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Are Swedish Private Equity Firms Better at Creating Value in Swedish Companies?

Alfred Carlsson

24320@student.hhs.se

Ted Kennertsson

24441@student.hhs.se

Abstract

We examine whether companies owned by Swedish PE firms are superior in value creation compared to companies owned by foreign PE firms, to identify a potential local advantage. Additionally, we investigate local advantage in more detail by decomposing it into different factors and analyzing these factors individually and how they are interlinked. To investigate this, we study 61 PE transactions of which the acquiring PE firm has been Swedish and an equal number of transactions where the acquiring PE firm has been foreign. In line with our hypothesis, we find that companies owned by Swedish PE firms experience superior value creation, measured as the change in EBIE three years after the acquisition. Furthermore, we find that the superior development in EBIE is explained by a significant increase in both ROCE and EBIE margin, while there is no evidence of a significant change in capital employed or capital turnover. Our findings are in line with previous literature on how domestic and foreign ownership differ.

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1. Introduction

1.1 Background

The Private Equity (henceforth PE) industry has been discussed frequently over the last 30 years. Kaplan (1989b) finds that PE firms improve the operational performance in target companies in the US, including growth in sales, increase in cash flow to sales as well as lowering the capital expenditure to sales. In a study focusing on 73 Swedish PE exits, Bergström et al. (2007) demonstrate that PE buyouts have a significant positive impact on the target companies' EBITDA margin and return on invested capital, while there is no significant increase in sales. In contrast to the two previous studies, Guo et al. (2011) find no evidence that PE buyouts lead to operational improvements. A PE firm's business model is built upon obtaining enough voting power to be able to implement operational initiatives such as reducing the number of employees, decreasing unit costs and streamlining organizational processes in order to maximize returns (Jensen, 1989).

The capital inflow to PE firms has fluctuated much historically, but since 2010 the market has seen an increase in fundraises and investments (Burth and Reißig-Thus, 2019). Compared to other European countries, Sweden stands for some of the highest levels of PE investments measured as a percentage of GDP, and during a ten-year period, PE firms have invested more than 240 billion Swedish kronor in Swedish companies (SVCA, 2019). The interest in the Swedish market will likely be high in the future as well (PWC, 2020).

The great interest in the Swedish PE market opens up for further analysis of the most vital characteristics determining successful investments. According to Loos (2005), the most significant factor for success is professional experience. However, it would be interesting to examine if being geographically close to the investments is an additional factor. Norman and Riboe (2011) did a Bachelor thesis on a similar topic where they investigated the effects of being close to the investments in the Scandinavian PE market without finding any local advantage measured in EBITDA, sales and EBITDA margin. Lindemanis et al. (2019) conclude that domestically owned companies develop a better profit margin and return on assets (ROA) compared to foreign-owned companies, while foreign-owned companies increase their sales more. Sudarsanam (2003) states that cross-border acquisitions in many cases can be more challenging than domestic acquisitions since the countries differ on many points, including legal and cultural principles.

Apart from firm performance, there have been studies focusing on local performance regarding exchanged-traded stocks. Shukla and van Inwegen (1995) claim that local investors

have an advantage in the access of information. However, Seasholes (2000) states that foreign investors have better expertise and access to superior resources.

Considering PE firms, previous literature has put much emphasis on investigating whether PE-owned companies outperform non-PE-owned companies. However, there is a gap in the literature on whether Swedish or foreign PE firms are better at creating value in Swedish portfolio companies and the factors contributing to this. Hence, we want to answer the following research question: *Are Swedish PE firms better at creating value in Swedish companies compared to foreign PE firms?*

1.2 Purpose

The main purpose of this study is to investigate whether Swedish PE firms are better at creating value in Swedish portfolio companies compared to foreign PE firms to see if a local advantage exists in the Swedish PE market. The study will be carried out by comparing value creation among companies owned by Swedish PE firms to companies owned by foreign PE firms. In addition, the study will examine the main factors that contribute to value creation and how these factors change as a result of the origin of the PE firm. Our study is inspired by findings made by Lindemanis et al. (2019) on how firm performance differs depending on domestic or foreign ownership. Furthermore, we are also inspired by recent PE studies by Berg and Gottschalg (2005), Bergström et al. (2007), Guo et al. (2011) and Kaplan and Strömberg (2009), which all focus on value creation.

1.3 Contribution

This study contributes to already existing research in two ways. First, it will contribute with a contemporary examination on whether domestic PE investors have a local advantage or not. The study adds value to prior research on domestic and foreign ownership in other countries such as Chen (2010), Guadalupe et al. (2012) and Lindemanis et al. (2019) by studying the phenomenon from a PE perspective in Sweden.

Second, we are using different financial metrics to measure value creation compared to previous PE related research such as Bergström et al. (2007), Guo et al. (2011), Kaplan and Bergström (2009) and Norman and Riboe (2011). Furthermore, by decomposing value creation to different factors, the study adds explanation value to current research within PE on what drives value creation in a company.

1.4 Delimitation

The study is limited to PE transactions in the Swedish market for the time period of 1999-2016. We focus solely on the Swedish market as we want to ensure access to the specific company information needed to calculate the different components of value creation. Also, the study will only include companies in which the PE firms obtain significant ownership since that is necessary to be able to implement the changes that maximize value creation. Additionally, the study will not include any transactions made by two PE firms, i.e., no secondary buyouts or companies such as banks and insurance companies as their financial structure differ. Furthermore, the PE firms must hold the portfolio companies for a time period of at least three years.

1.5 Disposition

The study consists of seven different sections. Section 2 reviews the theoretical framework, including previous literature on PE in general and how PE firms operate, the definition of value creation including financial metrics, and lastly, how domestic and foreign ownership differ. Section 3 states the five different hypotheses, including a detailed explanation of each, and linking the hypothesis to previous literature. Section 4 describes the methodology used, including a description of the sample, selection of variables and presentation of regressions. Section 5 describes the data by presenting descriptive statistics, test results, correlations of variables, regressions and associated analysis. Section 6 consists of a discussion on the results. Section 7 includes suggestions for future research. Section 8 concludes the study.

2. Theory and Literature Overview

In the following sections, a short review of previous research on the topic of PE, firm valuation and operational performance, value creation and local advantage will be described.

2.1 Private Equity firms

PE firms acquire companies through a leveraged buyout, where PE firms strive to buy a sufficient part of the shares to receive majority control. To finance these buyouts, PE firms raise outside debt, i.e., use a low fraction of equity. PE firms operate through different PE funds, where mainly large institutional investors and wealthy individuals act as investors. The PE funds have a pre-agreed lifetime, and once this pre-agreed lifetime is over, the PE firm will terminate the fund and return the capital to the investors (Kaplan and Strömberg, 2009).

PE firms seek to increase the value of their investments since the ability to generate value corresponds to the PE firm's success and future payoff. This payoff can be shown directly through carried interest profit sharing-provisions, but it can also impact the firm's ability to raise enough capital for future funds (Chung et al., 2012). Loos (2005) argues that buyout sponsors aim to improve the profitability of the portfolio companies by providing them with their knowledge and expertise. Furthermore, he states that experience is considered to be the most important human factor for a PE firm and its employees.

According to Jensen (1989), a PE firm can add economic value to the portfolio companies by financial, governance or operational engineering. Financial engineering comes from the 'control hypothesis', which implies that the large amount of debt used in PE reduces the risk of managers taking on negative NPV projects as otherwise can be the case (Jensen 1986). In addition, the large amount of debt creates an interest tax shield, which is considered to be an additional benefit of the debt structure (Kraus and Litzenberger, 1973). In governance engineering, PE firms align their interests with the managers' by offering them an equity stake in the company. By doing this, PE firms decrease agency costs and thereby increase the value of the portfolio company (Kaplan and Strömberg, 2009). Furthermore, in their study, Kaplan and Strömberg (2009) find that a CEO through both stock and options receives 5.4% of the equity upside on average, and the management group as a whole receives 15%. Lastly, operating engineering can be applied by increasing growth or operational efficiency, including actions such as reducing costs or increasing capital efficiency (Kaplan et al., 2016). Lichtenberg and Siegel (1990) describe how total productivity is increased in companies after being acquired by a PE firm. Cressy et al. (2007) also reach the conclusion that operating profitability is greater in a PE-backed company than in non-PE-backed companies. The portfolio companies benefit from the strategic improvements that PE firms implement within 3-4 years (Kaplan, 1989a; Lichtenberg and Siegel, 1990).

2.2 Firm valuation and operational performance

The firm value at time t is the sum of future free cash flows discounted by the weighted average cost of capital (WACC) up to a given time period n, together with a terminal value. The terminal value occurs when the company reaches steady state and is the free cash flow in n+1 divided by WACC minus the expected constant growth in the free cash flows (g), (Berk J. & DeMarzo P. 2017, p. 323):

$$Firm\ Value_t = \frac{FCF_{t+1}}{(1+WACC)^1} + \frac{FCF_{t+2}}{(1+WACC)^2} + \cdots + \frac{FCF_n + V_n}{(1+WACC)^n}$$
$$where\ V_n = \frac{FCF_{n+1}}{WACC - g}$$

(1)

Even though the discounted cash flow method is widely used in most finance academic courses, PE firms often do not use this when evaluating different investments. Instead, PE firms use the internal rate of return (IRR) and multiples of invested capital (MOICs) (Kaplan et al., 2016). Kaplan and Ruback (1995) state that companies can be valued using multiples and find that this valuation method is considered to be useful, particularly when combining it with the discounted cash flow method. Berg and Gottschalg (2005) investigated the phenomenon of value generation within PE and formulated a function of a company's equity value at the time t:

$$Equity\ value_t = Valuation\ Multiple_t \times Revenue_t \times Margin_t - Net\ Debt_t \quad (2)$$

When investigating value creation for all stakeholders and not just the equity owners, the net debt is added to the equity value to receive the firm value. Equation 2 is thereby rearranged to the following, where profit measure equals revenue times margin:

$$Firm\ Value_t = Valuation\ Multiple_t \times Profit\ measure_t \quad (3)$$

The first component that determines firm value is the valuation multiple. This is dependent on financial performance, market valuations for comparable companies or updated beliefs about the future financial performance for a specific company or an industry as a whole (Berg and Gottschalg, 2005). The second component that determines firm value regards the profit measure and comes from a company's revenue, margins or capital requirements, which derives from improvements in the operating performance (Berg and Gottschalg, 2005).

    EBITDA is the most widely used metric in studies on PE firms (Barber and Lyon, 1996; Bergström et al., 2007; Kaplan et al., 2016). However, Lonergan (2016) describes how the

EBITDA multiple valuation needs to be used with caution and with other metrics as a complement because EBITDA multiples fail to incorporate enough information, especially in capital-intensive industries. Stewart (2009; 2019) argues that EBITDA, as a metric and as a base for valuation, has several shortcomings. EBITDA fails to take the capital into consideration and therefore puts no pressure on managers to efficiently manage their assets. In line with the argumentation of Stewart, Moody's (2000) argues that EBITDA has several drawbacks, whereof one of the drawbacks is that EBITDA does not consider the required reinvestments, which could have a large impact on companies with short-lived assets. Ningzhong (2016) examines the definition of performance measures in earnings-based financial covenants used in loan contracts. In his study, he concludes that EBITDA fails to explain a company's credit risk and that EBIT defines the credit risk in a better way. Furthermore, Bacidore et al. (1997) argue that EBIT captures how well companies operate on a daily basis. Companies owned by PE firms use the operating cash flow to repay debt, resulting in little or no excess cash (Jensen, 1986; 1989; Roden and Lewellen, 1995). Since the only difference between EBIT and EBIE is financial income, these two metrics coincide to a great extent. The definition of firm value by Berg and Gottschalg (2005) can therefore be defined as:

$$Firm\ Value_t = Valuation\ Multiple_t \times EBIE_t \qquad (4)$$

2.3 Value creation

As stated in 2.2, firm value depends on the valuation multiple and the profit measure EBIE. As value creation derives from the ability to grow the firm value, value creation comes from either change in the valuation multiple i.e., multiple expansion or a change in a company's EBIE.

Multiple expansion can arise from updated beliefs regarding financial performance for an industry or risk changes (Achleitner et al., 2011; Berg and Gottschalg, 2005; Liu et al., 2002).

Changes in EBIE can be derived from operational improvements in a company (Berg and Gottschalg, 2005). As the second component of value creation is the change in EBIE, value creation can be expressed as:

$$Value\ creation_{(t+n,t-1)} = \frac{EBIE_{t+n}}{EBIE_{t-1}} \qquad (5)$$

EBIE can further be decomposed into two parts, consisting of (1) the return on capital employed (ROCE) and (2) capital employed (CE).

$$EBIE_t = ROCE_t \times CE_t \qquad (6)$$

According to Singh and Yadav (2013) ROCE is a well-explaining profitability metric that investigates whether a company is using its capital in an efficient way. Furthermore, they state that the use of ROCE gives a clear view of how much return a company can produce from the capital employed in the business. ROCE can be compared to the cost of capital to determine value creation (Jagannathan et al., 2017). Treating EBIE as the product of ROCE and capital employed, value creation can be defined as:

$$Value\ creation_{(t+n,t-1)} = \frac{ROCE_{t+n}}{ROCE_{t-1}} \times \frac{CE_{t+n}}{CE_{t-1}} \qquad (7)$$

Nissim and Penam (2001) investigate equity valuation by using the DuPont analysis, which decomposes a company's return on net operating assets (RONA) into (1) profit margin and (2) asset turnover. In their study, they define net operating assets as operating assets minus operating liabilities and total assets as operating assets plus financial assets. As capital employed equals total assets minus operating liabilities, the only difference when comparing net operating assets to capital employed is financial assets. However, as stated in 2.2, companies owned by PE firms have little or no excess cash, i.e., financial assets (Roden and Lewellen, 1995; Jensen, 1986; Jensen, 1989). This indicates that net operating assets do not deviate significantly from capital employed for companies acquired by PE firms. Therefore, the same decomposition can be made for ROCE to examine factors that impact profitability.

The first component in the DuPont analysis is the profit margin. This is often related to a company's pricing power and ability to keep the costs low (Nissim and Penam, 2001; Soliman, 2008). The second component, asset turnover, derives from allocating assets in the most effective way (Soliman, 2008). In his study, Soliman examines the use of the DuPont analysis when estimating the stock market return and analyst's forecasts and finds that the DuPont is of great use when analyzing financial statements. Similar to Soliman (2008), Fairfield and Yohn (2001) find evidence that the breakdown into profit margin and asset turnover yields useful information about changes in future profitability. ROCE can therefore be expressed by the two components, EBIE-margin (EBIE to sales) and capital turnover (sales to capital employed), as follows:

$$ROCE = \frac{EBIE}{Sales} \times \frac{Sales}{CE} \qquad (8)$$

2.4 Local advantage

According to Bae et al. (2008), local analysts have a significant advantage compared to foreign analysts because of their geographical proximity to their home market, resulting in more precise earnings forecasts. Furthermore, Malloy (2005) describes how local analysts have an information advantage which makes them perform better than analysts not located close to the market. Shukla and van Ingwen (1995) strengthen this conclusion arguing that foreign fund managers perform worse than local fund managers in the US. Lindemanis et al. (2019) further conclude that domestically acquired companies experience a better improvement in both profit margin and ROA but a worse development in sales. Decisions regarding acquisitions and other strategic initiatives are made by a company's top management team (Barkema and Shvyrkov, 2007; Hayward and Hambrick, 1997). Siming (2010) also finds that network is an important advantage for PE firms and the right connections give the firm a better chance of being included in different buyout processes. Kedia et al. (2008) find that local investors create more value and manage to earn twice the return compared to non-local investors. This stems from being geographically closer to the target and therefore reap larger benefits from synergies.

Contrary to these studies, Albuquerque et al. (2009) indicate that non-local investors have information that is beneficial when trading in other countries, which gives them an advantage over local investors. Chen (2010) finds that foreign acquisitions increase sales in portfolio companies more than domestic acquisitions. Aydın et al. (2007) also argue that target companies owned by foreign investors perform better in terms of profitability. Guadalupe et al. (2012) state the word cherry picking, which implies that foreign owners only acquire the best domestic firms. In their study on Spanish manufacturing firms, they find that after foreign investors have made their decision, they tend to invest large amounts. Paprzycki and Fukao (2008) also find that foreign investors tend to acquire more profitable companies. Furthermore, Globerman et al. (1994) find that foreign-owned establishments are more productive than domestically owned establishments in terms of value added per employee. However, this is a result of being more capital intensive. Additionally, in a study on European private and public companies Egger et al. (2010) find that foreign ownership is positively related to larger debt ratios.

Other studies have investigated the impact of geographical proximity and concluded that geographical presence does not have an impact on the investor's performance. For example, Seasholes and Zhu (2010) find that local investors do not generate abnormal returns and the difference between local and non-local investors is therefore zero. Additionally, Ferreira et al.

(2017) argue that foreign institutional investors perform just as good as local institutions on average.

3. Hypotheses

As discussed in 2.2, firm value can be defined according to equation 4, where firm value is dependent on the valuation multiple and EBIE. Further stated in 2.3, many of the factors affecting the valuation multiple are dependent on external market conditions. It is therefore reasonable to assume a constant valuation multiple and instead focus on what the PE firm and their portfolio companies can manage, the profitability. Hence, value creation can be expressed as in equitation 5 where the change in EBIE is measured.

There has not been any study investigating the changes in EBIE with regards to the origin of the owner. However, we expect a local advantage similar to Malloy's (2005) findings, stating that local analysts are superior due to an information advantage and being closer to the market. Bae et al. (2008) come to a similar conclusion and argue that local investors have an advantage since they know their home market better and therefore are able to make more precise projections. Furthermore, Siming (2010) stretches the importance of having a solid network as this leads to a better chance of being included in more buyout processes. It is reasonable to assume that such a network is easier to build when being located in the same country as the target company, previous owners, brokers and other important actors. We believe that the combination of information advantage and precedence in buyouts result in a larger advantage than having international knowledge as foreign PE firms might have according to Albuquerque et al. (2009). This provides local PE firms with better prerequisites for being able to create more value. Hence, we state the first hypothesis as:

H_1: Companies owned by Swedish PE firms will experience a superior change in EBIE compared to companies owned by foreign PE firms

As stated in equation 6, EBIE can be decomposed into ROCE and capital employed. There is a gap in the literature investigating whether local or foreign owners are better at developing ROCE. However, Lindemanis et al. (2019) find that companies with local owners show larger improvements in ROA. This study indicates that companies with local owners are more successful in yielding returns on their assets which we believe serves as a good proxy for their ability to generate returns on capital employed as well. As mentioned in hypothesis 1, we also

believe that Swedish PE firms will have an information advantage and reap the benefits from a better network, resulting in a superior change in EBIE and therefore also ROCE.

Egger et al. (2010) find that foreign ownership is related to significantly higher debt ratios. In addition, Guadalupe et al. (2012) state that foreign ownership is positively related to large investments. We therefore believe that companies owned by foreign PE firms will grow their capital employed more compared to companies owned by Swedish PE firms. Additionally, we assume that the geographical distance will lead to an information disadvantage which will require larger investments in order to achieve the same results as Swedish PE firms. All in all, this would imply that companies owned by Swedish PE firms experience a more positive change in ROCE while companies owned by foreign PE firms demonstrate a larger increase in capital employed. Our second and third hypotheses are therefore:

H_2: Companies owned by Swedish PE firms will experience a superior change in ROCE compared to companies owned by foreign PE firms.

H_3: Companies owned by foreign PE firms will grow their capital employed more than companies owned by Swedish PE firms

According to equation 8, ROCE is the product of EBIE margin and capital turnover. Although Aydın et al. (2007) find that foreign ownership is positively correlated with higher margins, our beliefs are in line with Lindemanis et al. (2019) findings. These state that companies acquired by foreign investors experience an inferior development in profit margin. Our beliefs are also based on finding by Guadalupe et al. (2012) and Paprzycki and Fukao (2008) findings that foreign investors tend to acquire more profitable companies. This indicates more room for improvements in companies acquired by Swedish PE firms, given that the right strategies are implemented. We believe that Swedish PE firms will be able to implement such strategies successfully because of their information advantage and local knowledge.

While there has not been any study on whether domestic or foreign investors are better at developing capital turnover, other studies have been made on productivity. Haddad and Harrison (1993) find that foreign ownership does not result in increased productivity and show that in some cases, domestically owned companies demonstrate a higher growth rate in productivity. In addition to this, capital turnover is calculated as sales divided by capital employed and each of these components must therefore be taken into consideration. Chen (2010) and Lindemanis et al. (2019) find that foreign ownership is related to higher sales growth. However, as described in hypothesis 3, we believe that companies acquired by foreign

PE firms will increase their capital employed more than their counterparts. Consequently, the improvement in sales relative to capital employed will be better for companies owned by Swedish PE firms. This results in the fourth and the fifth hypothesis:

H_4: Companies owned by Swedish PE firms will experience a superior change in EBIE-margin compared to companies owned by foreign PE firms.

H_5: Companies owned by Swedish PE firms will experience a superior change in capital turnover compared to companies owned by foreign PE firms.

4. Methodology

4.1 Data collection

To study if Swedish PE firms are better at creating value in Swedish portfolio companies compared to foreign PE firms, we use a larger data set of PE transactions taken place from 1999-2016. The wide majority of Swedish companies have reported no later than 2019, and since we need financial information three years after the transaction, the latest transaction year is 2016. To conduct our study, we need financial data for the portfolio companies one year prior to the first transaction (1998) and three years after the last transaction (2019). The selected time horizon of three years is similar to what Lindemanis et al. (2019) had in their study on the comparison between foreign and domestic ownership. This also matches a PE firm's normal holding period.

4.2 Description of data sample

We used Eikon[1] and Factset[2] to sort out and collect the PE transactions. Even if there is a risk of not covering all transactions, our cross-checking using two databases eliminates some of the potential risks for systematic error. Specific firm information for the portfolio companies is obtained using Retriever[3]. The use of Retriever allows us to access companies' own annual reports, which we use in order to calculate the required components. Example of such components are sales, operating profit (EBIT), and total assets.

Furthermore, in order to strengthen the quality of our study, we choose to make the following adjustments:

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[1] Eikon is a digital tool for monitoring and analysis of financial information
[2] Factset is a financial data and software company
[3] Retriever is a Swedish database containing annual reports from all companies registered in Sweden

(1) we exclude companies where PE firms lack majority ownership. This is because PE firms' business model is dependent on strategic improvements and in order to make these improvements, it is necessary to have voting rights and thereby enough ownership, (2) we choose to exclude companies where the financial information is unavailable and thereby preventing us from making any comparison, (3) we remove banks and insurance companies since their financial structure differ and thereby make the comparison less accurate, and (4) we exclude companies of which a transaction has occurred between two PE firms since strategic changes most certainly have been implemented by the selling PE-firm which makes it hard to determine the real effect from the buying PE firm. After these adjustments, we have a sample of 142 companies.

To determine any potential impact local or foreign ownership has on the variables, we use a propensity score matching method. This method is used to match companies with similar characteristics so that every locally owned company is matched with a foreign-owned company with similar characteristics. This makes it possible to determine the impact while controlling for firm-specific characteristics. The goal is to reduce potential bias and therefore be able to isolate and study the effects of the treatment to a greater extent. Ideally, before matching companies from the different groups, we would run a probit regression to see what characteristics that affect the probability of being acquired by foreign PE firms the most. These variables would then be taken into consideration when calculating propensity scores and when matching companies. Due to our limited data sample, we choose to only match on industry and EBIE as we otherwise would end up with a very limited number of observations. We recognize that this might lead to a potential bias, but we have no reason to believe that this will have a significant impact on our results. Industry classifications are based on SNI codes which then are assigned an industry number between 1 and 12 based on Ken French's 12 industry divisions[4]. When determining every company's SNI code, we are sometimes required to use the SNI code of the operating subsidiary, similar to Bergström et al. (2007). This is because some companies are classified as holding companies based on their SNI code.

After matching companies using the propensity score method, the data sample in our study contains 122 Swedish companies, whereof 61 of the companies were acquired by Swedish PE firms and 61 were acquired by foreign PE firms.

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[4] Twelve Industry classifications developed by Ken French

4.3 Classification of foreign PE-firms

In this study, we distinguish between Swedish and foreign PE firms based on the headquarters' location. As stated in 2.4, decisions regarding acquisitions are made by top management and they are often located at the headquarter. All PE firms with headquarter in Sweden are therefore classified as Swedish PE firms and all PE firms with headquarter outside of Sweden are classified as foreign PE firms.

4.4 Variables

In the table below we list all variables chosen in our study, including a short definition. We then describe the variables in more detail.

Table 1. Selection and description of the used variables

Dependent variables	
Change in EBIE	EBIE at (t+3) divided by EBIE at (t-1) minus 1 (percentage change)
Change in ROCE	ROCE at (t+3) divided by ROCE at (t-1) minus 1 (percentage change)
Change in capital employed	Capital employed at (t+3) divided by capital employed at (t-1) minus 1 (percentage change)
Change in EBIE margin	EBIE margin at (t+3) divided by EBIE margin at (t-1) minus 1 (percentage change)
Change in capital turnover	Capital turnover at (t+3) divided by capital turnover at (t-1) minus 1 (percentage change)
Independent variables	
Swedish PE firms	Indicator variable which takes the value of 1 if the portfolio company is owned by a Swedish PE-firm and 0 if the portfolio company is owned by a foreign PE-firm
Control variables	
Firm Size at (t-1)	Sized measured by the natural logarithm of the portfolio company's revenues
Leverage at (t-1)	Measure of how much debt a portfolio company has in relative to the assets. Computed as debt divided by total assets
EBIE margin at (t-1)	Measures the operating profitability for the portfolio company. Computed as EBIE divided by sales
ROCE at (t-1)	Measures the return on capital employed for the portfolio company. Computed as EBIE divided by capital employed.
Company age	The age of the portfolio company at the time of the acquisition

4.4.1 Dependent variables

4.4.1.1 Change in EBIE

Our definition of value creation, i.e., growth in firm value, is the percentage increase in EBIE over a certain time period, according to:

$$Change\ EBIE_{(t+n,t-1)} = \frac{EBIE_{t+n}}{EBIE_{t-1}} - 1^5 \qquad (9)$$

We study the change in EBIE over the first three years after the PE investment. We do this by dividing EBIE at t+3 with EBIE at t-1. By analyzing the change in EBIE over this period, we give the PE firm enough time to implement their strategies and we are able to capture any potential value creation.

4.4.1.2 Change in ROCE

The first part of the change in EBIE, and thereby in firm value, derives from the change in ROCE. The change in ROCE makes it possible to distinguish how local presence is related to the difference in profitability and use of capital. Similar to the change in EBIE, the change in ROCE will be analyzed over three years from the acquisition according to:

$$Change\ ROCE_{(t+n,t-1)} = \frac{ROCE_{t+n}}{ROCE_{t-1}} - 1 \qquad (10)$$

4.4.1.3 Change in capital employed

The second part of the change in EBIE, and thereby in firm value, is the change in capital employed. By investigating how capital employed has changed three years after the acquisition we can conclude if there is any difference between the groups in this metric. The change in capital employed will be calculated as:

$$Change\ capital\ employed_{(t+n,t-1)} = \frac{Capital\ employed_{t+n}}{Capital\ employed_{t-1}} - 1 \qquad (11)$$

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[5] When the variable changes from positive to negative or from negative to positive it becomes problematic to calculate growth. We adjust so if a company goes from positive to negative the change is -100% and if a company goes from negative to positive the change is +100%

4.4.1.4 Change in EBIE margin

ROCE can be decomposed into two components, where the first component is the EBIE margin. Studying the change in EBIE margin three years post investment will add explaining value in primarily two ways. First, an insight of how the change in EBIE margin is contributing to the change in ROCE. Second, it reveals who is better at growing in EBIE relative to their sales. The change in EBIE margin over the time period will be calculated according to:

$$Change\ EBIE\ margin_{(t+n,t-1)} = \frac{EBIE\ margin_{t+n}}{EBIE\ margin_{t-1}} - 1 \qquad (12)$$

4.4.1.5 Change in capital turnover

Capital turnover is the second part that can be decomposed from ROCE. The change in capital turnover can be seen as a proxy for efficiency changes (Lindemanis et al., 2019). The change in capital turnover will examine whether any additional capital employed contributes to a growth in sales. Furthermore, by comparing the change in capital turnover among portfolio companies owned by local PE firms to companies owned by foreign PE firms, we can conclude who generates most sales from the capital. The change over three years post acquisition will be calculated according to:

$$Change\ capital\ turnover_{(t+n,t-1)} = \frac{Capital\ turnover_{t+n}}{Capital\ turnover_{t-1}} - 1 \qquad (13)$$

4.4.2 Independent variables

To be able to compare Swedish PE firms to foreign PE firms we use an indicator variable that takes the value of 1 if the PE firm is Swedish and 0 if the PE firm is foreign.

4.4.3 Control variables

We choose to include the size of the portfolio companies at (t-1) as one of our control variables. Prior research shows that firm size has an impact on the profitability among companies (Abeyrathna and Priyadarshana 2019; Baumann et al., 2010). Asimakopoulos et al. (2009) find that larger companies are more profitable compared to smaller firms. In contrast to this, Hamilton (2012) finds results that smaller companies actually grow more often and with more continuity compared to larger companies.

   Another control variable we choose to include is each company's leverage in (t-1). Much study has been done on this subject and the results differ. Abor (2016) investigates listed companies on the Ghana Stock Exchange and finds a significantly positive relation between short-term debt to total assets and Return on Equity but a negative relationship between long-

term debt to total assets and Return on Equity. Additionally, we choose to include the EBIE margin in t-1 and ROCE in t-1 as control variables.

Furthermore, we include company age as a control variable. Previous research indicates that age is correlated to financial performance both in terms of sales, capital intensity and financial structure (Barba Navaretti et al. 2014; Bentzen et al. 2012). We calculate company age as the difference between the year that the company is founded according to the Retriever database and the year the acquisition of the portfolio company took place. Ideally, we would also include the size of the PE firm in terms of asset under management as a control variable in our regression to investigate a potential size effect. However, several PE firms do not disclose this number and this control variable is thereby not included.

4.5 Regression analyses

By using different regressions, we compare the change in EBIE, ROCE, capital employed, EBIE margin and capital turnover among the portfolio companies. The change is measured by comparing the metric in t-1, one year prior to the acquisition, to the metric in t+3. In our regressions, we are regressing the change in our dependent variables depending on the value of the chosen dummy variable. This dummy variable takes the value of one if the acquiring PE firm is Swedish and takes the value of zero if the acquiring PE firm is foreign. Furthermore, we use the selected variables mentioned and described above to analyze what correlates with the change. We also chose to include industry effects in one of our regressions to account for any potential impact. Ideally, we would include year effects as well but since we have a limited data sample spread over 18 years, we find that unnecessary in this study. We specify the regressions as follows:

Regression 1.

$$Change \; dep. var_{(t+3),(t-1)} = \beta_1 \times Swedish \; PE \; firm + \beta_2 \times Company \; age \qquad (14)$$
$$+\beta_3 \times Leverage + \beta_4 \times EBIE \; margin(t-1) + \beta_5 \times ROCE(t-1)$$
$$+(Ln) \; Sales(t-1) + \varepsilon$$

Regression 2.

$$Change \; dep. var_{(t+3),(t-1)} = \beta_1 \times Swedish \; PE \; firm + \beta_2 \times Company \; age \qquad (15)$$
$$+\beta_3 \times Leverage + \beta_4 \times EBIE \; margin(t-1) + \beta_5 \times ROCE(t-1)$$
$$+(Ln) \; Sales(t-1) + Industry \; Effects + \varepsilon$$

Where the dependent variables are change in EBIE, ROCE, capital employed, EBIE margin and capital turnover.

5. Results

5.1 Descriptive statistics

Table 2. Descriptive statistics

	Companies owned by Swedish PE firms						Companies owned by foreign PE firms					
VARIABLES	Obs.	Mean	Median	St. dev.	Min	Max	Obs.	Mean	Median	St. dev.	Min	Max
Change EBIE	61	0.857	0.310	2.156	-1.000	13.745	61	0.196	-0.111	1.131	-1.000	2.963
Change ROCE	61	0.337	-0.134	1.784	-1.000	11.132	61	-0.304	-0.512	0.665	-1.000	1.204
Change Capital employed	61	1.189	0.472	2.270	-0.770	14.613	61	2.410	0.992	7.156	-0.655	55.481
Change EBIE margin	61	0.430	-0.087	1.810	-1.000	9.683	61	-0.111	-0.256	0.884	-1.000	3.697
Change Capital turnover	61	0.007	-0.149	0.749	-0.752	3.962	61	0.014	-0.196	0.826	-0.925	3.301
Swedish PE firm	61	1.000	1.000	0.000	1.000	1.000	61	0.000	0.000	0.000	0.000	0.000
Company age	61	23.492	20.000	16.439	3.000	77.000	61	20.820	15.000	18.569	3.000	88.000
Leverage (t_{-1})	61	0.235	0.181	0.219	0.000	0.823	61	0.189	0.118	0.194	0.000	0.738
EBIE margin (t_{-1})	61	0.085	0.074	0.098	-0.152	0.396	61	0.116	0.111	0.256	-0.414	1.772
ROCE (t_{-1})	61	0.329	0.228	0.356	-0.226	1.662	61	0.555	0.346	3.205	-13.922	19.186
Ln Salest (t_{-1})	61	12.175	12.186	1.104	9.537	15.078	61	12.045	12.110	1.335	8.679	14.642

The table presents descriptive statistics for our matched sample of 122 observations, 61 observations with Swedish PE firms as owners and 61 observations with foreign PE firms as owners. Financial data for the period 1999-2016.

Table 2 shows descriptive statistics for companies owned by Swedish and foreign PE firms. Companies owned by Swedish PE firms demonstrate a mean logarithmic value of 12.2 measured in sales, while companies owned by foreign PE firms demonstrate a slightly lower mean of 12.0. The two groups also demonstrate a mean value in age of 23.5 and 20.8, respectively.

Overall, companies owned by Swedish PE firms experience an average change of 85.7% in EBIE over the period, while the ones owned by foreign PE firms instead demonstrate a change of 19.6% on average. In addition, foreign PE firms' portfolio companies demonstrate a mean increase in capital employed of 241.0% while companies owned by Swedish PE firms demonstrate an average increase of 118.9%.

Foreign PE firms' investments display a mean ROCE in t-1 of 55.5% and their competitors demonstrate a mean ROCE of 32.9%. Companies owned by Swedish PE firms also experience a 33.7% change in ROCE over the period and foreign-owned companies experience a -30.4% change. Table 2 indicates that the average EBIE margin in t-1 is 11.6% for companies owned by foreign PE firms and 8.5% for companies owned by Swedish PE firms. Furthermore, companies owned by Swedish PE firms demonstrate an average positive change in EBIE margin of 43.0% over the period, while foreign firms demonstrate a negative change of 11.1%. Companies owned by Swedish PE firms also demonstrate a positive average change in capital turnover of 0.7% and foreign-owned organizations demonstrate a positive development of 1.4%.

Foreign PE firms' investments demonstrate a mean debt to asset level of 0.19 the year before the acquisition. Swedish PE firms' investments instead demonstrate a mean debt to asset level of 0.24.

5.2 Indicators before change

Table 3. Variables before change

VARIABLES	Swedish PE	Foreign PE	T-stat
EBIE	23910.910	27732.520	1.034
ROCE	0.329	0.555	0.555
Capital Employed	235910.500	169495.100	-0.708
EBIE margin	0.085	0.116	0.953
Capital turnover	4.531	5.676	0.933

The table presents the mean difference in t-1 before the companies were acquired by PE firms. Each group consists of 61 observations. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

As can be seen in table 3, all the differences between the two groups lack statistical significance before they are acquired by either a Swedish PE firm or a foreign PE firm. This indicates that our propensity score matching method was successful and allows us to study the effects of Swedish and foreign ownership in a correct way. Ideally, we would have matched companies on additional criteria as well to refine our matching further, but the limited data sample does not allow this. However, as the differences in EBIE, ROCE, capital employed, EBIE margin and capital turnover are statistically insignificant between the groups, it is not considered to be a problem and the necessary requirements for conducting a study are met.

5.3 Correlation between variables

Table 4. Pearson correlation matrix

VARIABLES	Swedish PE firm	Company age	Leverage	EBIE margin	ROCE	Ln Sales
Swedish PE firm	1					
Company age	0.0766	1				
Leverage (t-1)	0.1119	0.0803	1			
EBIE margin (t-1)	-0.0807	-0.0409	-0.1659	1		
ROCE (t-1)	-0.0500	-0.0637	-0.1623	0.4925*	1	
Ln Salest (t-1)	0.0534	0.2525*	0.2152*	-0.1281	-0.1165	1

The table presents correlations between the variables. Values that are close to zero indicate low a low correlation. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

We use a Pearson correlation matrix to investigate if any multicollinearity exists between the variables. According to Grewal et al. (2004), a value above 0.80 indicates problems with multicollinearity. We have no value exceeding 0.5 in our matrix which is advantageous from a multicollinearity perspective. However, table 4 show a few significant correlations between the different variables but as the values are relatively low, we consider the risk of multicollinearity low.

5.4 Bivariate comparisons

Table 5. T-tests:

VARIABLES	Swedish PE	Foreign PE	T-stat
Change EBIE	0.857	0.196	-2.066**
Change ROCE	0.337	-0.304	-2.633***
Change Capital Employed	1.189	2.410	1.250
Change EBIE marg.	0.430	-0.111	-2.036**
Change Capital turnover	0.007	0.014	0.045

The table presents the mean difference of the change from one year before the acquisition to three years after the acquisition. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

To further study the difference between Swedish and foreign PE firms and their ability to create value in their portfolio companies, we use a t-test to compare the means of the two groups.

Table 5 shows a significant difference in the EBIE development (at 5% level) over the period where companies owned by Swedish PE firms experience a mean increase in EBIE of 85.7%, while companies owned by foreign PE firms experience an increase of 19.6%. This implicates a compounded annual growth rate (CAGR) of 16.7% for companies owned by Swedish PE firms and 4.6% for companies owned by foreign PE firms.

When examining the change in ROCE three years after the acquisition, we find that portfolio companies owned by Swedish PE firms demonstrate a positive development of 33.7% on average, while companies owned by foreign PE firms on average demonstrate a negative development of 30.4%. This result is statistically significant on the 1% level which indicates that companies owned by Swedish PE firms manage to generate a higher return on their capital employed than companies owned by foreign PE firms. Given the ROCE level in t-1, the change implies an average ROCE of 44.0% in t+3 for companies owned by Swedish PE firms and an average ROCE of 38.6% for foreign-owned companies.

Companies owned by foreign PE firms increase their capital employed by 241.0% on average while companies owned by Swedish PE firms demonstrate an average increase of 118.9%. However, the difference in capital employed between the two groups is not statistically significant.

For the change in EBIE margin, we find a significant difference at the 5% level between the means of the two groups. Foreign investments present an 11.1% decrease in EBIE margin over the period, which indicates a negative change of 1.2 percentage points in total. Swedish PE firm's investments instead manage to present a 43.0% increase over the same time period, indicating a total change of 3.7 percentage points.

We fail to find any significant difference between companies owned by Swedish and foreign PE firms regarding the change in capital turnover. Companies owned by Swedish PE firms experience a change of 0.7%, while companies owned by foreign PE firms demonstrate an increase of 1.4%.

The significant difference (at the 5% level) in EBIE development between the two groups is consistent with hypothesis 1 which stated that Swedish PE firms are better at creating value in Swedish portfolio companies than foreign PE firms. Companies owned by Swedish PE firms also demonstrate a larger increase in ROCE three years after the acquisition which is consistent with hypothesis 2 stating that companies owned by Swedish PE firms demonstrate a superior

development in ROCE. Furthermore, as can be seen in table 5, the difference in EBIE margin is significant at the 5% level as companies owned by Swedish PE firms demonstrate a larger positive change over the period. The superior change in EBIE margin can be interpreted as an explanation for the larger increase in ROCE and ultimately in EBIE.

Additionally, regarding the development in capital employed, we find that the difference between the treatment group and the control group lack statistical significance. Hypothesis 3 states that companies owned by foreign PE firms will increase their capital employed more than the ones owned by Swedish PE firms. The result is therefore not consistent with hypothesis 3. A similar pattern can be spotted in the change for capital turnover as the difference lacks significance at any conventional level. The result is therefore not consistent with hypothesis 5, saying that companies owned by Swedish PE firms will experience a better development in capital turnover.

5.5 Regression analyses

Table 6. Regressions:

VARIABLES	(1) Change EBIE	(2) Change EBIE	(3) Change ROCE	(4) Change ROCE	(5) Change Capital Employed	(6) Change Capital Employed	(7) Change EBIE margin	(8) Change EBIE margin	(9) Change Capital Turnover	(10) Change Capital Turnover
Swedish PE firm	0.622**	0.625*	0.561**	0.561**	-1.268	-1.294	0.473*	0.474*	0.00743	0.0171
	(0.303)	(0.316)	(0.230)	(0.240)	(0.804)	(0.826)	(0.248)	(0.257)	(0.145)	(0.144)
Company age	0.00568	0.00483	0.00975	0.00696	-0.0462***	-0.0414**	0.00645	0.00528	0.00601	0.00241
	(0.0101)	(0.00797)	(0.00823)	(0.00662)	(0.0156)	(0.0168)	(0.00834)	(0.00750)	(0.00548)	(0.00510)
Leverage (t-1)	-0.364	-0.481	0.462	0.389	-1.125	-0.789	-0.0917	-0.103	0.180	0.167
	(0.562)	(0.581)	(0.464)	(0.486)	(1.371)	(1.400)	(0.450)	(0.484)	(0.405)	(0.413)
EBIE margin (t-1)	-1.327**	-1.355*	-1.298	-1.468*	0.195	0.164	-1.728*	-1.838*	0.227	0.141
	(0.658)	(0.715)	(0.791)	(0.874)	(4.160)	(4.345)	(0.969)	(1.037)	(0.293)	(0.296)
ROCE (t-1)	-0.0245	-0.0304	-0.0245	-0.0283	-1.365	-1.353	-0.0186	-0.0135	0.0653***	0.0747***
	(0.0231)	(0.0240)	(0.0191)	(0.0205)	(1.116)	(1.120)	(0.0165)	(0.0242)	(0.0136)	(0.0118)
Ln Salest (t-1)	-0.0496	-0.0331	-0.0975	-0.0682	-0.618	-0.625	-0.0262	-0.0174	-0.129**	-0.129**
	(0.119)	(0.118)	(0.0970)	(0.0920)	(0.404)	(0.408)	(0.0942)	(0.0902)	(0.0597)	(0.0608)
Constant	0.912	1.384	0.745	0.556	11.77*	10.73*	0.298	0.545	1.343*	1.201*
	(1.384)	(1.386)	(1.098)	(1.040)	(6.057)	(5.764)	(1.096)	(1.162)	(0.699)	(0.704)
Industry effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	122	122	122	122	122	122	122	122	122	122
R-squared	0.066	0.082	0.120	0.141	0.371	0.385	0.101	0.124	0.097	0.153

The table presents regressions for the dependent variables, with and without industry effects. Robust standard errors in parentheses.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

5.5.1 EBIE development

In table 6 and regression 1 and 2, we test hypothesis 1 which states that Swedish PE firms are better at creating value in Swedish companies than foreign PE firms in terms of change in EBIE. Table 6 shows no large differences in the result between regression 1 and regression 2. When adjusting for industry effects, we find that Swedish PE firms have a significant positive effect (at the 10% level) on the EBIE development. The positive coefficient of the Swedish PE firm variable illustrates that companies owned by a Swedish PE firm generate an increase in EBIE that is 62.5 percentage points higher over the time period than the ones owned by a foreign PE firm. This result would imply that Swedish PE firms generally are better at creating value than their foreign competitors in these companies. This result is consistent with hypothesis 1.

Additionally, we find that the EBIE margin in t-1 has a significant impact on the development in EBIE. The negative relationship to EBIE development indicates that companies with a lower initial EBIE margin are able to increase their EBIE more and therefore create more value. Although not statistically significant, we also find that the coefficient of the age variable is positive while the coefficient of leverage, ROCE and size variables are negative.

5.5.2 ROCE and Capital Employed

EBIE can be further broken down into ROCE and capital employed as described in the theory section. Table 6 presents no major differences between the regressions depending on if industry effects are included or not. When examining the change in ROCE in regression 4, the coefficient of the Swedish PE firm variable is positive and statistically significant at the 5% level. This indicates that Swedish PE firms have a positive effect on the change in ROCE in local portfolio companies as they generate a 56.1 percentage points higher increase than companies owned by non-local PE firms. This result is consistent with hypothesis 2, which states that companies owned by Swedish PE firms experience a more positive change in ROCE compared to companies owned by foreign PE firms. In addition to this, table 6 and regression 6 illustrate that the coefficient of the Swedish PE firm variable has a negative relationship to the change in capital employed. Hypothesis 3 states that companies with foreign PE firms as owners increase their capital employed more than companies with Swedish PE owners. However, the result fails to show significance at any conventional level and the result is therefore not consistent with hypothesis 3.

In table 6 and regression 4 we see that the initial EBIE level in t-1 has a significant (at a 10% level) negative relationship with the change in ROCE over the period. This indicates that companies with a low initial EBIE margin experience a larger change in ROCE than companies

with an initially high EBIE margin. Additionally, we find that the age of the company has a significant negative relationship with the increase in capital employed. This indicates that younger companies, on average, increase their capital employed more than larger companies.

5.5.3 EBIE margin and capital turnover

As stated in 2.3, the ROCE ratio can be explained by the DuPont relationship. This relationship consists of two factors, EBIE margin and capital turnover. By using DuPont and studying it further, it is possible to find the contributing factor in the ROCE change. No major differences are found between regression 7 and 8 or between 9 and 10. Regression 8 tests our fourth hypothesis that examines if companies owned by local PE firms are able to increase their EBIE margin more than companies owned by foreign PE firms. The result shows a significant positive effect on the change in EBIE margin (at a 10% level) over the period. This indicates that Swedish PE firms have a positive effect on the change in EBIE margin in local portfolio companies as they generate a 47.4 percentage points higher increase than companies owned by non-local PE firms over the period. This result is therefore consistent with hypothesis 4.

Table 6 and regression 10 also shows the results from testing hypothesis 5 that companies owned by Swedish PE firms will demonstrate a better improvement in capital turnover than companies owned by foreign PE firms. Table 6 shows that the coefficient of the Swedish PE firm is positive but lacks significance at any conventional level. The result is therefore not consistent with hypothesis 5.

Additionally, we see that the EBIE margin in t-1 has a significant impact on the change in EBIE margin. This relationship is negative which indicates that companies with lower initial EBIE margin will experience a larger change in EBIE margin. The initial ROCE level in t-1 does also have a significant impact (at the 1% level) on capital turnover. Additionally, the size variable has a significant negative relationship to change in capital turnover, indicating that smaller companies increase their capital turnover more.

5.6 Robustness tests and thesis limitations

As described in 4.2, companies are matched using the propensity score matching method where we match companies owned by Swedish PE firms with companies owned by foreign PE firms. Our matching is based on the different industries the companies operate in and their reported EBIE. We choose not to develop this matching process further because such a matching process would reduce our sample too much. This means that there is a risk of bias and that the data

sample contains outliers. However, we believe that the data is correct and that the outliers play an important role. We therefore choose not to adjust for this further.

As the financials have been gathered manually for every company, there is a risk of human error in the process. However, the numbers have been reviewed several times to minimize any potential human error.

As shown in table 4, correlations between the variables were low. In addition, we also choose to test for multicollinearity by performing a VIF test to study the correlations between the independent variables of the regression further. The result from the VIF test shows that the mean VIF is 1.16 for regression 1 and 1.22 for regression 2 (Appendix 1 and 2). No variable has a VIF value above 4 which is considered to be the point where multicollinearity might be an issue.

To test for potential heteroscedasticity, we conduct a Breusch-Pagan test. When doing this, we find some indications of heteroscedasticity. To account for this, we use regressions with robust standard errors.

6. Discussion

6.1 EBIE

Table 6 and regression 2 illustrate that companies owned by Swedish PE firms experience a growth that is 62.5 percentage points higher in EBIE than companies owned by foreign PE firms. As this result indicates that local PE investors are better at creating value in local portfolio companies than foreign PE firms, the result is consistent with hypothesis 1. It is also consistent with what Bae et al. (2008) found in their study, where local investors have a significant advantage compared to non-local investors because of their geographical proximity. The result is also consistent with Malloy's study (2005) where he argues that local analysts have an information advantage that leads to better performance than non-local analysts. We believe that the findings in these studies can add explanatory value to our results, as it is reasonable to think that geographical proximity leads to more useful information which the PE firms and their portfolio companies can capitalize on. According to Kedia et al. (2008), local advantage can be explained by being closer to the investments and as a result, being able to benefit from synergies to a greater extent. This could potentially be one of the underlying factors that explains the superior EBIE development for companies owned by Swedish PE firms. However, further studies would need to be conducted on the subject. Another explanation can be that information

advantage implies the possibility to be involved in more buyout-processes (Siming, 2010) which opens up for being more selective when it comes to investment decisions.

The result from regression 2 is contrary to what Albuquerque et al. (2009) find in their study. They argue that non-local investors have information that is beneficial when trading in other countries and that this information gives the foreign investor an advantage. Based on our study, this information advantage seems to be non-existing, or have a very limited effect on the EBIE development in Swedish portfolio companies. One plausible explanation would be that the information is not generally applicable for driving EBIE development for companies in Sweden. Instead, different knowledge and information is needed. In addition, our results differ from what Aydın et al. (2007) find in their study on how target companies owned by foreign investors perform better in terms of profitability. One potential explanation on why our findings differ from theirs' can be geographical differences. Our study is conducted on a fairly mature market while their study is made on a more of an emerging market.

Overall, the superior growth in EBIE implies that Swedish PE firms are able to generate more value in their portfolio companies compared to foreign PE firms given a constant valuation multiple.

6.2 ROCE and capital employed

EBIE can be divided into one ROCE component and one capital employed component. Table 6 illustrates that the coefficient of the Swedish PE firm variable is significant for the change in ROCE but not for the change in capital employed. The significance of the Swedish PE firm variable in the second regression is consistent with the results from previous research. Lindemanis et al. (2019) find in their study that companies owned by domestic firms experience a better development in ROA than companies owned by foreign firms. The same tendencies can be seen in this study where companies with local ownership are able to generate higher returns on their capital than companies owned by foreign firms. In contrast to ROCE, we fail to find any significant difference between the two groups in regression 6 regarding the change in capital employed. The result from regression 6 is therefore not consistent with previous research about the capital allocation of local and non-local investors. Guadalupe et al. (2012) and Egger et al. (2010) find in their studies that foreign owners are more prone to invest larger amounts and take on more debt than domestic owners. One potential explanation for the difference can be that companies in our sample finance their operations with a larger proportion of operating liabilities. However, our data sample is

relatively limited, and it is possible that a larger sample would display significance on the change in capital employed.

Given the insignificant difference in capital employed, the increase in profit in relation to capital employed is likely higher for companies owned by Swedish PE firms than for companies owned by foreign PE firms. This would imply that they are able to generate a higher return on the additional capital. To be able to both increase the capital base, and the profitability creates a double effect which is advantageous for the change in EBIE, which we study in regression 1 and 2. As mentioned earlier, an increase in EBIE is positive from a value creation, and ultimately, valuation perspective.

Table 6 displays that EBIE in t-1 has a significant negative relationship with the change in ROCE, indicating that companies with a low initial EBIE will demonstrate a larger change in ROCE. Jensen (1989) states that a PE firm can add economic value to the portfolio company by financial, governance or operational engineering. ROCE is an operational ratio and PE firms can therefore generate more value to their portfolio companies by successfully implementing operational engineering. The negative relationship with the change in ROCE can be interpreted as there is more room for operational improvements once the PE firm has acquired the company if the initial EBIE margin in t-1 is low.

6.3 EBIE margin and capital turnover

ROCE can be further decomposed into EBIE margin and capital turnover according to the DuPont relationship. Regression 8 in table 6 indicates that the Swedish PE firm variable has a significant impact on the change in EBIE margin. However, regression 10 indicates that the Swedish PE variable is insignificant regarding the change in capital turnover. The result from regression 8 is in line with what Lindemanis et al. (2019) find in their study about domestically owned companies experiencing a superior development in profit margin compared to foreign-owned companies. Using the DuPont relationship, this superior development in EBIE margin is positive for ROCE. A plausible explanation can be that foreign PE firms put more emphasis on sales growth in the portfolio companies and that the profit margin therefore is affected. This would be consistent with Lindemanis et al. (2019) findings. Another explanation can be that the possible information advantage discussed in 6.1, mainly shows up in the profit margin. The information advantage can be materialized in better synergy opportunities as Kedia et al. (2008) stated, but also in better pricing power as Soliman (2008) argued.

Regression 10 indicates that the Swedish PE firm variable is insignificant regarding the capital turnover. This is not consistent with hypothesis 5 or findings on productivity by Haddad

and Harrison (1993). The inconsistency may be explained by the non-significant results on the change in capital employed. Furthermore, one potential reason why our findings differ from previous literature can be that Haddad and Harrison (1993) only focused on companies in the manufacturing sector, while we cover a wider spread of industries.

The DuPont relationship for ROCE is expressed by multiplying the EBIE margin with capital turnover. As described in section 6.2, companies owned by Swedish PE firms demonstrate a superior development in ROCE which can be derived mainly from the development in the EBIE margin, according to regression 7-10. The better development in ROCE can explain the superior change in EBIE i.e. value creation.

7. Suggestions for future research

The main purpose of this thesis was to investigate if local PE investors were better at creating value in Swedish portfolio companies compared to non-local PE investors. Based on the results from this study, we believe that it would be of interest to expand this study and include more countries than just Sweden. It would be interesting to see if the same conclusions and relationships hold for other countries as well. This could also be complemented with an additional dimension that measures how close every investor is located to the companies they are acquiring. Will there be a difference between foreign investors depending on how geographically close they are to their investment or not? Another way to further deepen this research would be to conduct a similar study within a specific industry. Certain countries or industries might be more or less mature, which could mean that a local presence can have a different impact than what we found in our study.

Another suggestion for future research would be to expand on the value creation theme. For example, one suggestion would be to define value creation as the return on capital the companies manage to generate in excess of their cost of capital, similar to the definition of value-adding by Jagannathan et al. (2017). This way, different stakeholders' required rate of return would be taken into consideration and any result above this would be classified as value creation. In addition to defining value creation as the difference in return on capital compared to the cost of capital, the focus could be on investigating the IRR of the different investments among Swedish PE firms and foreign PE firms. This would add value to current PE literature since IRR is widely used among PE firms when they are evaluating different investments. However, potential challenges of a study on IRR could be to access information on how much

PE firms are paying and receiving in the entry and exit phases since PE firms often do not disclose such information publicly.

8. Conclusion

This study examines the potential existence of a local advantage in terms of value creation within the Swedish PE market. We further investigate the value drivers behind value creation and how these factors are interlinked. Since we wanted to study companies' own ability to generate value and reduce the potential impact from external factors, we defined value creation as the change in EBIE. To be able to answer the research question, we collected a data sample containing 142 Swedish companies that have been acquired by different PE firms. By using propensity score matching, our main sample of 142 companies was filtered down to 122. 61 of these companies had been acquired by Swedish PE firms and 61 by foreign PE firms. Furthermore, we stated five different hypotheses and performed regressions on the change in EBIE, ROCE, capital employed, EBIE margin, and capital turnover.

We found evidence supporting our first hypothesis that portfolio companies owned by Swedish PE firms are superior at creating value in terms of the change in EBIE. The results were significant on a 10% level. The superior change was explained by a superior change in ROCE and EBIE-margin, which was in line with our second and fourth hypothesis. However, when testing for change in capital employed and capital turnover, we did not find any significant difference between the two groups.

Previous studies have focused on comparing domestically to foreign ownership in general terms. However, by studying companies owned by PE firms, our study contributes with an additional perspective on domestic versus foreign ownership. Furthermore, by demonstrating how value creation depends on various components and how changes in these components differ depending on the origin of the owner, our results contribute with additional explanation value to current literature in accounting and finance. An understanding of how different factors are interlinked and how they contribute to value creation is vital for PE firms in the pursuit of successful investments.

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Appendix

Appendix 1:

VIF table for regression model 1

VARIABLES	VIF	1/VIF
EBIE margin	1.34	0.745
ROCE	1.34	0.748
Size	1.12	0.889
Leverage	1.09	0.919
Age	1.07	0.931
Swedish PE firm	1.02	0.979
Mean VIF	1.16	

This table report the result from a multicollinearity test for regression 1 (Variation inflation factor). A low VIF value indicates low probability of multicollinearity.

Appendix 2:

VIF table for regression model 2

VARIABLES	VIF	1/VIF
Swedish PE firm	1.02	0.745
Age	1.23	0.748
Leverage	1.11	0.889
EBIE margin	1.39	0.919
ROCE	1.37	0.931
Size	1.18	0.979
Mean VIF	1.22	

This table report the result from a multicollinearity test for regression 2 (Variation inflation factor). A low VIF value indicates low probability of multicollinearity.

Appendix 3:

List of observations included in the matched sample

Company	PE firm	Country PE firm	Entry Year
Balco	3i	Foreign	2003
DIAB International	3i	Foreign	2001
Coor Service Management	3i	Foreign	2004
Lekolar	3i	Foreign	2007
OneMed Group Oy	3i	Foreign	2011
Kreatel Communication	AAC Capital Partners	Foreign	2000
Vinga Hiss AB	Accent Equity	Sweden	2013
Hissgruppen AB	Accent Equity	Sweden	2013
Troax Group AB	Accent Equity	Sweden	2010
Hoist Group AB	Accent Equity	Sweden	2011
Hööks Hästsport AB	Accent Equity	Sweden	2011
Elmo Leather	Accent Equity	Sweden	1999
Bergteamet AB	Accent Equity	Sweden	2009
Nordomatic AB	Adelis	Sweden	2016
Logent AB	Adelis	Sweden	2013
Powerbox International AB	Alder	Sweden	2013
Jeeves Information Systems AB	Battery Ventures LP	Foreign	2012
Dometic	BC Partners	Foreign	2005
Memnon Networks AB	Bridgepoint Advisers Ltd	Foreign	2012
Nya Solhagagruppen AB	Bridgepoint Advisers Ltd	Foreign	2010
KGH Customs Services AB	Bridgepoint Advisers Ltd	Foreign	2013
Scanacon AB	Capilon	Sweden	2010
Malte Månson AB	Capman	Foreign	2014
Swereco Rehab AB	Capman	Foreign	2009
Samsa AB	Capman	Foreign	2009
Inredningsglas Skandinavien	Capman	Foreign	2010
Cederroth International AB	Capman	Foreign	2008
MPT Sweden AB	Capman	Foreign	2009
Kronfågel Group	CapVest Partners LLP	Foreign	2013
Broadcast Text International AB	Carlyle Group Inc	Foreign	2013
Persson Innovation AB	Connecting Capital	Sweden	2012
Royal Design Group AB	eEquity	Sweden	2012
IP-Only AB	EQT	Sweden	2013
Bewator	EQT	Sweden	2002
Eldon	EQT	Sweden	2000
Hector Rail AB	EQT	Sweden	2014
Swedegas AB	EQT	Sweden	2009
Bilvision AB	Eterna Invest AB	Sweden	2011
JG Ventilation AB	Evolver Investment group	Foreign	2012
Yrkesakademin AB	Fagerberg & Dellby AB	Sweden	2010

Bellbox	Fidelio	Sweden	2010
SP Greenfood	Fidelio	Sweden	2012
Klimatrör AB	FSN Capital Partners AS	Foreign	2014
CTEK Sweden AB	FSN Capital Partners AS	Foreign	2008
Tactel AB	FSN Capital Partners AS	Foreign	2009
Kjell & Co Elektronik AB	FSN Capital Partners AS	Foreign	2014
Didriksons Regnkläder AB	Herkules Capital AS	Foreign	2014
Frösunda Omsorg AB	HgCapital Trust PLC	Foreign	2010
Epi Server	IK Investments	Foreign	2010
Scandinavian Air Ambulance	Industrifonden	Sweden	2009
Hilding Anders	Investcorp	Foreign	2003
Silva Sweden AB	Karnell	Sweden	2011
Kasthall HQ Kinna	Karnell	Sweden	2010
Wermlands Mechanics Group AB	Karnell	Sweden	2012
Noas Snickeri AB	Kattegatt Partners AB	Sweden	2012
Byredo AB	Manzanita Capital Limited	Foreign	2013
Permascand AB	Mittkapital i Jamtland och Vasternorrland AB	Sweden	2012
SMP Parts AB	MVI	Sweden	2014
Xlent Consulting Group	Neqst Partner AB	Sweden	2009
Crendo	Next Wave Partners	Foreign	2007
Ellos	Nordic Capital	Sweden	2013
Arenagruppen AB	Norgesinvestor	Foreign	2008
World Class Seagull International AB	Norgesinvestor AS	Foreign	2010
Dundret Sweden AB	Norrskenet AB	Sweden	2013
SORTERA Skandinavien AB	Norvestor	Foreign	2012
Aptilo Networks AB	Norvestor	Foreign	2011
Apsis Sweden AB	Norvestor	Foreign	2010
Johnson Metall AB	Norvestor	Foreign	2007
RCO Security AB	Novax	Sweden	2012
Breas Medical AB	PBM Capital Group, LLC	Foreign	2014
Inläsningstjanst AB	PEQ AB	Sweden	2012
Samres AB	PEQ AB	Sweden	2010
SEM AB	Perusa GmbH	Foreign	2012
Scandinavian Track Group AB	Polaris Private Equity	Foreign	2011
Fiskarhedenvillan AB	Polaris Private Equity	Foreign	2007
Skånska Byggvaror AB	Polaris Private Equity	Foreign	2012
Unisport Scandinavia AB	Priveq Investment	Sweden	2008
Kung Markatta AB	Priveq Investment	Sweden	2013
San Sac AB	Priveq Investment	Sweden	2008
El-Björn AB	Priveq Investment	Sweden	2011
Pierce AB	Procuritas	Sweden	2014
Osby Glas AB	Procuritas	Sweden	2012
Däckia Corporation	Procuritas	Sweden	2009

Scandumin AB	Profura AB	Sweden	2014
Biolin Scientific AB	Ratos	Sweden	2010
KVD Kvarndammen AB	Ratos	Sweden	2010
Gudrun Sjödin Group AB	Ratos	Sweden	2016
HL Display AB	Ratos	Sweden	2010
Bisnode Business Information Group AB	Ratos	Sweden	2016
Klättermusen AB	Scope Capital Advisory AB	Foreign	2013
Pocketstället AB	Scope Capital Advisory AB	Foreign	2008
Temperature Sensitive Solutions Systems Sweden AB	SEB Private Equity	Sweden	2011
Scan Coin AB	Segulah	Sweden	2010
Almondy Group Holding AB	Segulah	Sweden	2008
Zengun AB	Segulah	Sweden	2016
Gunnebo Industrier Holding AB	Segulah	Sweden	2008
ByggDialog AB	Sobro AB	Sweden	2014
Tengbom Architects AB	Sobro AB	Sweden	2011
System Edström Bilinredningar	Springlake Invest AB	Sweden	2012
Internationella Engelska Skolan i Sverige Holdings II AB	TA Associates Management, LP.	Foreign	2012
PPS Power Planning System AB	The Riverside Company	Foreign	2011
Ovako Group AB	Triton Beteiligungsberatung GmbH	Foreign	2010
Kährs Holding AB	Triton Beteiligungsberatung GmbH	Foreign	2011
Inflight Services Europe AB	Triton Beteiligungsberatung GmbH	Foreign	2010
OBH Nordica AB	Triton Beteiligungsberatung GmbH	Foreign	2010
Alimak Hek	Triton Beteiligungsberatung GmbH	Foreign	2007
Bindomatic AB	Valedo	Sweden	2008
Cambio Healthcare Systems AB	Valedo	Sweden	2012
Best Transport	Valedo	Sweden	2014
Perten Instruments Group AB	Valedo	Sweden	2010
Akademikliniken AB	Valedo	Sweden	2011
Mathem i Sverige AB	Verdane Capital Advisors AS	Foreign	2013
Reseguiden Interactive AB	Verdane Capital Advisors AS	Foreign	2011
Animail AB	Verdane Capital Advisors AS	Foreign	2011
Mantacore AB	Verdane Capital Advisors AS	Foreign	2008
Adra Software AB	VIA Equity A/S	Foreign	2007
Comactivity	VIA Equity A/S	Foreign	2007
Miori AB	VIA Equity A/S	Foreign	2010
Projectplace International AB	VIA Equity A/S	Foreign	2009
Flexpay AB	Vitruvian Partners LLP	Foreign	2011
Snow Software AB	Vitruvian Partners LLP	Foreign	2012
Victor Hasselblad AB	VM Capital Advisors GmbH	Foreign	2011