid decision making (Lichtenberg & Siegel, 1990; Achleitner & Figge, 2012).

A common motivational incentive is increasing managerial ownership. An increase of ownership by management will reduce agency costs as management will become more monetarily incentivized to make the right value-influencing actions (Leslie & Oyer, 2009; Muscarella & Vetsuypens, 1990). Next to this, private equity houses often transform and improve the corporate governance structure (Wright et al, 1992).

A common disciplinary incentive is the use of leverage. A leveraged buyout entails using a relatively large amount of debt to buy a company. This debt must be serviced in terms of paying down the debt and paying the interest expenses. This results in less free cash flow available for management to spend on projects that are not in the interest of the shareholders (Jensen, 1989). In addition, the previously mentioned increase in managerial ownership can, next to being a motivational incentive, also be seen as a disciplinary incentive. This is the case because a large part of personal wealth of the manager and his/her job security is tied to the same company and its future performance (Wright et al, 1992).

Governance engineering can also be done through active monitoring by the private equity house or by improved reporting procedures. This will improve information sharing and thus reduce information asymmetry between management and the private equity house (Acharya & Viswanathan, 2011; Metrick & Yasuda, 2011). For example, increasing the frequency of

reporting can naturally lead to faster decision making, resulting in a possibility to increase operational performance.

#### Cost cutting and margin improvement

After the buyout of a portfolio company by a private equity house the new owner often substantially changes operations, with the purpose of reducing costs and improving margins (Wright et al, 2001). Firstly, cost reductions can be achieved by changing the way operations are organized and managed (Muscarella & Vetsuypens, 1990). Secondly, general cost reduction programs are commonly introduced by private equity houses immediately after the buyout (Muscarella & Vetsuypens, 1990). Thirdly, private equity houses typically alter the management structure of the portfolio company to be less bureaucratic, which results in lower corporate overhead cost (Butler, 2001).

Private equity critics claim that this cost cutting and margin improvement mainly comes at the expense of the personnel of the portfolio company. Academic literature however does not support this statement and hence these cost reductions are predominantly not in form of excessive firing of employees or reducing wages (Wright et al, 2009; Paglia & Harjoto, 2014; Achleitner & Kloeckner, 2005).

#### Improving capital efficiency

A common way for the private equity house to directly impact operating performance is improving the capital efficiency. The investor can create value by reducing required fixed assets and thus freeing-up resources that can be invested (Gottschlag & Berg, 2005). Also, working capital utilization can be improved by decreasing inventories and by increasing supplier financing (Gaspas, 2012). The professionalizing of working capital management can also contribute to better operating performance (Long & Ravenscraft, 1993). Furthermore, non-core activities can be outsourced to free up resources such as employees and capital (Baker, 1992).

Generally, it is important to keep in mind that capital efficiency should feed its purpose of positively impacting operating performance and thus should not negatively impact the ability to compete with competitors (Easterwood et al, 1989).

#### 2.2.4. Value creation: strategic enhancements

Private equity houses can also create value by altering or (re-)focusing strategy. Typically, there are three main levers the private equity house can pull to enhance the strategy of the portfolio company.

##### Increasing strategic distinctiveness

There are a lot of levers in terms of strategic distinctiveness and differentiating itself from competitors that a firm or a private equity house can pull. On product level, new markets can be entered or exited, price points can be altered, product quality can be modified and distributions channels can be reorganized. Whereas on service level customer mix can be shifted all together and customer experience can be improved (Gottschlag & Berg, 2005).

However, in general private equity houses reduce complexity and re-focus strategy on the core business (Phan & Hill, 1995; Liebeskind et al, 1992). This can be achieved by selling non-core activities that do not improve the competitive advantage of the company (Singh, 1990). Also, resource allocation can be altered to focus on investments that are essential to enhancing or maintaining the competitive advantage (Easterwood et al, 1989).

This refocusing of strategy, cutting non-core activities and increasing focus on a smaller variety of investments however does not mean that private equity companies can only focus on downside efficiencies, as a successful exit is highly dependent on the proven growth of the company (Wright et al, 2001; Butler 2001). This growth can also be obtained by strategic enhancements. These strategic enhancements can have the form of internal growth strategies and innovation or by external growth through acquisitions (Markides, 1997; Wiersema & Liebeskind, 1995).

##### Buy-and-build strategy

A value creation technique that is specific to private equity houses is buy-and-build (“B&B”). In a B&B strategy the private equity house buys a company that will be used as platform for subsequent acquisitions of companies which are aligned in terms of strategy with the platform company (Fabozzi, 2002). The private equity house combines these add-on acquisitions and platform acquisition into a single entity. Platform companies usually have very specific characteristics such as having a reputation for high quality (Smit, 2001). Add-on companies

have specific tangible or intangible assets such as new technologies or access to new markets and are typically smaller than the platform (Borell & Heger, 2013).

Companies bought with a B&B strategy in mind have the same value creation opportunities as ordinary buyout as described above such as using leverage as disciplinary incentive. Specific to the B&B strategy however is the classical advantages of synergy effects and the transfer effect of knowledge and technology (Borell & Heger, 2013). Coupled with the advantages of increased company size such as cost reductions through economies of scale and scope, as well as tax gains (Ross & Westerfield, 2002). Revenue growth can also be realized by the creation of synergies which would not have been possible on a standalone basis (Loos, 2006).

### Mentoring

Mentoring can also be a way of creating value for the portfolio company. The effect of having a private equity house as owner as a portfolio company is quite similar to being a business unit in a certain corporation (Goold et al, 1994). Even though private equity firms differ in the degree to which they are involved with the managerial aspect of the portfolio company, they can support the portfolio company through mentoring in mainly two ways.

First, entrepreneurial spirits can be restored as in many cases companies lack these when acquired (Hilb & Casas, 2015). Reasons for this can be that risk-aversion unfavorably impacted the climate for entrepreneurial activities or that a particular division of a company did not receive the necessary attention (Wright et al, 2000).

Wright et al (2000) found that buyout transactions can be seen as vehicles of renewal and increase the entrepreneurial opportunities. Private equity houses can restore entrepreneurial spirits by changing the governance structure and interaction so that managers feel less burdened by bureaucracy (Butler, 2001). Also, the combination of increasing managerial ownership and improving corporate government structure reintroduces the entrepreneurial drive of the firm (Wright et al, 2001; Butler 2001). These changes frequently lead to corporate revitalization, strategic innovation and growth (Kaneda, 2006).

Secondly, the private equity house can advise and enable the management of the portfolio company. Constructive interaction between the two is often facilitated in an un-bureaucratic and direct manner (Luehrman & Kester, 1995). Usually the lead private equity professional serves as the sounding board for the top management and provides his/her knowledge from

previous transactions, strategy advice, perspectives and industry contacts (Sapienza & Timmons, 2017; Luehrman & Kester, 1995).

### **2.3. Value creation in secondary buyouts**

As mentioned in section 2.1. a secondary exit is one of the three exits a private equity house can choose. The choice of this certain type of exit has gained an increasing coverage in academic literature. This is mainly driven by two topics, namely the increase in the choice for secondary exit as exit strategy and by the debate around the economic rationale and value creation ability for the buying party in the secondary buyout.

That secondary buyouts as means of exit have been increasing rapidly in the last decade is evident from the numbers. In absolute terms, deal value grew from € 4.09bn and 58 deals in 2009 to € 46.36bn and 221 deals in 2018 in Europe (Centre for Management Buy-Out & Private Equity Research, 2018). While in percentage terms, the amount of secondary buyouts as means of exit grew from almost non-existent two decades ago to over 50 percent in 2018 (Eschenröder, 2020).

As mentioned, this increase of secondary buyouts led to an increase in academic coverage. Despite of this increase in academic coverage, there are several unresolved issues with regards to SBO's. Particularly, the economic rationale and the value creation ability is still puzzling (Wright et al, 2009; Cumming et al, 2007). For example, Achleitner & Figge (2012) find no significant difference between primary buyouts and SBO's, whereas Bonini (2015) find significant industry-adjusted operating performance and efficiency improvements for PBO's, but not for SBO's.

Bonini (2015) explains this underperformance of SBO's compared to PBO's by the fact that under the null hypothesis that the private equity house that conducted the PBO has been effective in implementing the value creation items mentioned in section 2.1. such as engaging in active monitoring, reducing free cash flow and mitigating agency problems, it is unclear how the private equity house conducting the SBO is able to create value using the same techniques. Attributed by the fact that these techniques are likely to generate a one-off steep effect on operating performance (Wright et al, 2009)<sup>1</sup>.

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<sup>1</sup> Because of the above mentioned and previous literature, tertiary buyouts (and beyond) are still classified as SBO's (Degeorge et al. 2016)

Literature states that there are two main explanations on why increasing operating performance is possible in a secondary buyout.

Firstly, the private equity house that did the PBO might be forced to exit without finishing the entire value creation strategy. This is driven by the limited partner structure of the fund (Arcot et al, 2015). The private equity house might have an incentive to return the committed capital to the limited partner and thus materialize the profits as this can be beneficial for fund raising purposes (Axelson et al, 2009). Additionally, the current investment fund of the private equity house might simply be close to the end of the funds' lifetime (Achleitner & Figge, 2012).

Secondly, the private equity house might exhibit different characteristics in terms of skill set and areas of expertise (Wang, 2012). It can for instance be the case that the first private equity house is specialized in modernizing production facilities and cutting costs, while the second private equity house skillset is in expanding operations internationally or outsourcing certain production processes (Wang, 2012). Furthermore, private equity houses might focus on a specific part of the lifecycle of the firm. For example, some private equity houses focus on providing growth capital for younger companies, while others focus on buyouts of mature companies (Cressy et al, 2007).

To get a clear view on the difference between PBO's and SBO's in terms of operating performance the following hypothesis is formulated:

*Hypothesis 1: "Secondary buyouts perform worse in terms of increasing operating performance after the buyout compared to primary buyouts"*

The importance of specific characteristics of private equity houses on the value creation abilities is striking. As a large number of value enhancement levers are extrinsic, hence dependent on the characteristics of the private equity house, it suggests that it matters a great deal which specific private equity house conducts the PBO and SBO, as well as the key private equity professional on the deal (Gottschlag & Berg, 2005). These private equity house and key-professional characteristics are separately discussed in the sub-chapters below.

### 2.3.1. The influence of private equity house characteristics

As mentioned above, the specific characteristics of private equity houses may have an impact on the value creation ability. These characteristics can broadly be divided in two elements



namely specialization with regards to industry and geographical focus and experience proxied by size and age.

### Specialization

Private equity houses specialize in a certain industry or geography with the purpose of gaining a competitive advantage (Harper & Schneider, 2004). This competitive advantage comes from two main sources. Firstly, a reduction in uncertainty as the firm gains more in-depth knowledge of that specific industry and/or geography. Secondly, a reduction of information asymmetry as this specialization leads to the private equity house having more information relative to non-specialized private equity houses (Eisenhardt, 1989).

Concluding, two specialization factors are identified that could positively impact the value creation potential of SBO's. Each of these two specialization factors have two scenarios in which the value creation potential is likely to be higher. Namely when the private equity house of the PBO is specialized in another element of the factor<sup>2</sup> or when the private equity house of the PBO is not specialized at all in the factor<sup>3</sup>. This leads to the following hypothesis:

*Hypothesis 2: "SBO operating performance is positively impacted by a difference in specialization between the buying and selling private equity house"*

### Experience

Another private equity house characteristic that can influence the operational performance of SBO's is experience (with size and age of the private equity house used as proxy). If the private equity house that conducted the first buyout is less experienced than the private equity house it sells to, it is likely that the second, more experienced, private equity house is still able to create significant value. This is driven by the skillset that the private equity house has obtained through their extensive experiences. These specific value creation levers were not used by the first private equity house as the first private equity house does not have this extensive experience and hence does not have the required skillset for it (Achleitner & Figge, 2012). This argument leads to the following hypothesis:

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<sup>2</sup> For example, the PE conducting the PBO has a geographical focus on the DACH region whereas the PE conducting the SBO focuses on the Benelux region

<sup>3</sup> For example, the PE conducting the PBO has an industry focus on manufacturing but no geographical focus and the PE conducting the SBO does have a relevant specific geographical

*Hypothesis 3: "SBO operating performance is positively impacted by a difference in private equity house characteristics"*

### 2.3.2. The influence of key-professional characteristics

Next to private equity house characteristics, key-professional characteristics can also play a large role in the value creation potential of secondary buyouts. Degeorge et al (2016) discovered that the presence of complementary skillsets between the buyer and the seller is an important source of value creation. Notably the existence of complementarity of the career path and/or education background of the general partners showed a positive effect on performance.

That the career-paths of the key private equity professional involved with the specific transaction have an influence on the ability to increase operating performance has also been studied by other researchers. Acharya et al (2009) found that ex-consultants tend to outperform in internal value-creation programs, whereas ex-bankers do better in merger and acquisition situations. Finance-oriented PE firms might therefore bring value to the company if it previously has been sponsored by an operational-oriented PE firm and vice versa (Degeorge et al, 2016). Degeorge et al (2016) also researches the educational background of private equity professionals, with the focus on MBA and non-MBA.

This paper will next to researching the value of a MBA have a focus on the difference between financial and non-financial educational backgrounds. This twist on the previously mentioned earlier research is of interest as MBA's are less common in Europe as compared to the USA and having a non-financial background (i.e. engineering) might give the professional a better understanding of the operational side of the business and thus makes this person more likely to improve operating performance than someone with a financial background.

The above stated effects of the key-professional characteristics on operating performance of the SBO leads to the following hypothesis:

*Hypothesis 4: "SBO operating performance is positively impacted by a difference in key-professional characteristics"*

Concluding, hypothetically it could also be possible that, disregarding the difference between PBO's and SBO's in general, it is not only the case that having a certain change in characteristic(s) has a positive effect on the operating performance of the target, but also that

not having the change in characteristic(s) will deteriorate the operating performance. This reasoning and the hypotheses above lead to the main research question of this paper:

*“Do specific private equity house and/or professional characteristics explain the operating performance differences between secondary and primary buyouts?”*

### 3. Methodology

For the analysis of the above-mentioned main research question and hypotheses several regressions were created. These regressions include several variables which will be discussed in the following sections. The data on the buyouts comes from the Preqin Pro database, whereas the financial data (i.e. the operating performance measures) has been collected through the Orbis database of Bureau van Dijk. Private equity house and professional data has been collected through web-searches (i.e. LinkedIn and the website of the private equity house). Sub-chapter 3.1. will first cover how the measures used are constructed, after the data collection process and a data analysis on the constructed measures is covered in section 3.2.

#### 3.1. Measures of operating performance

The main operating performance measure used is the operating margin ratio EBIT/Turnover which is common used proxy for operating performance (Cressy et al, 2007; Yeh, 2012; Gill & Visnjic, 2015). Critics might argue that EBITDA/Turnover would be a better measure as it controls for differences in depreciation and amortization between companies. However, due to (voluntarily) differences in reporting between companies, differences in reporting regulation between countries and also the difficulty of the databases to correctly collect the information in an adequate manner, it can be argued that using EBIT instead of EBITDA might provide a better picture on operating performance. (see Bonini, 2015; Cressy et al, 2007).

For robustness purposes four other operating performance measures have been created based on (Bonini, 2015) which are split between operating margin ratio's, turnover ratio's and return on investment ("ROI") ratio's.

| Ratio                      | Variable        |
|----------------------------|-----------------|
| <b>Main measure</b>        |                 |
| Operating margin ratio     | EBIT/Turnover   |
| <b>Robustness measures</b> |                 |
| Operating margin ratio     | EBITDA/Turnover |
| Turnover ratio             | Turnover/Assets |
| Return on investment ratio | EBIT/Assets     |
|                            | EBITDA/Assets   |

Table 1: Operating performance measures

Operating profitability scaled by turnover or total assets have been widely adopted as a measure of company performance in previous research on buyouts (Kaplan, 1989; Long & Ravenscraft, 1993; Jain & Kini, 1994). Scaling turnover by assets in the turnover ratio instead of using raw sales has been chosen as this turnover measure provides more accurate information for both the future as the current performance (Fairfield & Yohn, 2001). In addition, ROI is preferred over return on assets (“ROA”) as ROA, measured by net income divided by assets, is affected by financial engineering of debt and difference in tax law across countries. As this paper focuses predominantly on value creation instead of value capturing, ROI is preferred.

Following previous studies, the economic performance of the acquired companies in a three year period (T+1 to T+3 with T=0 being the year of the buyout) after the buyout is measured (Alemany & Marti, 2005; Desbrières & Schatt, 2002). Research also provides strong evidence that most of the performance change is achieved during the first two years, allowing confidence in the economic significance of the results (Kaplan, 1989; Kaplan & Stromberg, 2009; Guo et al, 2011; Boucly et al, 2009). Using a longer window might introduce potential noise, which is not beneficial (Wang, 2012). Observations are included when at least 2 observations after the deal (T=0) are available.

The above-mentioned operating performance indicators will hereafter be referred to as “unadjusted operating performance measures”. In addition to these measures discussed above, an industry-adjusted abnormal performance percentage change indicator has been constructed (Barber & Lyon, 1996). This alternative specification ensures the robustness of the results and is consistent with the methodology used in other studies on the operating performance of LBOs (Bonini, 2015; Guo et al, 2011; Kaplan, 1989). As a consequence of dividing by the volatility of the industry, abnormal performance within industries that are characterized by low volatility are weighted more than the abnormal performance within industries that have high volatility in operating performance<sup>4</sup> (Bonini, 2015). The industry

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<sup>4</sup> Industry data has been collected through Orbis. Industry has been defined as having the same 2-digit NACE Rev.2 code. Additionally, only companies in the European Union and that have known values for EBITDA in at least one of the years 2010-2014. When more than 10.000 observations were available a random sample of 10.000 observations has been made

portfolios have been based on companies within the European Union with the same 2-digit NACE Rev.2 codes.

$$\text{Industry adjusted abnormal percentage change ratio} = \Delta\%W_{i,s} = \frac{(\Delta\%x_i - \Delta\%m_s)}{\sigma_{\Delta\%s}}$$

Where  $\Delta\%x$  is the percentage change in ratio  $x$  for firm  $i$  operating in industry  $s$ , and  $m_s$  is the ratio  $x$  median for industry  $s$ .  $\Delta\%m_s$  is the median percentage change of indicator  $x$  for industry  $s$ .  $\sigma_{\Delta\%s}$  is the standard deviation of indicator  $x$  for industry  $s$ .

An example calculation of the ratio is provided in appendix 1.

### **3.2. Measures of private equity house characteristics**

As discussed previously, proxies for private equity house characteristics, specialization and experience is measured. These measures are computed for both the selling as the buying private equity house to be able to determine if there was a significant change in characteristics between them.

In the instance that the buyout is conducted by a syndicate/consortium of private equity houses, the focus will only be on the lead investor. This is driven by the fact that the leader will most likely initiate the deal and coordinate the activities and strategy, while the other consortium members will act as followers (Wright & Lockett, 2003). Previous literature suggests that the lead investor on average hold a larger equity stake and has a more hands-on approach, in terms of monitoring and managing the company, compared to the followers (Das & Teng, 1998; Barry, 1994). The lead investor has been identified as the private equity house that is explicitly stated as lead investor or the private equity house that holds the largest stake. Acknowledging the strength of participating in a consortium due to information sharing, a dummy variable will be included in the regressions (named syndication).

#### **3.2.1. The influence of private equity house specialization**

A change in the specialization between the buying and selling private equity houses in terms of geographical focus and industry focus may impact the operating performance of the SBO.

In terms of geographical focus, a distinction has been made on the private equity house having no geographical focus and having a domestically/regionally focused. The geographical regions are defined as Benelux (Belgium, The Netherlands and Luxemburg), CEE (Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia & Slovakia) DACH

(Germany, Austria and Switzerland), Scandinavia (Sweden, Norway, Denmark and Finland) and Iberia (Portugal and Spain). An example of a Benelux focused private equity house is Parcom Capital and an example of an Iberia focused private equity house is MCH Private Equity.

Two types of specialization with regards to geography have been identified. Firstly, when a private equity house that was not focused on the geography of the target sells to a private equity house that is specialized in this geography. Improvement of operating performance through this type of specialization might be possible as there is a reduction in uncertainty and information asymmetry as previously mentioned (Eisenhardt, 1989). An example transaction is the buyout of Finland-based Kotkamills Oy in 2015 by MB Funds. MB Funds is a Finland-focused fund whereas the seller OpenGate Capital does not have a geographic focus. This type of specialization will be named “Geographical focus”. Secondly, when a private equity house that is geographically specialized in the country/region in which the target is located sells to a private equity house that has a different geographical focus. Improvement of operating performance through this type of specialization might be possible as a proven concept in one specific geography can be rolled out to different geographies. An example transaction is the buyout of Finland-based Aidon Oy in 2013 by Alder. Alder is a Scandinavia-focused private equity house whereas the seller Midinvest Management is only focused on Finland. This second type of specialization will be named “Change geographical focus”.

To determine this focus, a two-step approach has been used. Firstly, the website and related articles of the private equity house have been researched as most private equity houses with a domestic or regional focus state this clearly on the website. Secondly, if this information was not available on the website or related articles, the deals over the past 15 years have been checked on geographical focus. Firms have been classified as focused when over 60 percent of the deals in the last 15 years have been domestically or regionally (Degeorge et al, 2016).

In terms of industry focus, the approach of Cressy et al (2007) has been used. The measure is based on literature on technological specialization and international trade (Archibugi & Pianta, 1994). The index of competitive advantage (“ICA”) has been defined as:

$$ICA_{ij} = \frac{(C_{ij}/C_{.j})}{(C_{i.}/C_{..})}$$

With  $C_{ij}$  being the total number of portfolio companies of private equity house  $i$  in industry  $j$ ,  $C_{.j}$  being the total number of companies invested in industry  $j$  by all private equity houses,  $C_{i.}$  being the total number of portfolio companies of private equity house  $i$  and  $C_{..}$  being the total number of companies invested by all PE firms across all industries.

A dot indicates summation over the relevant subscript. Note that:

$$ICA_{ij} = \begin{cases} \geq 1 & \leftrightarrow C_{ij}/C_{.j} \geq C_{i.}/C_{..} \\ < 1 & \leftrightarrow C_{ij}/C_{.j} < C_{i.}/C_{..} \\ = 0 & \leftrightarrow C_{ij} = 0 \end{cases}$$

A value greater than one therefore indicates that the private equity house is relatively specialized in the industry, whereas a value lower than 1 indicates that the private equity house is not specialized in the industry. The dummy variable for the specific private equity house with regards to industry focus will therefore equal 1 when  $ICA_{ij} \geq 1$  and 0 when  $ICA_{ij} < 1$ , which will be compared to the dummy variable of the other private equity house.

### 3.2.2. The influence of private equity house experience

A change in the experience between the buying and selling private equity may impact operating performance of the SBO. For measuring experience, the proxies relative size and relative age have been used.

With regards to relative size, following literature a dummy variable has been constructed that has value 1 when the funds raised in the last 10 years of the buying private equity house is 1.5x larger than the funds raised in the last 10 years of the selling private equity house.

With regards to relative age, following literature a dummy variable has been constructed that has value 1 when the buying private equity house is at least 7 years older than the selling private equity house, with 7 years roughly illustrating having at least one more full life-time cycle of an investable fund.

### 3.3. Measures of private equity professional characteristics

As discussed previously, the private equity professional characteristics career path and educational background have been measured. These measures have been computed for key professionals of the selling as well as the buying private equity house to be able to determine if there was a significant change in characteristics between them.



After identifying the key professional, an online search has been conducted on the career path. A separation has been made between the following career backgrounds: audit, banking, consulting, corporate, law, private equity and other<sup>5</sup>. With private equity meaning that the professional has entered private equity straight after graduation without working in a different field. We controlled for professionals that have experience in multiple fields. Based on these career backgrounds a change dummy variable has been constructed that takes the value 1 if there is a change between the career-path of the buyer with regards to the seller and 0 if they have the same career background.

The variable for educational background of the key professional has been constructed in the same manner as the variable for career path of the key professional described above. The financial background consists of accounting, business administration and economics. The non-financial background consists of engineering, law and other<sup>6</sup>. There has been controlled for some professionals having multiple educations. Furthermore, a dummy variable for MBA has been included in the regression in accordance to Degeorge et al (2016).

In the table 2 below, a summation of both the measures of private equity house characteristics and the measures of private equity professional characteristics can be found.

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<sup>5</sup> Other includes careers in academia, the army, asset management, entrepreneurship, marketing and medicine

<sup>6</sup> Other includes education in medicine, mathematics, philosophy, computer science, natural science, chemistry and history

| Measurement  | Description  | Variable  |
|--|--|---|
| <b>Private equity house characteristics</b>        |  |   |
| Geographical focus                                 | A PE house is defined focused when (i) they clearly state this or (ii) over 60% of deals in the last 15 deals have been in the specific country or region**                                      | Dummy variable with value 1 when (i) non-focused sells to focused or (ii) regional focused sells to country focused, otherwise value is 0                                   |
| Change geographical focus                          | A PE house is defined focused when (i) they clearly state this or (ii) over 60% of deals in the last 15 deals have been in the specific country or region**                                      | Dummy variable with value 1 when buying house is geographically focused on a different geography than the target and the seller, otherwise value is 0                       |
| Industry focus                                     | Based on ICA. Defined as focused when ICA value is higher or equal to 1 and not focused when lower than 1  | Dummy variable with value 1 when buying house has value 1 as described in description section and selling house has a value of zero, otherwise value is 0                   |
| Size*  | Based on the fund raised in the last 10 years of the private equity house  | Dummy variable with value 1 when the buying house raised 1.5x more funds in the last 10 years than the selling house, otherwise value is 0                                  |
| Age*   | Based on the founding year of the private equity house   | Dummy variable with value 1 when the age of the buying house is at least 7 years older than the selling house, otherwise value is 0   |
| <b>Private equity professional characteristics</b> |  |   |
| Educational background                             | Accounting, business administration and economics are defined as a financial background. Engineering, law and other are defined as a non-financial background                                    | Dummy variable with value 1 when the buying professional has a different background from the selling professional and 0 when they both have the same educational background |
| MBA  | Dummy variable that takes value 1 when the professional has a MBA and 0 when the professional does not   | Dummy variable with value 1 when the buying professional has a MBA and the selling professional has not and visa versa, otherwise value is 0                                |
| Career-path  | Defined as the job(s) that the professional has had before working in private equity. A separation has been made between audit, banking, consulting, corporate, law, private equity and other*** | Dummy variable with value 1 when the buying professional has a different career-path from the selling professional, otherwise value is 0                                    |

**Table 2: Private equity house and professional characteristics change measures**

\* Proxy for experience of the private equity house

\*\* Regions used are: Benelux, DACH, CEE, Scandinavia and Iberia

\*\*\* With private equity meaning the professional has no other experience than private equity

### 3.4. Regressions and control variables

In order to test the hypotheses previously mentioned numerous regressions will be conducted, which can be divided in three main elements. All these regressions will have both the unadjusted operating performance measures as well as the industry adjusted abnormal change ratios as dependent variable.

The first group of regressions includes the entire dataset of PBO's and SBO's to determine if there is a statistical difference between the two in terms of operating performance. The SBO dummy that indicates 1 when the deal was a SBO and 0 when a deal was a PBO will be used to determine this difference. This group of regressions therefore is used to answer hypothesis 1.

The second group of regressions also includes the entire dataset of PBO's and SBO's. It compares the SBO deals that show a change in private equity house and/or professional

characteristics, as well as the SBO deals that do not show these changes, with that of PBO's. Therefore, this group of regressions is able to investigate if certain SBO deals under- or overperform compared to PBO's. For example, it might be possible that SBO's in general underperform PBO's, but SBO's with a change in professional characteristics are able to outperform PBO's. Additionally, it might be possible that SBO's in general perform the same as PBO's, but SBO's without a change in house characteristics do underperform PBO's. This group of regressions therefore is used to answer the main research question. This regression set is also the most relevant for practical use by private equity parties, as within their portfolio (or their investment decisions) there will be a mix of both PBO's as well as SBO's. Hence, if the regression set returns that a SBO conducted by a private equity investor without a certain changing skill will underperform other deals in general, the private equity party should investigate what kind of skillset they have and when looking at a SBO target they should also find out if they have complementary skills to the selling party.

The third group of regressions conducts a sub-sample analysis of the SBO deals in the dataset and has the purpose to investigate if the change in private equity house and professional characteristics do significantly impact operating performance between SBO's. The regression relates to the previous regression as all the characteristics used in regression 2 are also put into this regression. Note that in regression 3, due to the fact that the dummies are regressed on only SBO's, only the dummy variable that is 1 when there is a change is available in the regression. The inverse of the coefficient of the dummy is the effect of not having the change on the operating performance. This group of regressions is used to answer hypotheses 2, 3 and 4 and the main research question. This regression set is most relevant for academic literature as it does not have the joint hypotheses testing problem of the second regression set (further explained in section 5.2.). Also, if the second set find significant results but the conclusions of the third set of regressions are not matching, from an academic standpoint the focus should be put on regression set 3 as regression set 2 could be sample driven.

In addition to the variables of interest, several control variables were added to the regressions, which are chosen based on previous literature (Cressy et al, 2007; Achleitner & Figge, 2012). Firstly, the logarithm of turnover of the target a year prior to the buyout year (T-1) has been used to control for the size effect. Secondly, EBITDA margin in the year prior to the buyout year (T-1) has been used to control for the fact that it might be harder for already highly

profitable firms to increase profitability further. Thirdly, leverage<sup>7</sup> after the buyout (T=0) has been controlled for. Fourthly, a dummy variable has been included to account for syndication as mentioned before. Fifthly, country, time and industry<sup>8</sup> dummies have been added to account for country-specific and macroeconomic factors at the time of the deal.

Based on previous literature, accounting measures have been winsorized<sup>9</sup> (Bonini, 2015; Cressy et al, 2007). Additionally, robust (white) standard errors have been clustered around deal year.

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<sup>7</sup> Calculated as taking the log of  $(1 + ((\text{long-term debt} + \text{short-term debt}) / \text{total assets}))$

<sup>8</sup> Based on 2-digit NACE Rev. 2 codes

<sup>9</sup> At the 1% and 99% level

## **4. Data**

The regressions were conducted on a dataset that consists of buyouts within the European Union from January 2012 until December 2016. A total of 1,168 buyouts were identified of which 354 were secondary buyouts. In the following subchapters the data gathering process will be elaborated on, as well as a brief analysis of the sample.

### **4.1. Buyouts**

The data of the buyouts were collected from the Preqin Pro database, which is a data and insights provider for alternative investments professionals. As previously stated, deals were included when conducted between January 2012 and December 2016 within the European Union. Minority stake investments, debt investments and private investments in public entities (“PIPE’s”) were disregarded. Transactions conducted by bank-owned or state-owned private equity houses were also disregarded as they might have different incentives compared to ordinary private equity houses (Cressy et al, 2007).

As can be viewed below, the number of deals have increased year-by-year, both in terms of SBO’s as PBO’s. This might be a consequence of sentiment turning more positive after the European sovereign debt crisis that peaked around 2010-2012. The distribution between the SBO’s and PBO’s stayed quite stable with SBO’s ranging from 26% to 33% of total buyouts per year.

In terms of geography, most buyouts have been conducted in the United Kingdom with a total of 319 buyouts. Latvia had the lowest level of buyouts with only one during the period of interest. Next to having the most deals in absolute terms, the United Kingdom also had the highest percentage of SBO’s (41%) of the top 5.

Industry has been defined as the primary industry as assigned by the Preqin Pro database. Most deals have been conducted in the consumer products industry with a total of 105 buyouts. The lowest number of deals within a certain industry is one. This has been the case for the semiconductors, mining and energy storage & batteries industries. The amount of SBO’s relative to all buyouts across the top 5 industries ranges from 28% for business support services to 41% in the software industry.

| <b>General dataset information</b>  |            |             |            |             |              |             |
|-------------------------------------|------------|-------------|------------|-------------|--------------|-------------|
|                                     | <b>SBO</b> |             | <b>PBO</b> |             | <b>Total</b> |             |
|                                     | <b>#</b>   | <b>%</b>    | <b>#</b>   | <b>%</b>    | <b>#</b>     | <b>%</b>    |
| <b>Transactions</b>                 |            |             |            |             |              |             |
| Number of PBO's                     |            |             |            |             | 814          | 70%         |
| Number of SBO's                     |            |             |            |             | 354          | 30%         |
| <b>Total number of transactions</b> |            |             |            |             | <b>1168</b>  | <b>100%</b> |
| <b>Yearly distribution</b>          |            |             |            |             |              |             |
| 2012                                | 17         | 5%          | 49         | 6%          | 66           | 6%          |
| 2013                                | 47         | 13%         | 115        | 14%         | 162          | 14%         |
| 2014                                | 76         | 21%         | 197        | 24%         | 273          | 23%         |
| 2015                                | 100        | 28%         | 219        | 27%         | 319          | 27%         |
| 2016                                | 114        | 32%         | 234        | 29%         | 348          | 30%         |
| <b>Total</b>                        | <b>354</b> | <b>100%</b> | <b>814</b> | <b>100%</b> | <b>1168</b>  | <b>100%</b> |
| <b>Top 5 countries*</b>             |            |             |            |             |              |             |
| United Kingdom                      | 130        | 46%         | 189        | 34%         | 319          | 38%         |
| France                              | 49         | 17%         | 134        | 24%         | 183          | 22%         |
| Italy                               | 42         | 15%         | 99         | 18%         | 141          | 17%         |
| Germany                             | 36         | 13%         | 77         | 14%         | 113          | 13%         |
| Spain                               | 25         | 9%          | 64         | 11%         | 89           | 11%         |
| <b>Total</b>                        | <b>282</b> | <b>100%</b> | <b>563</b> | <b>100%</b> | <b>845</b>   | <b>100%</b> |
| <b>Top 5 Industries*</b>            |            |             |            |             |              |             |
| Consumer Products                   | 33         | 24%         | 72         | 27%         | 105          | 26%         |
| Travel & Leisure                    | 29         | 21%         | 54         | 20%         | 83           | 20%         |
| Business Support Services           | 22         | 16%         | 57         | 21%         | 79           | 20%         |
| Software                            | 29         | 21%         | 42         | 16%         | 71           | 18%         |
| Retail                              | 24         | 18%         | 43         | 16%         | 67           | 17%         |
| <b>Total</b>                        | <b>137</b> | <b>100%</b> | <b>268</b> | <b>100%</b> | <b>405</b>   | <b>100%</b> |

**Table 3: General information about the dataset**

*\* in terms of the total number of transactions*

## 4.2. Performance and other financial data

After the collection of the buyout deals data, the financial data has been collected by matching the companies of the Preqin Pro database with the Orbis database from Bureau van Dijk. All operating performance and control variables have been winsorized at the 1 and 99% level.

A comparison with regards to these operating performance variables and control variables is available below (table 4). The table shows that only one operating performance variable (E) indicates, based on a T-test, a significant difference of means. The test around median values showed significant differences at the 1%-level for operating performance measures B and E, as well as a significant difference at the 10%-level for operating performance measure C.

In terms of size proxied by the control variable  $\text{Log}(\text{Turnover}_{T-1})$ , there is a statistically significant difference in both the median as the mean between SBO's and PBO's, with SBO's being bigger in size. Median past profitability proxied by EBITDA margin  $\tau_{-1}$  is statistically different from each other at the 5%-level, with SBO's showing higher pre-deal profitability. In terms of pre-buyout leverage, the secondary buyout deals show a higher gearing compared to the PBO's (0.169 vs. 0.142) with the mean being statistically different from each other at the 1%-significance level. The higher value of leverage before the buyout of a SBO could be explained by the fact that a buyout is characterized by using a high amount of debt to buy to company. Thus, when the debt used by the previous buyout has not been paid down yet (i.e. when a big part of the capital structure contains debt with a bullet payment), the SBO's can show a higher value of leverage pre-buyout. The leverage post-buyout does not differ statistically in terms of mean and median. Also, the leverage pre-buyout shows a higher value than the leverage post-buyout for SBO's (0.169 vs. 0.162). However, these values do not significantly differ from each other and might be explained by the reasoning above that SBO's already have a higher leverage pre-buyout and thus it is less likely that the private equity house can increase this leverage considerably more in the SBO. Noteworthy, leverage is generally low in the sample leaving room for doubt if the Orbis database gives the leverage of the total capital structure. It might for instance be possible that the private equity house at the time of the buyout has set up a new entity that is 100%-owned by the target company in which the acquisition financing debt is located. If this entity is not regarded as part of the target by Orbis, the leverage ratios might be understated, which in turn might introduce a bias to the regressions. Hence, this hypothesis has to be kept in mind while interpreting the results.

Furthermore, there are differences in the control variables between SBO's and PBO's as previously mentioned (in example SBO's are larger in size). It might therefore be possible that SBO's are characteristically different from PBO's, as it could be possible that the private equity house that conducts a SBO chooses the acquisition based on certain characteristics that the target has. We thus might be testing a joint hypothesis. In the results section this will be elaborated on further.

| Variables                              | PBO    |        |        | SBO    |         |        | Test Statistics   |                 |
|--|--------|--------|--------|--------|---------|--------|-------------------|-----------------|
|  | # Obs. | Mean   | Median | # Obs. | Mean    | Median | T-test<br>t-value | Pearson<br>chi2 |
| <b>Operating performance variables</b> |        |        |        |        |         |        |                   |                 |
| A) EBIT / Turnover                     | 764    | 0.007  | 0.047  | 336    | (0.023) | 0.054  | 0.937             | 0.617           |
| B) EBITDA / Turnover                   | 727    | 0.085  | 0.085  | 319    | 0.075   | 0.108  | 0.474             | 7.581***        |
| C) EBIT / Assets                       | 814    | 0.067  | 0.059  | 354    | 0.067   | 0.049  | 0.061             | 2.740*          |
| D) EBITDA / Assets                     | 777    | 0.113  | 0.107  | 332    | 0.116   | 0.098  | (0.238)           | 0.807           |
| E) Turnover / Assets                   | 768    | 1.361  | 1.220  | 339    | 1.147   | 0.978  | 3.621***          | 22.469***       |
| <b>Control variables</b>               |        |        |        |        |         |        |                   |                 |
| Log(Turnover <sub>t-1</sub> )          | 754    | 9.840  | 9.942  | 338    | 10.311  | 10.514 | (4.003)***        | 30.958***       |
| EBITDA Margin <sub>t-1</sub>           | 726    | 0.106  | 0.099  | 320    | 0.113   | 0.122  | (0.499)           | 6.502**         |
| Log(1 + Leverage <sub>t=0</sub> )      | 745    | 0.120  | 0.044  | 310    | 0.134   | 0.029  | (1.318)           | 0.430           |
| <b>Other variables</b>                 |        |        |        |        |         |        |                   |                 |
| Log(1 + Leverage <sub>t-1</sub> )      | 814    | 0.100  | 0.036  | 354    | 0.139   | 0.047  | (3.973)***        | 0.584           |
| Turnover <sub>t-1</sub>                | 763    | 76,536 | 20,201 | 340    | 90,523  | 36,612 | (1.098)           | 30.221***       |
| Leverage <sub>t=0</sub>                | 745    | 0.142  | 0.045  | 310    | 0.162   | 0.029  | (1.445)           | 0.430           |
| Leverage <sub>t-1</sub>                | 814    | 0.117  | 0.037  | 354    | 0.169   | 0.048  | (4.232)***        | 0.584           |

**Table 4: comparison between primary buyouts and secondary buyouts. All variables have been winsorized at the 1 and 99% level.**  
\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

### 4.3. Private equity house and professional characteristics

After the SBO's have been identified and the financial data has been collected, the private equity house and professional characteristics data was collected. From all SBO deals first the Preqin Pro database has been checked if a lead partner was identified. If this was not the case a manual internet search was conducted on the deal. If an article covering the deal was found, the professional that was quoted in the article would then be identified as key professional. If the key professional still could not have been identified after the steps described above, a last search was done on all the partners working for the private equity house during the time of the deal. When these partners unanimously have the same background, then this background has been used. After the key professionals from both the buying and the selling party were identified a manual LinkedIn search was conducted to gather the educational and career backgrounds. If LinkedIn did not provide the needed information another manual internet search was conducted to gather the needed information. With regards to the private equity house information, all data has been collected through the Preqin Pro database. If a specific segment of the needed information was missing, a manual search on the internet was conducted.



As can be viewed in table 5 below, industry focus measured by ICA was relatively high for both the buyer as the seller (78% vs. 79%). Geographical focus however was lower for the buyer of the SBO (32%) compared to that of the seller (46%). Relatively, most of the key private equity professionals working on the deal have an educational background in economics (30%). Also, most professionals have a financial career background, but the number of professionals that have a financial career background is lower for buyers than for sellers (62% vs. 70%). MBA's are more common under key professionals of the buying private equity house in the SBO compared to the selling private equity house (26% vs. 16%).

| Variables                                    | Buyer      |             | Seller     |             |
|--|------------|-------------|------------|-------------|
|  | # Obs.     | %           | # Obs.     | %           |
| <b>Private equity house variables</b>        |            |             |            |             |
| Industry focus (ICA)                         | 121        | 78%         | 123        | 79%         |
| Geographical focus                           | 49         | 32%         | 72         | 46%         |
| <b>Private equity professional variables</b> |            |             |            |             |
| <u>Educational background</u>                |            |             |            |             |
| Economics                                    | 104        | 30%         | 85         | 30%         |
| Business administration                      | 20         | 6%          | 14         | 5%          |
| Engineering                                  | 30         | 9%          | 17         | 6%          |
| Other  | 32         | 9%          | 19         | 7%          |
| <b>Total</b>                                 | <b>352</b> | <b>100%</b> | <b>279</b> | <b>100%</b> |
| <u>Career background</u>                     |            |             |            |             |
| Financial                                    | 133        | 62%         | 107        | 70%         |
| Non-financial                                | 77         | 36%         | 45         | 29%         |
| Both   | 5          | 2%          | 1          | 1%          |
| <b>Total</b>                                 | <b>215</b> | <b>100%</b> | <b>153</b> | <b>100%</b> |
| MBA  | 72         | 26%         | 32         | 16%         |

Table 5: private equity house and professional variables compared between buyer and seller in secondary buyout transactions

Interestingly, the buyer in the secondary buyout is on average younger than the seller (25.78 years compared to 28.24 years). However, they are not found to be statistically different from each other. The buyer in the transaction did on average raise more funds within the last 10 years compared to the seller (€ 15bn compared to € 10bn), which statistically differs from each other at the 10% significance-level. As there are a few “mega funds” such as CVC with \$ 76bn raised in the last 10 years, it is preferred to compare the medians. When comparing these median values, the buyer is still larger in terms of raised funds (€ 1.5bn vs. € 1.3bn), but it is no longer significantly different from each other.

| Variables   | Buyer  |       |        | Seller |       |        | Test Statistics   |                 |
|---|--------|-------|--------|--------|-------|--------|-------------------|-----------------|
|   | # Obs. | Mean  | Median | # Obs. | Mean  | Median | T-test<br>t-value | Pearson<br>chi2 |
| <b>Private equity house experience indicators</b> |        |       |        |        |       |        |                   |                 |
| Age   | 155    | 25.78 | 23     | 155    | 28.24 | 21     | (1.117)           | 0.116           |
| Raised funds last 10 years                        | 151    | 14815 | 1540   | 149    | 10409 | 1329   | 1.655*            | 1.083           |

**Table 6: private equity house experience variables compared between buyer and seller in secondary buyout transactions**

\*\*\*  $p < 0.01$ , \*\*  $P < 0.05$ , \*  $P < 0.10$

Above tables cover the absolute difference between the buyer and the seller in the secondary buyout transactions. Table 7 illustrates the change of variables between the buyer and seller. For example, when looking at the industry focus variable, the table shows 15 observations that saw a change and 140 that saw no change in industry focus. Thus, in 10% of the transactions the seller was not focused in the industry of the portfolio company and the buyer was focused in that industry. Furthermore, in only 15% of the transactions the portfolio company was sold by a private equity house that was not geographically focused on the region/country of the portfolio company to a buyer that was focused on the specific region/country. 32% of buyers were at least 7 years older than the seller and in 56% of the deals the portfolio company was sold to a private equity house that had at least raised 1.5x more funds in the last 10 years. Educational background saw a switch in 43% of the buyouts and MBA in 25%. Interestingly, the secondary buyouts in which there was a switch of career background were relatively high with 60% of the total SBO observations.

| Variables   | Change |     | No Change |     | Total  |      |
|---|--------|-----|-----------|-----|--------|------|
|   | # Obs. | %   | # Obs.    | %   | # Obs. | %    |
| <b>Private equity house switch variables</b>        |        |     |           |     |        |      |
| Industry focus (ICA)                                | 15     | 10% | 140       | 90% | 155    | 100% |
| Geographical focus                                  | 23     | 15% | 132       | 85% | 155    | 100% |
| Experience (Age)                                    | 49     | 32% | 106       | 68% | 155    | 100% |
| Experience (Raised funds)                           | 87     | 56% | 68        | 44% | 155    | 100% |
| <b>Private equity professional switch variables</b> |        |     |           |     |        |      |
| Educational background                              | 67     | 43% | 90        | 57% | 157    | 100% |
| MBA   | 39     | 25% | 119       | 75% | 158    | 100% |
| Career background                                   | 111    | 60% | 74        | 40% | 185    | 100% |

**Table 7: Private equity house and professional switch variable information**

## 5. Results

Using the methodology and data described above, the primary and secondary buyouts have been analyzed and compared with regards to operating performance and are presented in this results section. The section is further divided into four separate sub-sections. Section 5.1. covers the question if SBO's perform different with regards to PBO's. Secondly, section 5.2. answers the question if certain characteristics influence SBO's with regards to the total dataset. Thirdly, in section 5.3. these characteristics are again tested, but only on the SBO dataset. Fourthly, in section 5.4. the hypotheses have been verified to give a clear overview on the findings.

### 5.1. Primary versus secondary buyouts

To be able to answer the hypothesis that states that SBO's perform worse in terms of operating performance compared to PBO's, regression 1 has been conducted on the entire dataset of PBO's and SBO's. The results of this regression are available below in table 8.

As can be seen in the table, EBITDA margin pre-buyout has been disregarded in the unadjusted regressions. This has been done as the correlation with the relevant operating performance indicator in T-1 was high (with 0.665 for operating performance indicator A and 0.798 for B, see appendix 2 for the correlation matrix).

As can be seen in table 8, SBO's perform worse in terms of operating performance measured by the main operating performance measure (EBIT/Turnover) at the 5% significance level. However, this is only true for the unadjusted operating performance measure. The adjusted operating performance measure (adjusted for overall industry performance and volatility, see section 3.1.) shows no significant difference in operating performance between PBO's and SBO's. These two results should be interpreted with caution as, already mentioned in section 4.2., you are testing a joint hypothesis. Namely, you test whether SBO's perform worse than PBO's, but the characteristics between the two differ that could originate from the professional choosing different types of targets when the target is a SBO. Interpreted on this specific case of results of operating performance measure, where the unadjusted measure shows a significant negative result and the adjusted measure shows no significant result. It might be that professionals chose to conduct the SBO in an industry that has low volatility and thus an industry in which it is harder to outperform peers and/or rapidly increase operating performance. When this is the case, it might be a logical result that the unadjusted measure

shows a negative significant difference and the adjusted measure shows no significant difference. However, this is not a conclusion that can be made without further research into the topic. We can however conclude with stating that a joint hypothesis is tested and therefore the results should be interpreted with caution as mentioned.

Additionally, for the purpose of robustness, as previously explained, the regression has also been performed on four other operating performance measures<sup>10</sup>. Appendix 3 gives the results from these regressions. From the four operating performance measures that have been added as a robustness check B, C and D show no significant difference between SBO's and PBO's. For the adjusted operating performance measure E (Turnover/Assets), the SBO dummy shows a positive significant (5%-level) effect.

The proxy for size (log of turnover in the year before the buyout) shows to have a positive effect on the adjusted measure (5%-significance). However, the results from the robustness regressions are not sufficient to attach a hard conclusion to this outcome. Additionally, leverage shows to have a negative effect on operating performance, which is not in line with past literature (Gonzalez, 2013). This might be explained by the already mentioned fact that leverage is relatively low in the sample (see section 4.2.). Pre-deal EBITDA margin shows no effect on operating performance. Operating performance pre-deal has an unsurprisingly positive effect on the operating performance post-deal.

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<sup>10</sup> These additional measures being: B) EBITDA/Turnover, C) EBIT/Assets, D) EBITDA/Assets and E) Turnover/Assets

| Variables                            | A) EBIT/Turnover    |                    |
|--------------------------------------|---------------------|--------------------|
|                                      | Unadj.              | Adj.               |
| SBO dummy                            | -0.034**<br>(0.008) | -0.000<br>(0.000)  |
| Log(Turnover <sub>T-1</sub> )        | 0.033<br>(0.018)    | 0.000**<br>(0.000) |
| Log(1 + Leverage <sub>T=0</sub> )    | -0.113<br>(0.058)   | -0.001<br>(0.002)  |
| Syndicated dummy                     | -0.048<br>(0.027)   | 0.001<br>(0.001)   |
| EBITDA margin <sub>T-1</sub>         |                     | -0.001<br>(0.000)  |
| A) EBIT/Turnover <sub>Pre-deal</sub> | 0.460***<br>(0.047) |                    |
| Industry dummies                     | Yes                 | Yes                |
| Year dummies                         | Yes                 | Yes                |
| Country dummies                      | Yes                 | Yes                |
| Constant                             | -0.093<br>(0.187)   | -0.003<br>(0.003)  |
| Observations                         | 965                 | 925                |
| Adjusted R-squared                   | 0.220               | 0.088              |

**Table 8: First regression results.** *This table shows the results of the OLS regressions of the main operating performance indicator for both the unadjusted and (industry and volatility) adjusted versions. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.*

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

## **5.2. Secondary buyouts compared to primary buyouts**

The second set of regressions have been made to compare the secondary buyouts that did and did not experience a change in private equity house and/or professional characteristic(s) with the primary buyouts. Hence, for this regression the full dataset of primary and secondary buyouts have been used. This particular set of regressions is of interest due to its practical use for private equity professionals. Private equity houses can choose between all the types of deals (PBO's and SBO's). It might therefore be interesting for the private equity party actively searching for deals to know if having a change in skills (or not having the change) compared to the seller in a secondary buyout means that, on average, they would be more likely to increase operating performance (or decrease when not having the change in skillset), compared to all the other types of deals they could do.

Two dummy variables have been included in the regressions for each proxy of the characteristics. Namely, the variable that has value one when the buyout was a SBO and the characteristic of interest showed a change between seller and buyer. As well as, the variable that has value one when the buyout was a SBO and the characteristic of interest showed no change between seller and buyer. As previously explained, these two dummy variables help to explain if a change in characteristic leads to an increase in operating performance or if no change in the characteristic leads to a decrease in operating performance. It might for instance be the case that secondary buyouts that do experience a change do not necessarily outperform PBO's, but that SBO's that have no change in characteristic do underperform PBO's as there are no value creation opportunities, as described in section 2.3. For this regression it should be kept in mind that we are testing a joint hypothesis as the dummy variable can only be 1 if the buyout was a secondary buyout.

### **5.2.1. Influence of private equity professional characteristics**

In terms of private equity professional characteristics, the educational switch dummy, MBA switch dummy and career switch dummy have been used as proxies for a change in characteristic(s) between buying and selling professional.

When looking at education, a switch in education has a positive effect for both the adjusted as well as the unadjusted operating measure (see table 9), but the effect is not significant. The buyout being a SBO and the buying key professional having no different education background from the seller shows a significant negative effect for both the adjusted and unadjusted

measure (5% significance). Appendix 4 shows that this result is also robust for the unadjusted operating performance measure B (EBITDA/Turnover). Both MBA dummies show to have no significant effect at all on operating performance (this is also the case for the robustness regressions). The no change in career dummy shows a negative significant effect on a non-adjusted basis at the 10% level in line with the hypothesis. Robustness check B on an unadjusted basis also shows this negative effect at the 5% significance level. Interestingly, the career change dummy shows a significant negative effect on the adjusted basis for the main operating measure. This result however is not robust.

### 5.2.2. Influence of private equity house characteristics

With the influence of private equity house characteristics, we try to analyze if the buying private equity house has different characteristic(s) compared to the selling private equity house. The proxies used to differentiate private equity house characteristics are PE size, age, geo focus, change geo focus and ICA industry. With the latter three being a proxy of strategic focus of the private equity house.

A switch in size of the private equity house seems to have no significant effect on the operating performance measures. The no switch variable for age is however negative and significant, both for the unadjusted as adjusted measures at the 5%-level. This result is however not robust (although measures C and D show a significant positive effect for a change in age). Geographical focus has no significant effect, but not having a change in geographical focus has a significant negative effect on the operating performance (5% significance on the unadjusted measure). This is however not robust as evident from appendix 4. The no switch industry (ICA) variable shows to have a significant negative effect on operating performance on an adjusted basis.

| Variables                            | A) EBIT/Turnover    |                     |                     |                     |                     |                     |                     |                     |                     |                    |                      |                    |                     |                    |                    |                    |                    |
|--------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|----------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|
|                                      | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Adj.                | Adj.               | Adj.                 | Adj.               | Adj.                | Adj.               | Adj.               | Adj.               |                    |
| Educational dummy - switch           | 0.019<br>(0.018)    |                     |                     |                     |                     |                     |                     |                     | 0.000<br>(0.001)    |                    |                      |                    |                     |                    |                    |                    |                    |
| Educational dummy - no switch        | -0.118**<br>(0.041) |                     |                     |                     |                     |                     |                     |                     | -0.001**<br>(0.000) |                    |                      |                    |                     |                    |                    |                    |                    |
| MBA dummy - switch                   |                     | -0.129<br>(0.079)   |                     |                     |                     |                     |                     |                     |                     | -0.002<br>(0.001)  |                      |                    |                     |                    |                    |                    |                    |
| MBA dummy - no switch                |                     | -0.050<br>(0.034)   |                     |                     |                     |                     |                     |                     |                     | -0.000<br>(0.001)  |                      |                    |                     |                    |                    |                    |                    |
| Career dummy - switch                |                     |                     | -0.034<br>(0.038)   |                     |                     |                     |                     |                     |                     |                    | -0.002***<br>(0.000) |                    |                     |                    |                    |                    |                    |
| Career dummy - no switch             |                     |                     | -0.133*<br>(0.054)  |                     |                     |                     |                     |                     |                     |                    | 0.000<br>(0.000)     |                    |                     |                    |                    |                    |                    |
| PE size dummy - switch               |                     |                     |                     | -0.104<br>(0.049)   |                     |                     |                     |                     |                     |                    |                      | -0.001<br>(0.000)  |                     |                    |                    |                    |                    |
| PE size dummy - no switch            |                     |                     |                     | -0.031<br>(0.102)   |                     |                     |                     |                     |                     |                    |                      | -0.001<br>(0.000)  |                     |                    |                    |                    |                    |
| Age dummy - switch                   |                     |                     |                     |                     | -0.057<br>(0.041)   |                     |                     |                     |                     |                    |                      |                    | 0.002<br>(0.001)    |                    |                    |                    |                    |
| Age dummy - no switch                |                     |                     |                     |                     | -0.081**<br>(0.025) |                     |                     |                     |                     |                    |                      |                    | -0.002**<br>(0.000) |                    |                    |                    |                    |
| Geo focus dummy - switch             |                     |                     |                     |                     |                     | -0.265<br>(0.163)   |                     |                     |                     |                    |                      |                    |                     | 0.000<br>(0.001)   |                    |                    |                    |
| Geo focus dummy - no switch          |                     |                     |                     |                     |                     | -0.046<br>(0.046)   |                     |                     |                     |                    |                      |                    |                     | -0.001<br>(0.000)  |                    |                    |                    |
| Change geo focus dummy - switch      |                     |                     |                     |                     |                     |                     | 0.006<br>(0.074)    |                     |                     |                    |                      |                    |                     |                    |                    | -0.002<br>(0.001)  |                    |
| Change geo focus dummy - no switch   |                     |                     |                     |                     |                     |                     | -0.083**<br>(0.026) |                     |                     |                    |                      |                    |                     |                    |                    | -0.001<br>(0.000)  |                    |
| ICA industry dummy - switch          |                     |                     |                     |                     |                     |                     |                     | -0.096<br>(0.088)   |                     |                    |                      |                    |                     |                    |                    |                    | 0.001<br>(0.001)   |
| ICA industry dummy - no switch       |                     |                     |                     |                     |                     |                     |                     | -0.070<br>(0.038)   |                     |                    |                      |                    |                     |                    |                    |                    | -0.001*<br>(0.000) |
| Log(Turnover <sub>T-1</sub> )        | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.033<br>(0.018)    | 0.000**<br>(0.000)  | 0.000**<br>(0.000) | 0.000**<br>(0.000)   | 0.000**<br>(0.000) | 0.000**<br>(0.000)  | 0.000**<br>(0.000) | 0.000**<br>(0.000) | 0.000**<br>(0.000) |                    |
| Log(1 + Leverage <sub>T=0</sub> )    | -0.118<br>(0.059)   | -0.124*<br>(0.053)  | -0.121<br>(0.060)   | -0.126*<br>(0.054)  | -0.126*<br>(0.053)  | -0.127<br>(0.065)   | -0.124*<br>(0.056)  | -0.124*<br>(0.057)  | -0.002<br>(0.002)   | -0.002<br>(0.002)  | -0.002<br>(0.002)    | -0.002<br>(0.002)  | -0.002<br>(0.002)   | -0.002<br>(0.002)  | -0.002<br>(0.002)  | -0.002<br>(0.002)  |                    |
| Syndicated dummy                     | -0.048<br>(0.025)   | -0.049<br>(0.025)   | -0.043<br>(0.025)   | -0.051<br>(0.028)   | -0.049<br>(0.025)   | -0.047<br>(0.025)   | -0.049<br>(0.025)   | -0.048*<br>(0.020)  | 0.001<br>(0.001)    | 0.001<br>(0.001)   | 0.001<br>(0.001)     | 0.001<br>(0.001)   | 0.001<br>(0.001)    | 0.001<br>(0.001)   | 0.001<br>(0.001)   | 0.001<br>(0.001)   |                    |
| EBITDA margin <sub>T-1</sub>         |                     |                     |                     |                     |                     |                     |                     |                     | -0.001<br>(0.001)   | -0.001<br>(0.000)  | -0.001<br>(0.000)    | -0.001<br>(0.000)  | -0.001<br>(0.000)   | -0.001<br>(0.000)  | -0.001<br>(0.000)  | -0.001<br>(0.000)  |                    |
| A) EBIT/Turnover <sub>Pre-deal</sub> | 0.459***<br>(0.049) | 0.457***<br>(0.051) | 0.455***<br>(0.045) | 0.457***<br>(0.049) | 0.458***<br>(0.049) | 0.459***<br>(0.049) | 0.458***<br>(0.049) | 0.458***<br>(0.048) |                     |                    |                      |                    |                     |                    |                    |                    |                    |
| Industry dummies                     | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                | Yes                  | Yes                | Yes                 | Yes                | Yes                | Yes                |                    |
| Year dummies                         | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                | Yes                  | Yes                | Yes                 | Yes                | Yes                | Yes                |                    |
| Country dummies                      | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                | Yes                  | Yes                | Yes                 | Yes                | Yes                | Yes                |                    |
| Constant                             | -0.077<br>(0.166)   | -0.065<br>(0.167)   | -0.066<br>(0.165)   | -0.075<br>(0.138)   | -0.090<br>(0.173)   | -0.096<br>(0.185)   | -0.118<br>(0.197)   | -0.092<br>(0.178)   | -0.003<br>(0.003)   | -0.002<br>(0.003)  | -0.004<br>(0.003)    | -0.003<br>(0.003)  | -0.002<br>(0.002)   | -0.003<br>(0.003)  | -0.002<br>(0.003)  | -0.003<br>(0.003)  |                    |
| Observations                         | 965                 | 965                 | 965                 | 965                 | 965                 | 965                 | 965                 | 965                 | 925                 | 925                | 925                  | 925                | 925                 | 925                | 925                | 925                |                    |
| Adjusted R-squared                   | 0.225               | 0.222               | 0.225               | 0.223               | 0.222               | 0.226               | 0.222               | 0.222               | 0.088               | 0.089              | 0.090                | 0.087              | 0.094               | 0.088              | 0.087              | 0.088              |                    |

**Table 9: Second regression results:** This table shows the results of the OLS regressions of the main operating performance indicator for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics of SBO's with regards to PBO's. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.

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



### **5.3. Secondary buyouts**

To be able to get an insight into the influence of private equity house and professional characteristics on the operating performance of SBO's, regression 3 has been conducted on the sub-sample of the dataset that only consists of SBO's. The results of this regression can be viewed in table 10 below. The robustness regressions are available in appendix 5. This regression set is particularly important for academic literature as it solely focuses on secondary buyouts and thus overcomes the problem of joint hypothesis testing of the above discussed second set of regressions, as well as sample driven problems previously discussed.

Looking at the results in table 10 below we see that no characteristic has a significant effect on the unadjusted main performance measure A. The private equity professional characteristic career switch dummy seems to have an unexpected negative effect on the adjusted operating performance measure. This result is however not significant for any of the robustness checks (see appendix 5). The age switch variable seems to have a positive effect on the adjusted operating performance at the 1% significance level, however again not robust with regards to the control operating performance measures.

There are other noteworthy results of the robustness regressions. Namely, a switch in the educational background has a positive effect on the performance of the SBO in both the adjusted as unadjusted regressions on C (EBIT/Assets) as on unadjusted measure D (EBITDA/Assets). Also, a change in size does seem to have a positive effect on the adjusted measure B (EBITDA/Turnover) at the 5% significance level. Lastly, a change in geographical focus has a negative effect and a switch in industry focus has a positive effect on adjusted measure C (both at the 5% significance level).

| Variables                            | A) EBIT/Turnover   |                    |                    |                    |                     |                     |                     |                    |                   |                   |                     |                     |                   |                     |                   |                   |                  |
|--------------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|--------------------|-------------------|-------------------|---------------------|---------------------|-------------------|---------------------|-------------------|-------------------|------------------|
|                                      | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.              | Unadj.              | Unadj.              | Unadj.             | Unadj.            | Adj.              | Adj.                | Adj.                | Adj.              | Adj.                | Adj.              | Adj.              |                  |
| Educational switch dummy             | 0.123<br>(0.141)   |                    |                    |                    |                     |                     |                     |                    |                   | 0.002<br>(0.002)  |                     |                     |                   |                     |                   |                   |                  |
| MBA switch dummy                     |                    | -0.014<br>(0.165)  |                    |                    |                     |                     |                     |                    |                   |                   | -0.003<br>(0.003)   |                     |                   |                     |                   |                   |                  |
| Career switch dummy                  |                    |                    | 0.076<br>(0.082)   |                    |                     |                     |                     |                    |                   |                   |                     | -0.002**<br>(0.001) |                   |                     |                   |                   |                  |
| PE size switch dummy                 |                    |                    |                    | -0.135<br>(0.087)  |                     |                     |                     |                    |                   |                   |                     |                     | -0.000<br>(0.001) |                     |                   |                   |                  |
| Age switch dummy                     |                    |                    |                    |                    | -0.087<br>(0.162)   |                     |                     |                    |                   |                   |                     |                     |                   | 0.004***<br>(0.001) |                   |                   |                  |
| Geo focus switch dummy               |                    |                    |                    |                    |                     | -0.486<br>(0.321)   |                     |                    |                   |                   |                     |                     |                   |                     | 0.002<br>(0.003)  |                   |                  |
| Change geo focus switch dummy        |                    |                    |                    |                    |                     |                     | 0.207<br>(0.151)    |                    |                   |                   |                     |                     |                   |                     |                   | -0.002<br>(0.001) |                  |
| ICA industry switch dummy            |                    |                    |                    |                    |                     |                     |                     | 0.259<br>(0.143)   |                   |                   |                     |                     |                   |                     |                   |                   | 0.003<br>(0.002) |
| Log(Turnover <sub>T-1</sub> )        | 0.086*<br>(0.037)  | 0.100<br>(0.050)   | 0.081<br>(0.046)   | 0.093<br>(0.049)   | 0.084<br>(0.043)    | 0.088*<br>(0.036)   | 0.105<br>(0.052)    | 0.106<br>(0.051)   | -0.000<br>(0.001) | 0.000<br>(0.001)  | 0.000<br>(0.000)    | -0.000<br>(0.000)   | 0.000<br>(0.001)  | -0.000<br>(0.000)   | -0.000<br>(0.000) | 0.000<br>(0.000)  |                  |
| Log(1 + Leverage <sub>T=0</sub> )    | 0.212<br>(0.561)   | 0.060<br>(0.624)   | 0.293<br>(0.413)   | 0.160<br>(0.503)   | 0.185<br>(0.494)    | -0.063<br>(0.258)   | 0.140<br>(0.493)    | 0.170<br>(0.495)   | 0.006<br>(0.005)  | 0.004<br>(0.003)  | 0.002<br>(0.006)    | 0.005<br>(0.004)    | 0.004<br>(0.006)  | 0.006<br>(0.005)    | 0.005<br>(0.004)  | 0.005<br>(0.004)  |                  |
| Syndicated dummy                     | -0.280<br>(0.229)  | -0.286<br>(0.225)  | -0.180<br>(0.166)  | -0.332<br>(0.221)  | -0.312<br>(0.261)   | -0.304<br>(0.186)   | -0.299<br>(0.237)   | -0.457<br>(0.266)  | 0.003<br>(0.001)  | 0.002<br>(0.002)  | 0.002<br>(0.002)    | 0.002<br>(0.001)    | 0.003<br>(0.002)  | 0.002<br>(0.001)    | 0.002<br>(0.001)  | 0.001<br>(0.001)  |                  |
| EBITDA margin <sub>T-1</sub>         |                    |                    |                    |                    |                     |                     |                     |                    | 0.001<br>(0.002)  | -0.000<br>(0.001) | 0.001<br>(0.002)    | 0.000<br>(0.001)    | -0.001<br>(0.002) | 0.000<br>(0.001)    | 0.000<br>(0.001)  | 0.000<br>(0.001)  |                  |
| A) EBIT/Turnover <sub>Pre-deal</sub> | 0.988**<br>(0.224) | 0.934**<br>(0.283) | 0.897**<br>(0.270) | 1.005**<br>(0.243) | 1.017***<br>(0.210) | 0.955***<br>(0.207) | 0.967***<br>(0.208) | 0.984**<br>(0.223) |                   |                   |                     |                     |                   |                     |                   |                   |                  |
| Industry dummies                     | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                 | Yes                 | Yes                | Yes               | Yes               | Yes                 | Yes                 | Yes               | Yes                 | Yes               | Yes               |                  |
| Year dummies                         | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                 | Yes                 | Yes                | Yes               | Yes               | Yes                 | Yes                 | Yes               | Yes                 | Yes               | Yes               |                  |
| Country dummies                      | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                 | Yes                 | Yes                | Yes               | Yes               | Yes                 | Yes                 | Yes               | Yes                 | Yes               | Yes               |                  |
| Constant                             | -0.299<br>(0.453)  | -0.547<br>(0.666)  | -0.454<br>(0.443)  | -0.174<br>(0.487)  | -0.075<br>(0.374)   | -0.217<br>(0.367)   | -0.620<br>(0.534)   | -0.198<br>(0.407)  | 0.018<br>(0.011)  | 0.020<br>(0.010)  | 0.020***<br>(0.004) | 0.020<br>(0.010)    | 0.012<br>(0.011)  | 0.019*<br>(0.008)   | 0.022*<br>(0.009) | 0.020*<br>(0.009) |                  |
| Observations                         | 129                | 129                | 149                | 127                | 127                 | 127                 | 127                 | 127                | 123               | 123               | 142                 | 121                 | 121               | 121                 | 121               | 121               |                  |
| Adjusted R-squared                   | 0.307              | 0.285              | 0.320              | 0.298              | 0.295               | 0.348               | 0.299               | 0.308              | -0.810            | -0.793            | -0.565              | -0.888              | -0.776            | -0.881              | -0.884            | -0.872            |                  |

**Table 10: Third regression results:** This table shows the results of the OLS regressions of the main operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.

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

#### 5.4. Verification of hypotheses

This subsection will be used to interpret the results on the hypotheses that have been covered in section 2.3. This is done to finally answer the main research question, which will be done in chapter 6, the conclusion.

*Hypothesis 1: "Secondary buyouts perform worse in terms of increasing operating performance after the buyout compared to primary buyouts"*

Hypothesis 1 has been researched by means of the first set of regressions (table 8). As shown from these regressions no single-sided conclusion can be drawn. The unadjusted main measure A shows a significant negative effect. However, this is not the case for the adjusted measure. Also, the result is not robust as none of the control dependent variables have a significant negative effect, with the adjusted measure E even having a significant positive effect of SBO's on the operating performance, however measure E (Turnover/Assets) is the least robust operating measure used in the regressions as it does not consider the costs that a measure that uses EBIT or EBITDA does.

A possible explanation for the fact that the unadjusted measure shows a significant negative effect and the adjusted measure does not might be because the private equity professionals that conducts SBO's might target different types of firms than the professional that conducts a PBO. This is evident from the differences in certain characteristics already described in section 4.2. Hypothetically, it might for instance be that, on average, SBO's are conducted in industries that have a higher volatility with regards to operating performance. If this is the case it might be that, compared on an unadjusted basis, SBO's underperform PBO's, but when adjusted for this difference in volatility (as is done in the adjusted measure) this underperformance is not visible anymore. It can thus not necessarily be argued that the adjusted measure is better than the unadjusted measure nor visa versa as it depends on if you want to include this potential selection process of the private equity professional in your regression or control for it. It must be noted that this problem can be overcome in an easier manner, namely by linking the SBO and PBO based on the individual target (further explained in section 6.2.)

Concluding, based on the firstly the main regression, secondly, the robustness regressions showing one significant contradicting result and no significant result that verifies the

significant result of adjusted measure A and thirdly, the above reasoning, it can be concluded that the aggregate results for the first set of regressions show that there is no real robust evidence to assume that there is a real difference in operating performance between PBO's and SBO's. Hence, there is not enough evidence to state that hypothesis 1 is true.

*Hypothesis 2: "SBO operating performance is positively impacted by a difference in specialization between the buying and selling private equity house"*

As previously mentioned, the strategic focus of the private equity house has been separately covered in the hypotheses from the other private equity house characteristics, namely in hypothesis 2. The proxy variables used to answer the hypothesis are the geographical focus change dummy, the change in geographical focus change dummy and the ICA industry change dummy. This hypothesis is answered based on the third set of regressions (table 10). The set of regressions shows that none of the change variables showed to have a significant effect on the main operating performance measure (EBIT/Assets).

Also, the change in geographical focus dummy had a negative effect on the adjusted robustness measure C, which is not in line with the hypothesis. The reason why a change in geographical focus might be beneficial for operating performance is that a proven concept can be rolled out to a different (geographical) market. A possible explanation for the fact that this change in geographical focus actually decreases operating performance based on adjusted measure C might be that this roll out takes time and requires investments. It might therefore be that it decreases the operating performance in the short term (but still increases it in the long term). As this paper only takes into account the operating performance of 3 years after the buyout, it could be possible that we just only see the temporarily decrease in the operating performance and not the long-term effects. Also, the industry focus change dummy had a positive effect on adjusted measure C. This therefore might possibly be explained by the reasoning that changing industry focus is faster or requires less upfront investments than shifting focus geographically.

Based on this set of regressions on the main operating measure and the robustness regressions, there is no reason to assume that specialization of the private equity house has a positive effect on the operating performance of SBO's.

*Hypothesis 3: "SBO operating performance is positively impacted by a difference in private equity house characteristics"*

Hypothesis 3 is also answered by means of the third set of regressions (table 10). Dummy variables of interest are PE size switch dummy and the age switch dummy. A change in age between buyer and seller shows to have a significant positive effect on the main operating performance measure. Also, the regression on the adjusted robustness measure B shows that a change in size has a significant positive effect on the operating performance of SBO's. No regression showed significant results in opposition of the hypothesis. Aggregately it can therefore be stated that SBO operating performance is positively impacted by certain differences in private equity house characteristics, and hence, there is no evidence to reject hypothesis 3.

*Hypothesis 4: "SBO operating performance is positively impacted by a difference in key-professional characteristics"*

Like hypotheses 2 and 3, hypothesis 4 is answered by means of the third set of regressions (table 10). Dummy variables of interest are the educational switch dummy, MBA switch dummy and the career switch dummy.

The educational switch dummy has a positive effect on the main operating performance measure, however this effect is not significant. The robustness check measure C (both adjusted and unadjusted) as well as unadjusted measure D do however show a significant positive effect of a change in educational background on the post-buyout operating performance. The MBA switch dummy seems to have no significant effect on any of the regressions in the set. This is in line with the reasoning made in sub-chapter 2.3.2. that MBA's are less common in Europe than in the United States (the focus of previous research) and thus that the effect on operating performance is nonexistent. As previously mentioned, the career switch dummy shows a significant negative effect on the post-buyout operating performance of SBO's, which is not in line with the hypothesis. However, this result is not in accordance with any of the robustness checks. A possible explanation for this negative result of a change in career might be that there is (or are multiple) career backgrounds that out-/underperform the other career backgrounds in general and thus might distort the switch variable used in this paper. Further research might therefore be done on specific career paths (in addition to

certain combinations of career, education and MBA as mentioned in section 6.2.). Based on the above, no aggregate conclusion can be made on the effect of key professional characteristics on the operating performance of SBO's, however there is reason to believe that education could have a positive effect.

Concluding, aggregately there was no clear evidence for the hypothesis that SBO's underperform PBO's. There was also no clear evidence to suggest that strategic focus influences the operating performance of SBO's. The other private equity house characteristics, namely age and size do seem to positively impact operating performance of SBO's. Additionally, a switch in education might positively influence the operating performance of SBO's.

This verification of hypotheses will, together with the results of the second set of regressions, be used to answer the main research question, which will be done in the next chapter, chapter 6.

## 6. Conclusion

This chapter, conclusion, is separated into 2 sub-chapters. First, the main research question will be answered. Thereafter, the limitations and suggestions for future research will be covered.

### 6.1. Answer on the main research question

With the increase of secondary buyouts as means of exit for private equity houses, the subject has also been gaining ground in the academic literature. Whereas value creation opportunities for PBO's have been widely discussed and researched, this is not the case for SBO's. Critics of secondary buyouts namely suggests that the private equity house that buys the target from another private equity house should not be able to further increase operating performance as the seller should already have pulled all the possible value creation levers. On the other side, it could be the case that the buying private equity house or its professionals has certain characteristics that the seller does not have and hence due to these characteristics the buying house is better at pulling the levers already pulled by the seller or that it can pull different value creation levers all together. This paper tries to shed a light on this last-mentioned theory.

The hypotheses that have been covered in section 5.4. as well as especially the second set of regressions are used to answer the main research question:

*“Do specific private equity house and/or professional characteristics explain the operating performance differences between secondary and primary buyouts?”*

Firstly, evidence based on the first set of regressions suggests that there is no reason to assume that secondary buyouts perform differently compared to primary buyouts in terms of operating performance. However, it should be kept in mind that SBO's differ in aspects such as size. Therefore, there might be other elements that make secondary buyouts characteristically different from primary buyouts.

Secondly, when comparing only secondary buyouts, for most researched changes in characteristics between the buyer and seller there is no reason to suspect an effect on operating performance. However, based on the second set of regressions, there is reason to believe that a change in age and size of the private equity house and a change in education of the private equity professional does positively impact operating performance in secondary buyouts.

Thirdly, when comparing secondary buyouts and the researched characteristics with primary buyouts, in terms of professional characteristics, having no switch in educational background or career-path has a significant and robust negative effect. In terms of private equity house characteristics, there is evidence that the age switch has an effect on operating performance, but this is not robust. Additionally, the no geographical switch and no ICA industry switch show significant negative results, but are also not robust. Generally, what can be argued from the conclusions of this second set of regressions is that it is not necessarily that having certain house or professional characteristics will lead to outperformance in terms of operating performance post-deal, but that not having certain characteristics can lead to underperformance of that specific SBO compared to the full sample of SBO's and PBO's.

Concluding, secondary buyouts do not necessarily differ from primary buyouts in operating performance. In addition, only for the age, size and education change dummies there are reasons to believe that they might positively impact SBO operating performance. Also, when comparing certain type of SBO's with both the SBO's as the PBO's there is reason to believe that certain characteristics influence the operating performance, as mentioned above. Especially not having certain characteristics might negatively impact the operating performance (with education and career being robust).

The above-mentioned concluding remarks are evidence for the reasoning that certain changes in characteristics do impact the operating performance post-buyout, but most importantly that not having certain changes does have a negative impact. This conclusion (based on the regression that takes the full dataset into account) could be of practical interest to private equity houses. This research suggests that when selecting an acquisition-target the house and its professionals should first ascertain their skillset and should pay special attention, when selecting a secondary buyout as target, that they do possess a certain skill that the selling party does not have. As, when this is not the case, the general operating performance of the target post-buyout could be lower than that of an average potential other type of target they could have chosen.

This above reasoning is based on the second regression set and not on regression set 3. As the aforementioned set tests a joint hypothesis, might be sample driven and set 3 does not necessarily conclude the same, it is important to take these shortcomings into account. These limitations and suggestions for future research will be discussed in the following sub-chapter.



## **6.2. Suggestions for future research and limitations**

In this sub-chapter both the suggestions for future research as the limitations of this paper are covered. The limitations are divided into six main elements.

Firstly, the most important limitation of this paper has already been mentioned previously. As evident from the data analytics in chapter 4, secondary buyouts and primary buyouts are statistically different in terms of control variables. That SBO's and PBO's differ in other characteristics also cannot be ruled out. Therefore, we cannot state that the operating performance difference is entirely due to what the buying party does with the secondary buyout after the transaction as it can also be that buyers of SBO's actively select the secondary buyout targets on certain characteristics and that these characteristics are the source of the difference in operating performance, which are not included in the regressions and thus might distort the coefficients and significance of the included variables. This paper tries to mitigate this by using an adjusted operating performance measure as this corrects for the fact that buyers of secondary buyouts might target firms in industries with higher volatility. This is however only one characteristic on which the buyer can base its decision, hence we are still testing a joint hypothesis, which is a limitation of this paper. Further research should identify all the characteristic differences between SBO's and PBO's to be able to test the hypothesis in isolation. Another solution might be to link the SBO and PBO based on the target firm as already shortly mentioned. This was however not possible for this paper as the financial data on the companies was only available for a limited timeframe that was not wide enough to research enough buyouts. The use of a different information provider might mitigate this problem in future research.

Secondly, leverage in the used dataset is relatively lower than expected. This could be a result from the fact that the private equity house put the debt used for the acquisition into a new entity that has not been identified by the Orbis database as part of the company. This could lead to an understatement of debt in the data and thus a bias. Future research might mitigate this bias by using a different data source or by manually checking all entities that are/were owned by the relevant private equity house and then matching these to the relative portfolio firm.

Thirdly, this paper only researched the effect of a change in characteristics. For future research it might also be of interest to test if there are for instance certain combinations of career-path

and educational background that outperform others regardless of a change. As well as for instance, if SBO's conducted by older private equity firms outperform younger private equity firms regardless of a change in the characteristic.

Fourthly, as already shortly mentioned in section 6.1. it might be that the pulling the value creation levers does not result in one-off effects, but a gradual effect over time which disappears when the private equity house that pulled the value creation lever sells to another private equity house that does not pull the value creation lever. A concrete example of this is the value creation lever mentioned in section 2.2.4. namely increasing strategic distinctiveness. It can be argued that a shift in strategy does not have a swift one-off value effect, but that it takes time for the value to materialize. When the target is sold in the process of increasing the strategic distinctiveness to another private equity party that does not have the know-how to finish the process, the full potential of the value lever pulled by the selling private equity party never materializes. If this hypothesis is true and thus influences the operating performance of both the seller and the buyer in a SBO transaction, it might be interesting for further research.

Fifthly, there might be several other factors/characteristics that influence the performance of secondary buyouts that have not been covered by this paper. An example on the private equity house level is the buyer having a (regional) office in the country of the target, whereas the seller of the SBO does not have this. This might positively impact operating performance as having a (regional) office in the country of interest might increase the speed of decision making, result in better cultural alignment and/or having a more extensive network of outside parties. An example of on the private equity professional level might be that it is not only the knowledge of the professional (proxied by for instance career-path or educational background), but that operating performance is also impacted by the time spend on the target after the deal by the professional.

Sixthly, this paper takes operating performance as dependent variable of interest and thus not necessarily the returns of the private equity house. Hypothetically it might for instance be the case that SBO's have better financing possibilities compared to PBO's, in example by more leverage or lower interest rate due to better negotiation skills of the professional or because the portfolio company is already known to the lender due to the PBO acquisition (knowledge-advantage). These effects on the return to the private equity house (and thus investors) is not

necessarily directly evident in the used operating performance measures. Using returns of the private equity house instead of operating performance measures might therefore be interesting for future research as it looks more to the performance to the private equity house instead of the performance of the target company.

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## 8. Appendixes

### Appendix 1 – example calculation of the industry adjusted abnormal percentage change indicator

Company XYZ was bought out for the first time in 2010 by ABC Capital Partners, this thus the PBO. After 6 years the company gets sold to DEF Capital Partners, hence T=0 is at 2016. Orbis shows EBIT and Turnover values in year t=-1, t=-2, t=2 and t=3. See the illustration below:

|                                       | T=-3 | T=-2 | T=-1 | T=0  | T=+1 | T=+2 | T=+3 |
|---------------------------------------|------|------|------|------|------|------|------|
| EBIT/TurnoverXYZ =                    | n.a. | 0,15 | 0,2  | n.a. | n.a. | 0,25 | 0,29 |
| Median EBIT/Turnover industry of XYZ= | 0,15 | 0,15 | 0,15 | 0,16 | 0,18 | 0,18 | 0,19 |

This leads to:

$$\Delta\%x_i = \frac{(\text{median}(\frac{EBIT}{\text{Turnover}}) \text{ from } T = +1 \text{ to } T = +3)}{(\text{median}(\frac{EBIT}{\text{Turnover}}) \text{ from } T = -1 \text{ to } T = -3)} - 1$$

$$\Delta\%x_i = \frac{0,27}{0,175} - 1 = 54,29\%$$

And

$$\Delta\%m_s = \frac{(\text{median industry}(\frac{EBIT}{\text{Turnover}}) \text{ from } T = +1 \text{ to } T = +3)}{(\text{median industry}(\frac{EBIT}{\text{Turnover}}) \text{ from } T = -1 \text{ to } T = -3)} - 1$$

$$\Delta\%m_s = \frac{0,185}{0,15} - 1 = 23,33\%$$

(Note that only the industry values of the T's that are available from XYZ are taken)

Standard deviation is 0,017854

Leading to:

$$\text{Industry adjusted abnormal percentage change ratio} = \Delta\%W_{i,s} = \frac{(\Delta\%x_i - \Delta\%m_s)}{\sigma_{\Delta\%s}}$$

$$\Delta\%W_{i,s} = \frac{(0,5429 - 0,2333)}{0,017854} = 17,3368$$

## Appendix 2 – Correlation matrix

|  | A)    | B)    | C)    | D)    | E)    | F)    | G)    | H)    | I)    | J)    | K)    | L)    | M)    | N)    | O)    | P)    | Q)    | R)    | S)    | T) | U) | V) | W) | X) | Y) | Z) |  |  |  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|----|----|----|--|--|--|
| A) EBIT/turnover <sub>post-deal</sub> (unadj.)   | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| B) EBITDA/Turnover <sub>pre-deal</sub> (unadj.)  | 0.366 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| C) EBITDA/Turnover <sub>post-deal</sub> (unadj.) | 0.051 | 0.005 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| D) EBITDA/Turnover <sub>pre-deal</sub> (unadj.)  | 0.856 | 0.370 | 0.057 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| E) EBITDA/Turnover (adj.)                        | 0.356 | 0.928 | 0.018 | 0.463 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| F) EBITDA/Turnover (adj.)                        | 0.065 | 0.015 | 0.195 | 0.117 | 0.004 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| G) EBIT/Assets <sub>post-deal</sub> (unadj.)     | 0.408 | 0.241 | 0.133 | 0.431 | 0.237 | 0.209 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| H) EBIT/Assets <sub>pre-deal</sub> (unadj.)      | 0.232 | 0.473 | 0.022 | 0.228 | 0.440 | 0.001 | 0.497 | 1     |       |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| I) EBIT/Assets (adj.)                            | 0.016 | 0.020 | 0.630 | 0.066 | 0.040 | 0.095 | 0.132 | 0.000 | 1     |       |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| J) EBITDA/Assets <sub>post-deal</sub> (unadj.)   | 0.398 | 0.267 | 0.091 | 0.491 | 0.304 | 0.221 | 0.917 | 0.467 | 0.123 | 1     |       |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| K) EBITDA/Assets <sub>pre-deal</sub> (unadj.)    | 0.251 | 0.456 | 0.045 | 0.279 | 0.489 | 0.007 | 0.479 | 0.929 | 0.009 | 0.079 | 1     |       |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| L) EBITDA/Assets (adj.)                          | 0.056 | 0.049 | 0.092 | 0.069 | 0.050 | 0.766 | 0.120 | 0.057 | 0.174 | 0.139 | 0.079 | 1     |       |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| M) Turnover/Assets <sub>post-deal</sub> (unadj.) | 0.104 | 0.096 | 0.042 | 0.070 | 0.036 | 0.025 | 0.205 | 0.19  | 0.027 | 0.205 | 0.19  | 0.016 | 1     |       |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| N) Turnover/Assets <sub>pre-deal</sub> (unadj.)  | 0.085 | 0.113 | 0.043 | 0.080 | 0.029 | 0.027 | 0.140 | 0.247 | 0.077 | 0.103 | 0.262 | 0.080 | 0.779 | 1     |       |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| O) Turnover/Assets (adj.)                        | 0.085 | 0.262 | 0.008 | 0.051 | 0.182 | 0.013 | 0.015 | 0.118 | 0.200 | 0.044 | 0.146 | 0.301 | 0.019 | 0.196 | 1     |       |       |       |       |    |    |    |    |    |    |    |  |  |  |
| P) SBO dummy                                     | 0.029 | 0.016 | 0.004 | 0.015 | 0.000 | 0.018 | 0.019 | 0.067 | 0.017 | 0.003 | 0.071 | 0.008 | 0.1   | 0.118 | 0.018 | 1     |       |       |       |    |    |    |    |    |    |    |  |  |  |
| Q) Log(Turnover <sub>T-1</sub> )                 | 0.210 | 0.236 | 0.036 | 0.144 | 0.194 | 0.082 | 0.066 | 0.034 | 0.024 | 0.071 | 0.062 | 0.003 | 0.115 | 0.133 | 0.178 | 0.166 | 1     |       |       |    |    |    |    |    |    |    |  |  |  |
| R) Log(1 + Leverage <sub>no</sub> )              | 0.136 | 0.087 | 0.045 | 0.016 | 0.017 | 0.031 | 0.211 | 0.163 | 0.067 | 0.116 | 0.128 | 0.003 | 0.212 | 0.209 | 0.107 | 0.007 | 0.000 | 1     |       |    |    |    |    |    |    |    |  |  |  |
| S) EBITDA Margin <sub>T-1</sub>                  | 0.395 | 0.665 | 0.039 | 0.570 | 0.798 | 0.041 | 0.269 | 0.436 | 0.005 | 0.337 | 0.474 | 0.020 | 0.091 | 0.076 | 0.054 | 0.010 | 0.118 | 0.034 | 1     |    |    |    |    |    |    |    |  |  |  |
| T) Syndicated dummy                              | 0.057 | 0.028 | 0.049 | 0.056 | 0.025 | 0.011 | 0.011 | 0.023 | 0.037 | 0.016 | 0.037 | 0.027 | 0.072 | 0.056 | 0.013 | 0.053 | 0.010 | 0.045 | 0.045 | 1  |    |    |    |    |    |    |  |  |  |

Appendix 3 – Robustness regressions of section 5.1.

| Variables                              | B) EBITDA/Turnover  |                     | C) EBIT/Assets      |                   | D) EBITDA/Assets    |                    | E) Turnover/Assets  |                     |
|--|---------------------|---------------------|---------------------|-------------------|---------------------|--------------------|---------------------|---------------------|
|  | Unadj.              | Adj.                | Unadj.              | Adj.              | Unadj.              | Adj.               | Unadj.              | Adj.                |
| SBO dummy                              | -0.008<br>(0.010)   | 0.013<br>(0.059)    | 0.003<br>(0.008)    | 0.017<br>(0.027)  | 0.009<br>(0.012)    | 0.044<br>(0.054)   | -0.027<br>(0.017)   | 0.033**<br>(0.011)  |
| Log(Turnover <sub>T-1</sub> )          | 0.009<br>(0.009)    | 0.046<br>(0.026)    | 0.006<br>(0.003)    | -0.016<br>(0.029) | 0.004<br>(0.002)    | -0.010<br>(0.052)  | 0.015<br>(0.007)    | -0.031**<br>(0.009) |
| Log(1 + Leverage <sub>T=0</sub> )      | -0.003<br>(0.041)   | -0.371<br>(0.259)   | -0.114**<br>(0.037) | -0.471<br>(0.266) | -0.051**<br>(0.016) | -0.475<br>(0.354)  | -0.292<br>(0.211)   | 0.175*<br>(0.071)   |
| Syndicated dummy                       | -0.051**<br>(0.016) | -0.035<br>(0.157)   | -0.002<br>(0.009)   | 0.100<br>(0.084)  | -0.005<br>(0.006)   | 0.070<br>(0.238)   | -0.078<br>(0.072)   | -0.009<br>(0.015)   |
| EBITDA margin <sub>T-1</sub>           |                     | 0.279*<br>(0.111)   |                     | 0.075<br>(0.168)  |                     | 0.421**<br>(0.109) |                     | 0.000<br>(0.068)    |
| A) EBIT/Turnover <sub>Pre-deal</sub>   |                     |                     |                     |                   |                     |                    |                     |                     |
| B) EBITDA/Turnover <sub>Pre-deal</sub> |                     | 0.424***<br>(0.065) |                     |                   |                     |                    |                     |                     |
| C) EBIT/Assets <sub>Pre-deal</sub>     |                     |                     | 0.474***<br>(0.071) |                   |                     |                    |                     |                     |
| D) EBITDA/Assets <sub>Pre-deal</sub>   |                     |                     |                     |                   | 0.523***<br>(0.072) |                    |                     |                     |
| E) Turnover/Assets <sub>Pre-deal</sub> |                     |                     |                     |                   |                     |                    | 0.592***<br>(0.051) |                     |
| Industry dummies                       | Yes                 | Yes                 | Yes                 | Yes               | Yes                 | Yes                | Yes                 | Yes                 |
| Year dummies                           | Yes                 | Yes                 | Yes                 | Yes               | Yes                 | Yes                | Yes                 | Yes                 |
| Country dummies                        | Yes                 | Yes                 | Yes                 | Yes               | Yes                 | Yes                | Yes                 | Yes                 |
| Constant                               | 0.024<br>(0.104)    | 0.895<br>(1.450)    | 0.267<br>(0.139)    | -0.292<br>(0.423) | 0.151<br>(0.115)    | 1.330<br>(2.181)   | 1.848**<br>(0.523)  | 0.485**<br>(0.135)  |
| Observations                           | 916                 | 915                 | 996                 | 953               | 942                 | 940                | 973                 | 932                 |
| Adjusted R-squared                     | 0.229               | 0.005               | 0.283               | 0.092             | 0.282               | -0.001             | 0.653               | 0.038               |

**Table 11: First regression results.** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions. All the variables other than the dummy variables have been winsorized at the 1 and 99% level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix 4 – Robustness regressions of section 5.2.

| Variables                              | B) EBITDA/Turnover  |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   |                   |
|--|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|  | Unadj.              | Unadj.              | Unadj.               | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Adj.                | Adj.              | Adj.              | Adj.              |                   |
| Educational dummy - switch             | 0.028<br>(0.018)    |                     |                      |                     |                     |                     |                     | 0.062<br>(0.133)    |                   |                   |                   |                   |
| Educational dummy - no switch          | -0.075*<br>(0.028)  |                     |                      |                     |                     |                     |                     | -0.110<br>(0.055)   |                   |                   |                   |                   |
| MBA dummy - switch                     |                     | -0.038<br>(0.053)   |                      |                     |                     |                     |                     | 0.064<br>(0.189)    |                   |                   |                   |                   |
| MBA dummy - no switch                  |                     | -0.042<br>(0.020)   |                      |                     |                     |                     |                     | -0.052<br>(0.103)   |                   |                   |                   |                   |
| Career dummy - switch                  |                     |                     | -0.018<br>(0.016)    |                     |                     |                     |                     | -0.136<br>(0.066)   |                   |                   |                   |                   |
| Career dummy - no switch               |                     |                     | -0.085***<br>(0.028) |                     |                     |                     |                     | 0.079<br>(0.165)    |                   |                   |                   |                   |
| PE size dummy - switch                 |                     |                     |                      | -0.048<br>(0.044)   |                     |                     |                     | 0.110<br>(0.057)    |                   |                   |                   |                   |
| PE size dummy - no switch              |                     |                     |                      | -0.029<br>(0.048)   |                     |                     |                     | -0.160<br>(0.117)   |                   |                   |                   |                   |
| Age dummy - switch                     |                     |                     |                      |                     | -0.046<br>(0.037)   |                     |                     | 0.157<br>(0.106)    |                   |                   |                   |                   |
| Age dummy - no switch                  |                     |                     |                      |                     | -0.037<br>(0.018)   |                     |                     | -0.087<br>(0.076)   |                   |                   |                   |                   |
| Geo focus dummy - switch               |                     |                     |                      |                     |                     | -0.133<br>(0.093)   |                     | 0.201<br>(0.515)    |                   |                   |                   |                   |
| Geo focus dummy - no switch            |                     |                     |                      |                     |                     | -0.026<br>(0.021)   |                     | -0.038<br>(0.040)   |                   |                   |                   |                   |
| Change geo focus dummy - switch        |                     |                     |                      |                     |                     |                     | -0.065<br>(0.039)   |                     |                   |                   |                   | -0.017<br>(0.412) |
| Change geo focus dummy - no switch     |                     |                     |                      |                     |                     |                     | -0.037<br>(0.026)   |                     |                   |                   |                   | -0.005<br>(0.036) |
| ICA industry dummy - switch            |                     |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   | 0.069<br>(0.063)  |
| ICA industry dummy - no switch         |                     |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   | -0.017<br>(0.070) |
| Log(turnover <sub>t-1</sub> )          | 0.009<br>(0.009)    | 0.009<br>(0.010)    | 0.009<br>(0.010)     | 0.009<br>(0.010)    | 0.009<br>(0.009)    | 0.009<br>(0.010)    | 0.009<br>(0.009)    | 0.047<br>(0.024)    | 0.047<br>(0.026)  | 0.047<br>(0.024)  | 0.047<br>(0.025)  | 0.047<br>(0.025)  |
| Log(1 + Leverage <sub>it</sub> )       | -0.004<br>(0.044)   | -0.008<br>(0.044)   | -0.005<br>(0.043)    | -0.009<br>(0.043)   | -0.010<br>(0.045)   | -0.008<br>(0.043)   | -0.010<br>(0.044)   | -0.370<br>(0.257)   | -0.388<br>(0.260) | -0.368<br>(0.269) | -0.371<br>(0.256) | -0.370<br>(0.258) |
| Syndicated dummy                       | -0.050**<br>(0.014) | -0.051**<br>(0.015) | -0.047**<br>(0.016)  | -0.051**<br>(0.017) | -0.050**<br>(0.016) | -0.051**<br>(0.015) | -0.046**<br>(0.011) | -0.031<br>(0.159)   | -0.028<br>(0.156) | -0.036<br>(0.156) | -0.034<br>(0.159) | -0.037<br>(0.156) |
| EBITDA margin <sub>t-1</sub>           |                     |                     |                      |                     |                     |                     |                     | 0.285*<br>(0.110)   | 0.297*<br>(0.114) | 0.281*<br>(0.108) | 0.279*<br>(0.110) | 0.279*<br>(0.110) |
| A) EBIT/turnover <sub>Pre-deal</sub>   |                     |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   |                   |
| B) EBITDA/Turnover <sub>Pre-deal</sub> | 0.424***<br>(0.064) | 0.423***<br>(0.066) | 0.418***<br>(0.064)  | 0.423***<br>(0.066) | 0.423***<br>(0.066) | 0.423***<br>(0.066) | 0.422***<br>(0.065) | 0.421***<br>(0.066) |                   |                   |                   |                   |
| C) EBIT/Assets <sub>Pre-deal</sub>     |                     |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   |                   |
| D) EBITDA/Assets <sub>Pre-deal</sub>   |                     |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   |                   |
| E) Turnover/Assets <sub>Pre-deal</sub> |                     |                     |                      |                     |                     |                     |                     |                     |                   |                   |                   |                   |
| Industry dummies                       | Yes                 | Yes                 | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes               | Yes               | Yes               | Yes               |
| Year dummies                           | Yes                 | Yes                 | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes               | Yes               | Yes               | Yes               |
| Country dummies                        | Yes                 | Yes                 | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes               | Yes               | Yes               | Yes               |
| Constant                               | 0.048<br>(0.081)    | 0.029<br>(0.078)    | 0.055<br>(0.094)     | 0.033<br>(0.074)    | 0.025<br>(0.101)    | 0.040<br>(0.107)    | 0.024<br>(0.101)    | 0.997<br>(1.430)    | 0.772<br>(1.489)  | 0.578<br>(1.453)  | 0.915<br>(1.547)  | 0.913<br>(1.465)  |
| Observations                           | 916                 | 916                 | 916                  | 916                 | 916                 | 916                 | 916                 | 915                 | 915               | 915               | 915               | 915               |
| Adjusted R-squared                     | 0.236               | 0.231               | 0.236                | 0.231               | 0.234               | 0.231               | 0.234               | 0.234               | 0.234             | 0.234             | 0.234             | 0.234             |

Table 12: Second regression results (continued): This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics of SBO's with regards to PBO's. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.

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

| Variables                              | C) EBIT/Assets |         |         |         |         |         |         |          |         |         |         |
|--|----------------|---------|---------|---------|---------|---------|---------|----------|---------|---------|---------|
|  | Unadj.         | Unadj.  | Unadj.  | Unadj.  | Unadj.  | Unadj.  | Unadj.  | Adj.     | Adj.    | Adj.    | Adj.    |
| Educational dummy - switch             | 0.023*         |         |         |         |         |         |         | 0.061**  |         |         |         |
|  | (0.010)        |         |         |         |         |         |         | (0.021)  |         |         |         |
| Educational dummy - no switch          | -0.007         |         |         |         |         |         |         | -0.017   |         |         |         |
|  | (0.018)        |         |         |         |         |         |         | (0.077)  |         |         |         |
| MBA dummy - switch                     | -0.002         |         |         |         |         |         |         | 0.037    |         |         |         |
|  | (0.010)        |         |         |         |         |         |         | (0.112)  |         |         |         |
| MBA dummy - no switch                  | 0.006          |         |         |         |         |         |         | 0.020    |         |         |         |
|  | (0.023)        |         |         |         |         |         |         | (0.096)  |         |         |         |
| Career dummy - switch                  | -0.012         |         |         |         |         |         |         | -0.093   |         |         |         |
|  | (0.013)        |         |         |         |         |         |         | (0.044)  |         |         |         |
| Career dummy - no switch               | 0.007          |         |         |         |         |         |         | 0.081    |         |         |         |
|  | (0.028)        |         |         |         |         |         |         | (0.129)  |         |         |         |
| PE size dummy - switch                 | 0.012*         |         |         |         |         |         |         | 0.046    |         |         |         |
|  | (0.005)        |         |         |         |         |         |         | (0.036)  |         |         |         |
| PE size dummy - no switch              | -0.008         |         |         |         |         |         |         | -0.020   |         |         |         |
|  | (0.028)        |         |         |         |         |         |         | (0.161)  |         |         |         |
| Age dummy - switch                     | 0.036**        |         |         |         |         |         |         | 0.196    |         |         |         |
|  | (0.011)        |         |         |         |         |         |         | (0.117)  |         |         |         |
| Age dummy - no switch                  | -0.012         |         |         |         |         |         |         | -0.069   |         |         |         |
|  | (0.026)        |         |         |         |         |         |         | (0.038)  |         |         |         |
| Geo focus dummy - switch               | 0.018          |         |         |         |         |         |         | -0.194   |         |         |         |
|  | (0.019)        |         |         |         |         |         |         | (0.205)  |         |         |         |
| Geo focus dummy - no switch            | 0.002          |         |         |         |         |         |         | 0.049    |         |         |         |
|  | (0.014)        |         |         |         |         |         |         | (0.041)  |         |         |         |
| Change geo focus dummy - switch        | -0.047         |         |         |         |         |         |         | -0.217   |         |         |         |
|  | (0.057)        |         |         |         |         |         |         | (0.149)  |         |         |         |
| Change geo focus dummy - no switch     | 0.010          |         |         |         |         |         |         | 0.043    |         |         |         |
|  | (0.010)        |         |         |         |         |         |         | (0.052)  |         |         |         |
| ICA industry dummy - switch            | 0.029*         |         |         |         |         |         |         | 0.052    |         |         |         |
|  | (0.013)        |         |         |         |         |         |         | (0.100)  |         |         |         |
| ICA industry dummy - no switch         | -0.000         |         |         |         |         |         |         | 0.013    |         |         |         |
|  | (0.017)        |         |         |         |         |         |         | (0.051)  |         |         |         |
| Log(turnover <sub>t-1</sub> )          | 0.006          |         |         |         |         |         |         | -0.015   |         |         |         |
|  | (0.003)        |         |         |         |         |         |         | (0.028)  |         |         |         |
| Log(1 + Leverage <sub>it</sub> )       | -0.113**       |         |         |         |         |         |         | -0.467   |         |         |         |
|  | (0.037)        |         |         |         |         |         |         | (0.267)  |         |         |         |
| Syndicated dummy                       | -0.001         |         |         |         |         |         |         | 0.102    |         |         |         |
|  | (0.008)        |         |         |         |         |         |         | (0.083)  |         |         |         |
| EBITDA margin <sub>t-1</sub>           | 0.009          |         |         |         |         |         |         | 0.076    |         |         |         |
|  | (0.009)        |         |         |         |         |         |         | (0.169)  |         |         |         |
| A) EBIT/turnover <sub>Pre-deal</sub>   |                |         |         |         |         |         |         |          |         |         |         |
| B) EBITDA/Turnover <sub>Pre-deal</sub> |                |         |         |         |         |         |         |          |         |         |         |
| C) EBIT/Assets <sub>Pre-deal</sub>     | 0.476***       |         |         |         |         |         |         | 0.473*** |         |         |         |
|  | (0.073)        |         |         |         |         |         |         | (0.073)  |         |         |         |
| D) EBITDA/Assets <sub>Pre-deal</sub>   | 0.474***       |         |         |         |         |         |         | 0.474*** |         |         |         |
|  | (0.073)        |         |         |         |         |         |         | (0.073)  |         |         |         |
| E) Turnover/Assets <sub>Pre-deal</sub> | 0.474***       |         |         |         |         |         |         | 0.473*** |         |         |         |
|  | (0.073)        |         |         |         |         |         |         | (0.073)  |         |         |         |
| Industry dummies                       | Yes            | Yes     | Yes     | Yes     | Yes     | Yes     | Yes     | Yes      | Yes     | Yes     | Yes     |
| Year dummies                           | Yes            | Yes     | Yes     | Yes     | Yes     | Yes     | Yes     | Yes      | Yes     | Yes     | Yes     |
| Country dummies                        | Yes            | Yes     | Yes     | Yes     | Yes     | Yes     | Yes     | Yes      | Yes     | Yes     | Yes     |
| Constant                               | 0.269          | 0.270   | 0.264   | 0.272   | 0.268   | 0.283*  | -0.267  | -0.318   | -0.322  | -0.294  | -0.294  |
|  | (0.137)        | (0.137) | (0.138) | (0.145) | (0.141) | (0.120) | (0.426) | (0.470)  | (0.492) | (0.461) | (0.426) |
| Observations                           | 996            | 996     | 996     | 996     | 996     | 996     | 953     | 953      | 953     | 953     | 953     |
| Adjusted R-squared                     | 0.284          | 0.283   | 0.283   | 0.286   | 0.283   | 0.284   | 0.091   | 0.091    | 0.092   | 0.092   | 0.091   |

**Table 12: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics of SBO's with regards to PBO's. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.

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

| Variables                              | D) EBITDA/Assets    |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Adj.                | Adj.                | Adj.                | Adj.                |
| Educational dummy - switch             | 0.013<br>(0.017)    |                     |                     |                     |                     |                     |                     | 0.086<br>(0.150)    |                     |                     |                     |
| Educational dummy - no switch          | -0.010<br>(0.018)   |                     |                     |                     |                     |                     |                     | -0.091<br>(0.148)   |                     |                     |                     |
| MBA dummy - switch                     | -0.001<br>(0.011)   |                     |                     |                     |                     |                     |                     | 0.051<br>(0.181)    |                     |                     |                     |
| MBA dummy - no switch                  | -0.005<br>(0.023)   |                     |                     |                     |                     |                     |                     | -0.057<br>(0.188)   |                     |                     |                     |
| Career dummy - switch                  |                     | -0.019<br>(0.018)   |                     |                     |                     |                     |                     | -0.195<br>(0.115)   |                     |                     |                     |
| Career dummy - no switch               |                     | 0.000<br>(0.030)    |                     |                     |                     |                     |                     | 0.295<br>(0.171)    |                     |                     |                     |
| PE size dummy - switch                 |                     |                     | 0.002<br>(0.011)    |                     |                     |                     |                     | 0.061<br>(0.078)    |                     |                     |                     |
| PE size dummy - no switch              |                     |                     | -0.008<br>(0.030)   |                     |                     |                     |                     | -0.068<br>(0.327)   |                     |                     |                     |
| Age dummy - switch                     |                     |                     |                     | 0.024**<br>(0.007)  |                     |                     |                     | 0.308<br>(0.305)    |                     |                     |                     |
| Age dummy - no switch                  |                     |                     |                     | -0.015<br>(0.028)   |                     |                     |                     | -0.142<br>(0.132)   |                     |                     |                     |
| Geo focus dummy - switch               |                     |                     |                     |                     | 0.014<br>(0.018)    |                     |                     |                     | -0.195<br>(0.415)   |                     |                     |
| Geo focus dummy - no switch            |                     |                     |                     |                     | -0.004<br>(0.019)   |                     |                     |                     | 0.036<br>(0.142)    |                     |                     |
| Change geo focus dummy - switch        |                     |                     |                     |                     |                     | -0.072<br>(0.081)   |                     |                     |                     | 0.079<br>(0.379)    |                     |
| Change geo focus dummy - no switch     |                     |                     |                     |                     |                     | 0.006<br>(0.011)    |                     |                     |                     | -0.003<br>(0.134)   |                     |
| ICA industry dummy - switch            |                     |                     |                     |                     |                     |                     | 0.006<br>(0.014)    |                     |                     |                     | -0.057<br>(0.087)   |
| ICA industry dummy - no switch         |                     |                     |                     |                     |                     |                     | -0.003<br>(0.018)   |                     |                     |                     | 0.014<br>(0.176)    |
| Log(turnover <sub>t-1</sub> )          | 0.005<br>(0.002)    | 0.005<br>(0.003)    | 0.005<br>(0.003)    | 0.005<br>(0.002)    | 0.005<br>(0.003)    | 0.005<br>(0.002)    | 0.005<br>(0.003)    | -0.007<br>(0.055)   | -0.008<br>(0.055)   | -0.008<br>(0.055)   | -0.008<br>(0.055)   |
| Log(1 + Leverage <sub>it</sub> )       | -0.050**<br>(0.017) | -0.051**<br>(0.016) | -0.052**<br>(0.015) | -0.053**<br>(0.018) | -0.051**<br>(0.017) | -0.052**<br>(0.017) | -0.051**<br>(0.017) | -0.471<br>(0.351)   | -0.475<br>(0.341)   | -0.472<br>(0.357)   | -0.474<br>(0.346)   |
| Syndicated dummy                       | -0.004<br>(0.006)   | -0.004<br>(0.006)   | -0.004<br>(0.006)   | -0.004<br>(0.007)   | -0.004<br>(0.006)   | -0.004<br>(0.006)   | -0.004<br>(0.006)   | 0.077<br>(0.236)    | 0.076<br>(0.235)    | 0.077<br>(0.232)    | 0.074<br>(0.240)    |
| EBITDA margin <sub>t-1</sub>           |                     |                     |                     |                     |                     |                     |                     | 0.424**<br>(0.111)  | 0.419**<br>(0.109)  | 0.422**<br>(0.109)  | 0.421**<br>(0.110)  |
| A) EBIT/turnover <sub>Pre-deal</sub>   |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| B) EBITDA/Turnover <sub>Pre-deal</sub> |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| C) EBIT/Assets <sub>Pre-deal</sub>     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| D) EBITDA/Assets <sub>Pre-deal</sub>   | 0.522***<br>(0.076) | 0.520***<br>(0.076) | 0.519***<br>(0.074) | 0.518***<br>(0.076) | 0.521***<br>(0.075) | 0.521***<br>(0.075) | 0.521***<br>(0.075) | 0.521***<br>(0.075) | 0.521***<br>(0.075) | 0.521***<br>(0.075) | 0.521***<br>(0.075) |
| E) Turnover/Assets <sub>Pre-deal</sub> |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Industry dummies                       | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Year dummies                           | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Country dummies                        | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Constant                               | 0.159<br>(0.112)    | 0.154<br>(0.114)    | 0.149<br>(0.110)    | 0.152<br>(0.109)    | 0.155<br>(0.114)    | 0.155<br>(0.114)    | 0.155<br>(0.114)    | 1.430<br>(2.147)    | 1.280<br>(2.178)    | 1.480<br>(2.152)    | 1.320<br>(2.071)    |
| Observations                           | 942                 | 942                 | 942                 | 942                 | 942                 | 942                 | 942                 | 940                 | 940                 | 940                 | 940                 |
| Adjusted R-squared                     | 0.281               | 0.281               | 0.282               | 0.283               | 0.281               | 0.285               | 0.281               | -0.002              | -0.002              | -0.002              | -0.002              |

**Table 12: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics of SBO's with regards to PBO's. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.

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

| Variables                              | E) Turnover/Assets  |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Adj.                | Adj.                | Adj.                | Adj.                |
| Educational dummy - switch             | -0.008<br>(0.068)   |                     |                     |                     |                     |                     |                     | 0.003<br>(0.013)    |                     |                     |                     |
| Educational dummy - no switch          | -0.070<br>(0.058)   |                     |                     |                     |                     |                     |                     | 0.043<br>(0.032)    |                     |                     |                     |
| MBA dummy - switch                     |                     | -0.002<br>(0.054)   |                     |                     |                     |                     |                     | 0.019<br>(0.013)    |                     |                     |                     |
| MBA dummy - no switch                  |                     | -0.074<br>(0.050)   |                     |                     |                     |                     |                     | 0.029<br>(0.032)    |                     |                     |                     |
| Career dummy - switch                  |                     |                     | -0.046<br>(0.028)   |                     |                     |                     |                     | -0.005<br>(0.009)   |                     |                     |                     |
| Career dummy - no switch               |                     |                     | -0.030<br>(0.063)   |                     |                     |                     |                     | 0.089<br>(0.050)    |                     |                     |                     |
| PE size dummy - switch                 |                     |                     |                     | -0.056<br>(0.043)   |                     |                     |                     | -0.004<br>(0.008)   |                     |                     |                     |
| PE size dummy - no switch              |                     |                     |                     | -0.044<br>(0.052)   |                     |                     |                     | 0.069<br>(0.056)    |                     |                     |                     |
| Age dummy - switch                     |                     |                     |                     |                     | 0.057<br>(0.083)    |                     |                     | 0.076<br>(0.059)    |                     |                     |                     |
| Age dummy - no switch                  |                     |                     |                     |                     | -0.105<br>(0.069)   |                     |                     | 0.004<br>(0.017)    |                     |                     |                     |
| Geo focus dummy - switch               |                     |                     |                     |                     |                     | -0.277**<br>(0.076) |                     | -0.046<br>(0.042)   |                     |                     |                     |
| Geo focus dummy - no switch            |                     |                     |                     |                     |                     | -0.020<br>(0.029)   |                     | 0.038<br>(0.024)    |                     |                     |                     |
| Change geo focus dummy - switch        |                     |                     |                     |                     | 0.012<br>(0.170)    |                     |                     | -0.003<br>(0.017)   |                     |                     |                     |
| Change geo focus dummy - no switch     |                     |                     |                     |                     | -0.059<br>(0.032)   |                     |                     | 0.031<br>(0.027)    |                     |                     |                     |
| ICA industry dummy - switch            |                     |                     |                     |                     |                     | -0.114<br>(0.165)   |                     | -0.002<br>(0.005)   |                     |                     |                     |
| ICA industry dummy - no switch         |                     |                     |                     |                     |                     | -0.042<br>(0.046)   |                     | 0.032<br>(0.029)    |                     |                     |                     |
| Log(turnover <sub>t-1</sub> )          | 0.015<br>(0.008)    | 0.015<br>(0.008)    | 0.015<br>(0.008)    | 0.015<br>(0.008)    | 0.015<br>(0.008)    | 0.015<br>(0.008)    | 0.015<br>(0.008)    | -0.030**<br>(0.009) | -0.030**<br>(0.009) | -0.030**<br>(0.009) | -0.030**<br>(0.009) |
| Log(1 + Leverage <sub>it</sub> )       | -0.297<br>(0.206)   | -0.297<br>(0.211)   | -0.298<br>(0.210)   | -0.300<br>(0.208)   | -0.311<br>(0.219)   | -0.304<br>(0.212)   | -0.301<br>(0.207)   | 0.179*<br>(0.070)   | 0.176*<br>(0.073)   | 0.179*<br>(0.070)   | 0.180*<br>(0.071)   |
| Syndicated dummy                       | -0.079<br>(0.072)   | -0.080<br>(0.071)   | -0.079<br>(0.072)   | -0.079<br>(0.072)   | -0.078<br>(0.071)   | -0.077<br>(0.074)   | -0.076<br>(0.062)   | -0.007<br>(0.015)   | -0.006<br>(0.015)   | -0.006<br>(0.015)   | -0.007<br>(0.015)   |
| EBITDA margin <sub>t-1</sub>           |                     |                     |                     |                     |                     |                     |                     | -0.001<br>(0.069)   | -0.001<br>(0.069)   | -0.002<br>(0.069)   | -0.001<br>(0.069)   |
| A) EBIT/turnover <sub>Pre-dial</sub>   |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| B) EBITDA/Turnover <sub>Pre-dial</sub> |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| C) EBIT/Assets <sub>Pre-dial</sub>     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| D) EBITDA/Assets <sub>Pre-dial</sub>   |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| E) Turnover/Assets <sub>Pre-dial</sub> | 0.592***<br>(0.052) | 0.592***<br>(0.052) | 0.592***<br>(0.052) | 0.592***<br>(0.052) | 0.591***<br>(0.051) | 0.592***<br>(0.053) | 0.591***<br>(0.052) | 0.591***<br>(0.052) | 0.591***<br>(0.052) | 0.591***<br>(0.052) | 0.591***<br>(0.052) |
| Industry dummies                       | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Year dummies                           | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Country dummies                        | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Constant                               | 1.855**<br>(0.508)  | 1.828**<br>(0.517)  | 1.843**<br>(0.514)  | 1.851**<br>(0.517)  | 1.863**<br>(0.491)  | 1.843**<br>(0.526)  | 1.849**<br>(0.516)  | 0.487**<br>(0.135)  | 0.411**<br>(0.139)  | 0.501**<br>(0.141)  | 0.476**<br>(0.142)  |
| Observations                           | 973                 | 973                 | 973                 | 973                 | 973                 | 973                 | 973                 | 932                 | 932                 | 932                 | 932                 |
| Adjusted R-squared                     | 0.653               | 0.653               | 0.653               | 0.653               | 0.654               | 0.654               | 0.653               | 0.637               | 0.637               | 0.636               | 0.635               |

**Table 12: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics of SBO's with regards to PBO's. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix 5 – Robustness regressions of section 5.3.

| Variables                              | B) EBITDA/Turnover |                    |                    |                    |                    |                    |                    |                    |                   |                    |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|
|  | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Adj.               | Adj.              | Adj.               |
| Educational switch dummy               | 0.098<br>(0.155)   |                    |                    |                    |                    |                    | 0.064<br>(0.185)   |                    |                   |                    |
| MBA switch dummy                       | 0.021<br>(0.100)   |                    |                    |                    |                    |                    | -0.333<br>(0.421)  |                    |                   |                    |
| Career switch dummy                    |                    | 0.071<br>(0.035)   |                    |                    |                    |                    |                    | -0.364<br>(0.249)  |                   |                    |
| PE size switch dummy                   |                    |                    |                    |                    |                    |                    |                    | 0.328**<br>(0.071) |                   |                    |
| Age switch dummy                       |                    |                    |                    |                    |                    |                    |                    |                    | 0.347<br>(0.373)  |                    |
| Geo focus switch dummy                 |                    |                    |                    |                    |                    |                    |                    |                    |                   | 0.368<br>(0.737)   |
| Change geo focus switch dummy          |                    |                    |                    |                    |                    |                    |                    |                    |                   | -0.425<br>(0.383)  |
| ICA industry switch dummy              |                    |                    |                    |                    |                    |                    |                    |                    |                   | 0.068<br>(0.098)   |
| Log(Turnover <sub>t-1</sub> )          | -0.000<br>(0.022)  | 0.019<br>(0.016)   | 0.004<br>(0.020)   | 0.008<br>(0.021)   | -0.003<br>(0.023)  | -0.007<br>(0.031)  | 0.007<br>(0.022)   | 0.010<br>(0.027)   | 0.132<br>(0.064)  | 0.136<br>(0.111)   |
| Log(1 + Leverage <sub>t-10</sub> )     | 0.062<br>(0.315)   | 0.039<br>(0.300)   | 0.162<br>(0.238)   | 0.008<br>(0.240)   | 0.050<br>(0.212)   | -0.049<br>(0.191)  | 0.007<br>(0.233)   | 0.010<br>(0.215)   | -0.407<br>(0.352) | -0.442<br>(0.557)  |
| Syndicated dummy                       | -0.274<br>(0.138)  | -0.254<br>(0.130)  | -0.179<br>(0.117)  | -0.312<br>(0.155)  | -0.302<br>(0.169)  | -0.300<br>(0.142)  | -0.292<br>(0.152)  | -0.332*<br>(0.135) | 0.156<br>(0.317)  | 0.058<br>(0.457)   |
| EBITDA marg <sub>t-1</sub>             |                    |                    |                    |                    |                    |                    |                    |                    | -0.244<br>(0.418) | -0.161<br>(0.614)  |
| A) EBIT/Turnover <sub>Pre-deal</sub>   |                    |                    |                    |                    |                    |                    |                    |                    | -0.149<br>(0.440) | -0.260<br>(0.321)  |
| B) EBITDA/Turnover <sub>Pre-deal</sub> | 0.883**<br>(0.263) | 0.797**<br>(0.255) | 0.762**<br>(0.254) | 0.870**<br>(0.248) | 0.903**<br>(0.206) | 0.892**<br>(0.266) | 0.867**<br>(0.227) | 0.867**<br>(0.226) | 0.099<br>(0.133)  | 0.099<br>(0.133)   |
| C) EBIT/Assets <sub>Pre-deal</sub>     |                    |                    |                    |                    |                    |                    |                    |                    | 0.099<br>(0.133)  | 0.099<br>(0.133)   |
| D) EBITDA/Assets <sub>Pre-deal</sub>   |                    |                    |                    |                    |                    |                    |                    |                    | -0.568<br>(0.274) | -0.568<br>(0.274)  |
| E) Turnover/Assets <sub>Pre-deal</sub> |                    |                    |                    |                    |                    |                    |                    |                    | 0.120<br>(0.303)  | 0.120<br>(0.303)   |
| Industry dummies                       | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes               | Yes                |
| Year dummies                           | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes               | Yes                |
| Country dummies                        | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes               | Yes                |
| Constant                               | 0.493<br>(0.395)   | 0.029<br>(0.345)   | 0.289**<br>(0.092) | 0.509<br>(0.396)   | 0.692*<br>(0.321)  | 0.654<br>(0.541)   | 0.468*<br>(0.205)  | 0.504<br>(0.319)   | 2.478<br>(1.252)  | 3.533**<br>(1.094) |
| Observations                           | 121                | 121                | 140                | 119                | 119                | 119                | 119                | 119                | 121               | 121                |
| Adjusted R-squared                     | 0.310              | 0.265              | 0.315              | 0.293              | 0.302              | 0.331              | 0.285              | 0.288              | 0.042             | 0.026              |

**Table 13: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



| Variables                              | C) EBIT/Assets     |                     |                     |                     |                     |                     |                     |                     |                    |                    |                    |                    |                     |                    |                    |
|--|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
|  | Unadj.             | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Adj.               | Adj.               | Adj.               | Adj.               |                     |                    |                    |
| Educational switch dummy               | 0.044**<br>(0.014) |                     |                     |                     |                     |                     |                     |                     | 0.123*<br>(0.055)  |                    |                    |                    |                     |                    |                    |
| MBA switch dummy                       | -0.007<br>(0.040)  |                     |                     |                     |                     |                     |                     |                     | -0.234<br>(0.237)  |                    |                    |                    |                     |                    |                    |
| Career switch dummy                    |                    | -0.029<br>(0.031)   |                     |                     |                     |                     |                     |                     |                    | -0.098<br>(0.115)  |                    |                    |                     |                    |                    |
| PE size switch dummy                   |                    |                     | 0.036<br>(0.031)    |                     |                     |                     |                     |                     |                    |                    | 0.116<br>(0.198)   |                    |                     |                    |                    |
| Age switch dummy                       |                    |                     |                     | 0.053<br>(0.041)    |                     |                     |                     |                     |                    |                    |                    | 0.153<br>(0.124)   |                     |                    |                    |
| Geo focus switch dummy                 |                    |                     |                     |                     | -0.023<br>(0.027)   |                     |                     |                     |                    |                    |                    |                    | -0.195<br>(0.264)   |                    |                    |
| Change geo focus switch dummy          |                    |                     |                     |                     |                     | -0.055<br>(0.060)   |                     |                     |                    |                    |                    |                    | -0.237**<br>(0.081) |                    |                    |
| ICA industry switch dummy              |                    |                     |                     |                     |                     |                     | -0.027<br>(0.022)   |                     |                    |                    |                    |                    | 0.239**<br>(0.064)  |                    |                    |
| Log(Turnover <sub>T-1</sub> )          | 0.004<br>(0.008)   | 0.004<br>(0.011)    | 0.004<br>(0.009)    | 0.004<br>(0.008)    | 0.004<br>(0.010)    | 0.002<br>(0.012)    | 0.004<br>(0.011)    | 0.004<br>(0.011)    | 0.019<br>(0.046)   | 0.035<br>(0.035)   | 0.000<br>(0.031)   | 0.014<br>(0.030)   | 0.009<br>(0.037)    | 0.010<br>(0.042)   | 0.034<br>(0.039)   |
| Log(1 + Leverage <sub>it</sub> )       | -0.091<br>(0.045)  | -0.098**<br>(0.025) | -0.122**<br>(0.030) | -0.111**<br>(0.032) | -0.106**<br>(0.026) | -0.103**<br>(0.031) | -0.107**<br>(0.029) | -0.107**<br>(0.029) | -0.028<br>(0.261)  | -0.068<br>(0.187)  | -0.378<br>(0.369)  | -0.023<br>(0.248)  | -0.033<br>(0.262)   | -0.033<br>(0.221)  | 0.040<br>(0.291)   |
| Syndicated dummy                       | -0.017<br>(0.019)  | -0.019<br>(0.026)   | -0.018<br>(0.022)   | -0.012<br>(0.018)   | -0.019<br>(0.017)   | -0.019<br>(0.019)   | -0.005<br>(0.024)   | -0.005<br>(0.024)   | 0.068<br>(0.237)   | 0.012<br>(0.260)   | -0.051<br>(0.200)  | 0.075<br>(0.241)   | 0.076<br>(0.227)    | 0.049<br>(0.221)   | -0.062<br>(0.257)  |
| EBITDA marg <sub>it</sub> -1           |                    |                     |                     |                     |                     |                     |                     |                     | -0.085<br>(0.197)  | -0.103<br>(0.125)  | 0.117<br>(0.176)   | -0.116<br>(0.128)  | -0.104<br>(0.146)   | -0.118<br>(0.096)  | -0.164<br>(0.137)  |
| A) EBIT/Turnover <sub>Pre-deal</sub>   |                    |                     |                     |                     |                     |                     |                     |                     |                    |                    |                    |                    |                     |                    |                    |
| B) EBITDA/Turnover <sub>Pre-deal</sub> |                    |                     |                     |                     |                     |                     |                     |                     |                    |                    |                    |                    |                     |                    |                    |
| C) EBIT/Assets <sub>Pre-deal</sub>     | 0.534**<br>(0.125) | 0.492**<br>(0.051)  | 0.530**<br>(0.049)  | 0.524**<br>(0.103)  | 0.470**<br>(0.116)  | 0.489**<br>(0.100)  | 0.487**<br>(0.090)  | 0.470**<br>(0.101)  |                    |                    |                    |                    |                     |                    |                    |
| D) EBITDA/Assets <sub>Pre-deal</sub>   |                    |                     |                     |                     |                     |                     |                     |                     |                    |                    |                    |                    |                     |                    |                    |
| E) Turnover/Assets <sub>Pre-deal</sub> |                    |                     |                     |                     |                     |                     |                     |                     |                    |                    |                    |                    |                     |                    |                    |
| Industry dummies                       | Yes                | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                | Yes                |
| Year dummies                           | Yes                | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                | Yes                |
| Country dummies                        | Yes                | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                | Yes                |
| Constant                               | -0.008<br>(0.139)  | 0.007<br>(0.077)    | 0.055<br>(0.088)    | -0.011<br>(0.148)   | -0.077<br>(0.107)   | 0.001<br>(0.136)    | 0.071<br>(0.190)    | -0.016<br>(0.137)   | 4.865**<br>(0.801) | 5.312**<br>(0.545) | 6.105**<br>(0.718) | 4.905**<br>(0.670) | 4.619**<br>(0.981)  | 5.021**<br>(0.769) | 4.892**<br>(0.690) |
| Observations                           | 132                | 132                 | 153                 | 130                 | 130                 | 130                 | 130                 | 130                 | 125                | 125                | 145                | 123                | 123                 | 123                | 123                |
| Adjusted R-squared                     | 0.220              | 0.212               | 0.149               | 0.193               | 0.227               | 0.178               | 0.194               | 0.179               | 0.554              | 0.534              | 0.361              | 0.545              | 0.553               | 0.548              | 0.555              |

**Table 13: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics. All the variables other than the dummy variables have been winsorized at the 1 and 99% level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

| Variables                              | D) EBITDA/Assets    |                     |                      |                     |                     |                     |                     |                     |                      |                      |                     |                      |                      |                      |
|--|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|
|  | Unadj.              | Unadj.              | Unadj.               | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Unadj.              | Adj.                 | Adj.                 | Adj.                | Adj.                 |                      |                      |
| Educational switch dummy               | 0.028**<br>(0.010)  |                     |                      |                     |                     |                     |                     |                     | 0.206<br>(0.143)     |                      |                     |                      |                      |                      |
| MBA switch dummy                       |                     | 0.012<br>(0.021)    |                      |                     |                     |                     |                     |                     | -0.161<br>(0.437)    |                      |                     |                      |                      |                      |
| Career switch dummy                    |                     |                     | -0.020<br>(0.033)    |                     |                     |                     |                     |                     |                      | -0.353<br>(0.278)    |                     |                      |                      |                      |
| PE size switch dummy                   |                     |                     |                      | 0.018<br>(0.028)    |                     |                     |                     |                     |                      |                      | 0.106<br>(0.255)    |                      |                      |                      |
| Age switch dummy                       |                     |                     |                      |                     | 0.045<br>(0.047)    |                     |                     |                     |                      |                      |                     | 0.311<br>(0.342)     |                      |                      |
| Geo focus switch dummy                 |                     |                     |                      |                     |                     | 0.007<br>(0.043)    |                     |                     |                      |                      |                     |                      | -0.224<br>(0.420)    |                      |
| Change geo focus switch dummy          |                     |                     |                      |                     |                     |                     | -0.102<br>(0.087)   |                     |                      |                      |                     |                      | -0.338<br>(0.239)    |                      |
| ICA industry switch dummy              |                     |                     |                      |                     |                     |                     |                     | -0.029<br>(0.021)   |                      |                      |                     |                      | -0.002<br>(0.144)    |                      |
| Log(Turnover <sub>T-1</sub> )          | -0.000<br>(0.010)   | 0.000<br>(0.009)    | 0.003<br>(0.005)     | -0.000<br>(0.008)   | 0.003<br>(0.011)    | 0.001<br>(0.009)    | -0.003<br>(0.009)   | -0.000<br>(0.011)   | 0.123<br>(0.080)     | 0.137<br>(0.147)     | 0.153<br>(0.230)    | 0.039<br>(0.079)     | 0.032<br>(0.075)     | 0.043<br>(0.092)     |
| Log(1 + Leverage <sub>it</sub> )       | -0.119**<br>(0.040) | -0.098**<br>(0.032) | -0.126***<br>(0.011) | -0.128**<br>(0.039) | -0.139**<br>(0.044) | -0.127**<br>(0.043) | -0.133**<br>(0.037) | -0.133**<br>(0.041) | -0.417**<br>(0.139)  | -0.381<br>(0.320)    | 0.937<br>(1.551)    | -0.032<br>(0.456)    | -0.052<br>(0.453)    | -0.032<br>(0.463)    |
| Syndicated dummy                       | -0.053*<br>(0.021)  | -0.047<br>(0.028)   | -0.039<br>(0.019)    | -0.053**<br>(0.017) | -0.054*<br>(0.020)  | -0.057*<br>(0.025)  | -0.060*<br>(0.023)  | -0.041<br>(0.035)   | -0.044<br>(0.387)    | -0.048<br>(0.472)    | 0.565<br>(0.682)    | -0.076<br>(0.401)    | -0.104<br>(0.378)    | -0.109<br>(0.485)    |
| EBITDA marg <sub>it</sub> -1           |                     |                     |                      |                     |                     |                     |                     |                     | -0.048<br>(0.548)    | -0.035<br>(0.579)    | -0.361<br>(1.108)   | -0.026<br>(0.542)    | -0.009<br>(0.540)    | -0.028<br>(0.527)    |
| A) EBIT/Turnover <sub>Pre-deal</sub>   |                     |                     |                      |                     |                     |                     |                     |                     |                      |                      |                     |                      |                      |                      |
| B) EBITDA/Turnover <sub>Pre-deal</sub> |                     |                     |                      |                     |                     |                     |                     |                     |                      |                      |                     |                      |                      |                      |
| C) EBIT/Assets <sub>Pre-deal</sub>     |                     |                     |                      |                     |                     |                     |                     |                     |                      |                      |                     |                      |                      |                      |
| D) EBITDA/Assets <sub>Pre-deal</sub>   | 0.564**<br>(0.137)  | 0.567***<br>(0.092) | 0.575***<br>(0.089)  | 0.552**<br>(0.127)  | 0.509**<br>(0.144)  | 0.537**<br>(0.122)  | 0.526***<br>(0.110) | 0.512**<br>(0.132)  |                      |                      |                     |                      |                      |                      |
| E) Turnover/Assets <sub>Pre-deal</sub> |                     |                     |                      |                     |                     |                     |                     |                     |                      |                      |                     |                      |                      |                      |
| Industry dummies                       | Yes                 | Yes                 | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes                  |
| Year dummies                           | Yes                 | Yes                 | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes                  |
| Country dummies                        | Yes                 | Yes                 | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes                  |
| Constant                               | 0.077<br>(0.159)    | -0.005<br>(0.114)   | 0.044<br>(0.075)     | 0.074<br>(0.143)    | 0.008<br>(0.172)    | 0.069<br>(0.152)    | 0.207<br>(0.133)    | 0.058<br>(0.161)    | 10.746***<br>(1.303) | 11.399***<br>(1.223) | 11.291**<br>(3.342) | 11.629***<br>(1.674) | 11.768***<br>(1.597) | 12.113***<br>(1.721) |
| Observations                           | 122                 | 122                 | 142                  | 120                 | 120                 | 120                 | 120                 | 120                 | 122                  | 122                  | 142                 | 120                  | 120                  | 120                  |
| Adjusted R-squared                     | 0.332               | 0.303               | 0.246                | 0.311               | 0.348               | 0.307               | 0.375               | 0.314               | 0.618                | 0.606                | 0.158               | 0.749                | 0.751                | 0.747                |

**Table 13: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

| Variables                              | E) Turnover/Assets |                    |                    |                    |                    |                    |                    |                    |                     |                     |                     |                     |                     |                     |                     |                     |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.             | Unadj.              | Adj.                | Adj.                | Adj.                | Adj.                |                     |                     |                     |
| Educational switch dummy               | 0.193<br>(0.247)   |                    |                    |                    |                    |                    |                    |                    |                     | -0.003<br>(0.040)   |                     |                     |                     |                     |                     |                     |
| MBA switch dummy                       |                    | 0.253<br>(0.148)   |                    |                    |                    |                    |                    |                    |                     |                     | -0.013<br>(0.120)   |                     |                     |                     |                     |                     |
| Career switch dummy                    |                    |                    | -0.022<br>(0.143)  |                    |                    |                    |                    |                    |                     |                     |                     | -0.100<br>(0.077)   |                     |                     |                     |                     |
| PE size switch dummy                   |                    |                    |                    | -0.036<br>(0.139)  |                    |                    |                    |                    |                     |                     |                     |                     | -0.203<br>(0.097)   |                     |                     |                     |
| Age switch dummy                       |                    |                    |                    |                    | 0.184<br>(0.163)   |                    |                    |                    |                     |                     |                     |                     |                     | 0.090<br>(0.100)    |                     |                     |
| Geo focus switch dummy                 |                    |                    |                    |                    |                    | -0.257<br>(0.222)  |                    |                    |                     |                     |                     |                     |                     | 0.016<br>(0.066)    |                     |                     |
| Change geo focus switch dummy          |                    |                    |                    |                    |                    |                    | 0.351<br>(0.211)   |                    |                     |                     |                     |                     |                     |                     | -0.123<br>(0.091)   |                     |
| ICA industry switch dummy              |                    |                    |                    |                    |                    |                    |                    | 0.092<br>(0.203)   |                     |                     |                     |                     |                     |                     | -0.162<br>(0.156)   |                     |
| Log(Turnover <sub>T-1</sub> )          | -0.038<br>(0.060)  | -0.038<br>(0.055)  | -0.032<br>(0.060)  | -0.030<br>(0.077)  | -0.020<br>(0.057)  | -0.037<br>(0.078)  | -0.016<br>(0.064)  | -0.027<br>(0.070)  | -0.050<br>(0.033)   | -0.052<br>(0.034)   | -0.030<br>(0.025)   | -0.042<br>(0.028)   | -0.044<br>(0.025)   | -0.050<br>(0.033)   | -0.055<br>(0.037)   | -0.061<br>(0.043)   |
| Log(1 + Leverage <sub>it</sub> )       | -0.328<br>(0.336)  | -0.263<br>(0.348)  | -0.082<br>(0.272)  | -0.476<br>(0.331)  | -0.563<br>(0.421)  | -0.572<br>(0.324)  | -0.461<br>(0.310)  | -0.457<br>(0.299)  | 0.529<br>(0.299)    | 0.500<br>(0.263)    | 0.647*<br>(0.288)   | 0.557<br>(0.290)    | 0.511<br>(0.299)    | 0.542<br>(0.299)    | 0.534<br>(0.325)    | 0.534<br>(0.325)    |
| Syndicated dummy                       | -0.188<br>(0.192)  | -0.196<br>(0.147)  | -0.079<br>(0.135)  | -0.229<br>(0.144)  | -0.213<br>(0.116)  | -0.226*<br>(0.093) | -0.223*<br>(0.101) | -0.274*<br>(0.106) | 0.028<br>(0.102)    | 0.009<br>(0.076)    | 0.083<br>(0.110)    | -0.022<br>(0.086)   | 0.035<br>(0.104)    | 0.027<br>(0.099)    | 0.023<br>(0.103)    | 0.120<br>(0.151)    |
| EBITDA marg <sub>it</sub>              |                    |                    |                    |                    |                    |                    |                    |                    | -0.353<br>(0.474)   | -0.338<br>(0.473)   | -0.243<br>(0.375)   | -0.359<br>(0.454)   | -0.382<br>(0.490)   | -0.356<br>(0.482)   | -0.352<br>(0.461)   | -0.336<br>(0.457)   |
| A) EBIT/Turnover <sub>Pre-deal</sub>   |                    |                    |                    |                    |                    |                    |                    |                    |                     |                     |                     |                     |                     |                     |                     |                     |
| B) EBITDA/Turnover <sub>Pre-deal</sub> |                    |                    |                    |                    |                    |                    |                    |                    |                     |                     |                     |                     |                     |                     |                     |                     |
| C) EBIT/Assets <sub>Pre-deal</sub>     |                    |                    |                    |                    |                    |                    |                    |                    |                     |                     |                     |                     |                     |                     |                     |                     |
| D) EBITDA/Assets <sub>Pre-deal</sub>   |                    |                    |                    |                    |                    |                    |                    |                    |                     |                     |                     |                     |                     |                     |                     |                     |
| E) Turnover/Assets <sub>Pre-deal</sub> | 0.851**<br>(0.193) | 0.857**<br>(0.242) | 0.807**<br>(0.222) | 0.827**<br>(0.217) | 0.808**<br>(0.239) | 0.828**<br>(0.208) | 0.826**<br>(0.214) | 0.836**<br>(0.212) | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Industry dummies                       | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Year dummies                           | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Country dummies                        | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Constant                               | 0.904<br>(0.577)   | 0.552<br>(0.391)   | 0.661<br>(0.651)   | 0.935<br>(0.733)   | 0.669<br>(0.429)   | 1.006<br>(0.865)   | 0.436<br>(0.475)   | 0.958<br>(0.819)   | 1.570***<br>(0.225) | 1.719***<br>(0.337) | 1.439***<br>(0.243) | 1.587***<br>(0.237) | 1.414***<br>(0.203) | 1.568***<br>(0.223) | 1.748***<br>(0.364) | 1.570***<br>(0.219) |
| Observations                           | 130                | 130                | 151                | 128                | 128                | 128                | 128                | 128                | 123                 | 123                 | 143                 | 121                 | 121                 | 121                 | 121                 | 121                 |
| Adjusted R-squared                     | 0.766              | 0.741              | 0.735              | 0.749              | 0.758              | 0.757              | 0.761              | 0.750              | -0.022              | -0.031              | -0.041              | 0.072               | -0.014              | -0.044              | -0.026              | -0.002              |

**Table 13: Second regression results (continued):** This table shows the results of the OLS regressions of all four control operating performance indicators for both the unadjusted and (industry and volatility) adjusted versions and the effect of private equity house and professional characteristics. All the variables other than the dummy variables have been winsorized at the 1 and 99% level.  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1