Does a Local Advantage Exist in Private Equity?

Christoffer Norman[*]

Stockholm School of Economics

Richard Riboe[**]

Stockholm School of Economics

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Department of Finance
Tutor: Jungsuk Han
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Abstract

We hypothesize that informational advantages, network advantages and reputational incentives allow local private equity investors to outperform non-local private equity investors in improving the operating performance of their holdings. To test the validity of this hypothesis, we apply both an event study and a difference-in-differences method to analyze data from the annual accounts of 91 Scandinavian target companies acquired by private equity investors between 1998 and 2009. Using EBITDA growth as a proxy for value generation, we find indications, in contrast to our initial hypothesis, that non-local investors increase the value of their investments more than local investors. Our findings suggest that this result is attributable to a superior ability of non-local investors to increase the revenue of their holdings. However, in line with our expectations, we find statistically significant evidence that local investors outperform non-local investors in improving the EBITDA margin of their holdings.

Keywords: Home bias, Leveraged buyouts, Local advantage, Informational advantage, Private equity

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I   INTRODUCTION

Does a local advantage exist in private equity? This question is of importance since the creation of global financial markets has allowed private equity investors to adopt an increasingly international investment scope.[1] European cross-border private equity deal volumes have grown by a compound annual growth rate of 36.3 percent between 1995 and 2005 (Schertler and Tykvová 2006). Furthermore, Aizenman and Kendall (2008) document a significant increase in the share of cross-border deals by private equity and venture capital firms, from 15 percent of the total number of deals in the early 1990s to 40 percent in 2007. In sharp contrast to this development, a multitude of private equity investors refer to their local presence and local market knowledge as key competitive advantages vis-à-vis rival sponsors.[2] This thesis seeks to investigate whether the commonly cited advantage of local presence has empirical support. Evidence in this matter would have implications for the strategic investment decisions of both private equity firms and their clients.

We identify three plausible reasons why local private equity investors should be able to manage their holdings more successfully than non-local investors. Firstly, local investors may enjoy informational advantages when investing in local companies (Heel and Kehoe 2005). This informational advantage may arise from better access to information about upcoming deal flows and more efficient screening processes of potential investment opportunities. Secondly, we hypothesize that local investors may enjoy a network advantage. For example, this would imply that local investors are likely to have more extensive local contact networks, which allow them to more efficiently find suitable candidates for management positions in their holdings. Moreover, a better understanding of the local language facilitates interaction with management teams and an extensive local professional network improves the investor's ability to participate in auction processes (Siming 2010). Thirdly, we hypothesize that local investors are subject to a reputational incentive to produce superior performance in their holdings. Non-local investors are not as geographically constrained as local investors. Thus, if an investment fails, it is easier for non-local investors than for local investors to walk away. Non-local investors do not need to be as concerned with their reputation in the local market because if reputational damage is incurred, they can permanently exit the geographical market. Local investors, on the other hand, are not as flexible and are therefore incentivized to dedicate resources to improve the performance of faltering portfolio companies, even if a swift exit would be more lucrative for the fund in a short term perspective. However, this incentive is likely to have a positive relative impact on the performance of distressed holdings at the portfolio company level.

We also identify a number of arguments in support of the opposing view that international investors should have an advantage over local investors. For example, non-local investors may be more sophisticated and have access to better resources and expertise than local investors (Grinblatt and Keloharju 2000). However, due to the limited amount of publicly available information that characterizes the private equity market, we believe the advantage of having local market knowledge and a strong local network should outweigh any potential international advantage.

To develop evidence on the validity of the arguments above, we analyze the annual accounts of 91 target companies between 1998 and 2009. We consider Scandinavia as one homogenous region. We distinguish between target companies acquired by: (1) Scandinavian investors, (2) foreign investors with a local office in Scandinavia and (3) foreign investors without local presence in Scandinavia. If a local advantage does exist, we should find that Scandinavian investors outperform foreign investors, *ceteris paribus*.

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[1] The terms private equity investor, private equity firm and buyout sponsor are used interchangeably throughout this thesis.

[2] Examples include, but are not limited to: 3i, AAC Capital Partners, Actis, Advent International, Akina, Angola Capital Partners, Apax Partners, AXA Private Equity, Bridgepoint, Capvent, CVC Capital Partners, Doughty Hanson & Co, EQT, Gilde Buy Out Partners, Natixis Private Equity, Pantheon Ventures and The Carlyle Group.

Furthermore, foreign investors with a local office in Scandinavia should reasonably outperform those without local presence. We apply two complementing methodologies to examine the validity of this reasoning. Both methodologies examine the impact of local presence of the investor on the growth in the firm value of the target company. As firm value is conventionally approximated as the product of the EBITDA and a valuation multiplier, we use EBITDA growth as a proxy for firm value growth.[3] To determine whether growth in firm value is achieved by sales expansion or cost cutting, the impact of local presence is also tested on sales growth and change in the EBITDA margin. Firstly, we apply an event study in which we measure actual performance in relation to expected performance. The second method makes use of a difference-in-differences model where the control group is defined as companies acquired by non-local investors and the treatment group as companies acquired by local investors. We include both methods in order to improve the robustness of our results and because they allow for complementing interpretations.

We present three main findings in this thesis. First of all, in contrast to our hypothesis, we find indications that non-local investors increase the firm value of their holdings more than local investors. Secondly, our findings suggest that non-local investors are more adept at improving top line growth than local investors. Thirdly, in accordance with our hypothesis, we find economically and statistically significant evidence that local investors more effectively improve the EBITDA margin than non-local investors.

Section II discusses previous research and Section III presents the theory and our hypotheses. Section IV presents the construction of our analytical framework and our empirical strategy. Section V describes the data sample and section VI presents our findings. Section VII provides conclusions and suggestions for future research.

II   PRIOR RESEARCH

A considerable amount of literature documents the positive effect of buyout transactions on the operating performance of target companies (see for example Acharya, Hahn and Kehoe 2009; Bergström, Grubb and Jonsson 2007; Jensen 1989; Kaplan 1989; Smart and Waldfogel 1994). Due to the exhaustive evidence that private equity owners do in fact generate value in their investments, we consider this issue resolved. Instead, we seek to add to the literature on why certain private equity investors are more successful than others.

THE VALUE GENERATION PROCESS IN PRIVATE EQUITY

In order to understand why a local advantage could exist in private equity, it is essential to comprehend how sponsors generate value in their holdings. Berg and Gottschalg (2005) have constructed a conceptual framework to categorize the value generation levers of private equity ownership. First and foremost, their framework defines value generation as the sum of the value capturing and value creating activities of private equity investors.

Value capturing refers to "financial arbitrage" or the ability of buyout firms to profit from developments in the market and in the portfolio companies that would have occurred even without the interventions of private equity investors.[4] For example, buyout sponsors may use their contact networks to build up industry expertise, allowing them to more precisely forecast future developments and to identify promising acquisition targets. Value capturing is largely internal to the portfolio company as it does not

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[3] EBITDA denotes earnings before interest, tax, depreciation and amortization.

[4] According to Berg and Gottschalg's framework, value capturing also refers to the ability to profit from changes in the market valuation of the company. However, we do not include such effects in this review because our analysis does not take market valuations into consideration.

require any transfer of skills or knowledge from the buyout sponsor to the portfolio company in order to take place.

In contrast to value capturing, value creation improves the operating performance of the target company through intervention by the investor. Value creation is principally external to the portfolio company as it reflects changes imposed upon it by the investor. According to the framework of Berg and Gottschalg (2005), value creating activities can be divided into primary and secondary levers. Primary levers are directly linked to the financial development whereas secondary levers affect performance indirectly.

An important primary lever is the enhancement of operational performance. Private equity investors seek to increase revenues aggressively, either by implementing ambitious plans for organic growth or by making add-on acquisitions to the existing business (Easterwood, Seth and Singer 1989; Liebeskind and Wiersema 1992; Seth and Easterwood 1993). Private equity firms also invest heavily in product development and take other innovation-increasing measures to increase sales (Malone 1989; Thompson et al 1992; Wright and Coyne 1985; Zahra and Fescina 1991). Secondly, the sponsors cut costs and expand margins (Anders 1992). A large source of cost cuts stem from the minimization of overhead costs and reduction of bureaucracy (Loos 2005). In Berg and Gottschalg's framework, a second primary lever is to focus the business strategy of the target company. Buyout sponsors utilize their industry expertise and market knowledge to fine-tune strategic variables such as market presence, pricing, product quality and customer service.

The primary levers are measures implemented by private equity investors to generate value. However, they do not explain why these processes are facilitated by the private equity ownership and why they were not employed before the transaction. This question is clarified by the secondary levers, which function as catalysts for the primary levers. Acharya et al. (2009) and Beroutsos, Freeman and Kehoe (2007) provide evidence that a large share of the value generated by private equity investors pertains to the implementation of an efficient corporate governance model. A beneficial effect of this model is that investors can monitor the performance of management members more closely (Singh 1990). Importantly, buyouts are typically followed by the replacement of inefficient management and board teams (Anders 1992). The sponsors are responsible for finding new candidates for these positions and leverage their extensive networks to find the most suitable candidates. Another important secondary lever is the mentoring of management teams of the portfolio companies by the private equity investors. Investment professionals in the buyout firms act as sounding boards for managers in the portfolio companies. The communication is often informal and unbureaucratic (Kester and Luehrman 1995). Importantly, the portfolio companies attain access to the buyout firms' extensive contact networks, which for example help them to find new business partners and new key employees (Bruining and Wright 2002).

THE IMPORTANCE OF HUMAN CAPITAL FACTORS IN PRIVATE EQUITY

According to the strategic management view of leveraged buyouts, as discussed by Loos (2005), buyout sponsors generate value through sharing resources with the target company. A distinguishing feature between buyout sponsors and strategic buyers is that strategic buyers typically acquire companies in the search for horizontal synergies whereas buyout sponsors generally lack the capability to share resources amongst its portfolio companies. Instead, the buyout sponsor seeks to exchange resources vertically and to improve the profitability of each individual portfolio company. The main resource of the buyout sponsor is the knowledge and expertise of its employees (Loos 2005).

Despite the importance of the exchanges between the buyout sponsor and the target company, remarkably little evidence has been provided in the existing literature on the composition of human capital factors that affect the financial performance of the target company. However, Acharya et. al (2010) provide anecdotal evidence showing that differences in human capital factors partly explain why large

mature buyout funds are able to consistently outperform others. In addition, Loos (2005) investigates a number of human capital factors related to the characteristics of private equity firms and its employees to see if a relationship exists between these factors and fund returns. According to his findings, professional experience is the most important amongst the factors. All in all, Loos' results establish that characteristics related to the firm and its investment professionals are statistically significant performance drivers in the value creation process and that they explain up to one quarter of the cross-sectional returns of private equity funds. Siming (2010) provides support to Loos' findings regarding the importance of professional background and finds evidence of the benefit of a network advantage in private equity. Siming shows that private equity firms have a 19 percentage points higher probability of being included in an auction bidding process and a 13.5 percentage points higher probability of winning the auction if the process is led by an advisory firm within a previous employment network. Moreover, the mere inclusion in an auction process is valuable for the private equity investor because bidders obtain access to confidential information memorandums and data rooms that would not have been accessible otherwise.

LOCAL AND INTERNATIONAL ADVANTAGES IN EQUITY INVESTING

The possible existence of a local advantage in private equity has not been previously examined. However, it has been extensively investigated in connection to exchange traded stocks. In an influential study, Shukla and van Inwegen (1995) argue that local investors have access to better information about local securities for a number of reasons. For example, local investors can make personal visits to target companies at a lower cost, giving them an edge over foreign investors. Furthermore, differences in accounting procedures make local financial statements more intelligible for local investors. Several other papers have reached similar conclusions. Hau (2001) studies trading data for professional traders and finds that local investors outperform foreign traders. Malloy (2005) argues that analysts located closer to a company provide more accurate analyses. Orpurt (2004) studies local and non-local analysts' earnings estimates in seven European countries and finds statistically significant evidence of a local advantage derivable from a better understanding of local languages, financial statements, customs and cultures.

On the other hand, there is also ample evidence in support of the contrasting view that a local advantage does not exist. The principal argument is that foreign investors are more sophisticated and have access to better resources and expertise. This view is emphasized by for example Grinblatt and Keloharju (2000), Seasholes (2000), Froot, O'Connell and Seasholes (2001) and Froot and Ramadorai (2001). Other papers have found that any differences between the returns of local and foreign investors are attributable to the type of securities that are held. For example, Dahlquist and Robertsson (2001) show that foreign investors buy larger stocks compared to local investors. Otten and Bams (2007) conduct a similar study to Shukla and van Inwegen (1995) using a more elaborate multi-factor asset pricing model, a more recent sample period and a larger sample but find no evidence of a local advantage. If anything, they find that foreign investors perform slightly better than local investors. Thus, the evidence is mixed. Some literature suggests that local investors enjoy an informational advantage whereas other papers stress the superior sophistication of non-local investors. However, no clear consensus has emerged as to which factor is more conducive to superior investor performance.

III   THEORY AND HYPOTHESES

MOTIVATION FOR A LOCAL ADVANTAGE IN PRIVATE EQUITY

From the literature review and interviews with investment professionals, we identify three key reasons as to why a local advantage may exist in the private equity market.[5] Firstly, we expect the informational

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[5] We have conducted interviews with investment professional in the private equity industry to improve our understanding of how private equity firms analyze investment opportunities, which financial performance metrics are studied, how investors generate value and what differentiates local investors from foreign investors.

advantage of local investors and analysts in exchange traded equities to persist also within private equity. As in exchange traded equities, local private equity investors can visit target companies more often and gain a better understanding of their operations. In addition, geographic proximity facilitates the process of following up on the practical implementation of strategic decisions and fine-tuning their execution. Furthermore, the informational advantage may arise through better access to information about upcoming deal flows and more efficient screening processes of investment opportunities due to a better understanding of local languages, customs and cultures and financial statements.

Secondly, the local investor may enjoy a network advantage. Siming (2010) shows that an extensive previous employment network is valuable because it allows the private equity investor to gain access both to a greater deal flow and to privileged information about target companies. It is reasonable to assume that local investors have more extensive previous employment networks in the local market. Moreover, key to implementing a successful corporate governance model is the ability to find and attract experienced industry professionals who can assume management positions and seats on boards of directors. It is likely that local investors have a larger local industrial network and a better ability to find suitable candidates. In addition, our interviews indicate that language barriers between members of boards of directors or members of management teams significantly reduce the efficiency of internal decision making processes.

Thirdly, the local investor is subject to a reputational incentive to engender superior performance in each target company. Private equity investors are incentivized to complete restructurings, as they would otherwise suffer reputational damage (Ross Sorkin 2007). In the multiplayer repeat private equity market, counterparties, for example banks, management teams, potential board members and acquirees, would be less willing to transact with a non-reputable investor (Davidoff 2009). From interviews conducted with industry professionals, we deduce that local investors are exposed to a much stronger incentive to complete restructurings than non-local investors. Non-local investors are not as geographically constrained as local investors and can exit a geographical market if substantial reputational damage is accrued. Local investors do not have the same flexibility. They are incentivized to complete restructurings and to commit substantial resources to improve target performance even if a quick exit would have been more cost effective in a short-term perspective. Whilst this may not be an advantage for the local investor per se, we expect the reputational incentive to have a positive relative impact on the operating performance of distressed target companies.

Like in the case of exchange traded equities, compelling arguments exist in favor of the view that non-local investors should have an advantage over local investors. For example, adopting the conclusions of Grinblatt and Keloharju (2000), it would be possible to argue that non-local investors are more sophisticated and have access to better resources and expertise. Moreover, non-local investors could potentially also enjoy an informational advantage. Specifically, an investor with an international investment scope could have a narrow industry scope and thus invest exclusively in certain industries but in a multitude of countries.[6] In such cases, industry knowledge may be more advantageous than local market knowledge. Our network advantage argument can also be inversed. Assuming that non-local investors have a broader geographical investment scope than local investors, non-local investors may enjoy an advantage if they can use a more extensive international network to find attractive business partners in other countries. Concretely, this could facilitate making add-on acquisitions and growing the business abroad. Furthermore, non-local investors could potentially enjoy a greater possibility to recruit qualified candidates from around the world and not just from the local market. In addition, international investors may also choose their investments from a larger pool of targets, suggesting that they only acquire companies in which they see substantial upside potential. Finally, our reputational incentive

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[6] For example, GMT Communication Partners are focused exclusively on the telecommunications industry and have made investments in 17 different countries, despite having only one single office.

argument can also be turned over. If local investors are more concerned with their reputation in the local press than non-local investors, it could be easier for non-local investors to implement unpopular but efficiency improving measures in their portfolio companies. For example, it could be argued that it would be easier for a non-local investor to lay off employees than for a local investor.

In sum, it is not evident whether we should expect local investors to outperform non-local investors, or vice versa. However, we believe that it is especially important in private equity to have good knowledge about the local market and a strong local network due to the limited amount of publicly available information about each investment opportunity. We expect that local investors should be able to gain access to a better deal flow and thus be able to acquire better companies and be in a better position to monitor them. We also believe that a local contact network is more advantageous than an international network because it is important to be able to recruit qualified senior staff members that speak the local language and have a good understanding of local market conditions. Thirdly, we believe that the reputational argument should work in favor of local investors. We do not expect that it is practical or desirable to implement unpopular measures in portfolio companies because it could obstruct efficient governance of the company. Our initial perception is therefore that any potential local advantage should outweigh any potential international advantage and that we should see that local investors generate more value in their portfolio companies than international investors do.

MEASURING VALUE GENERATION

As pointed out by Berg and Gottschalg (2005), value generation in buyouts is often seen from the perspective of equity holders and can be measured in terms of change in equity capital. The authors decompose the equity value into

$$Equity\ value = Valuation\ Multiple * Revenues * Margin - Net\ Debt. \tag{1}$$

To examine whether a local advantage exists, we rearrange Equation 1 to

$$Firm\ value = Valuation\ multiple * Revenues * Margin.^{7} \tag{2}$$

We study the impact on *firm value* rather than *equity value* because the firm value takes into account the value generation attributable to all stakeholders, not only to equity holders. This is important in our setup for two reasons. Firstly, the reputational incentive compels local investors to also acknowledge the interests of credit holders and not only seek to maximize the equity value at the expense of credit holders. Secondly, net debt figures cannot be accurately calculated, as the databases we use do not distinguish between interest bearing and non-interest bearing liabilities.[8]

In order to investigate whether local investors generate more value in their holdings than non-local investors, we introduce EBITDA growth as a proxy for growth in firm value. Since the firm value is the product of the EBITDA and the EBITDA multiplier, a percentage change in the EBITDA can be seen as a percentage change in firm value, holding the valuation multiple constant. The valuation multiple is predominantly determined by market conditions beyond the control of the private equity firm. Our analysis thus excludes the effects of market sentiment on valuation and thereby the ability of investors to profit from changes in market sentiment. This is appropriate since such an ability is unlikely to be contingent on whether the investor is local or non-local. Furthermore, the EBITDA is an appropriate profitability measure for four reasons: (1) it is preferable to study a measure of operating income rather

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[7] Firm value is the sum of equity value and net debt.

[8] The performance of private equity firms is analyzed using measures on the target company level. The alternative, to analyze the internal rate of return (IRR) on the fund level is not feasible. Most importantly, IRR data is not typically public information and is only disclosed sporadically by the investors. Furthermore, very few funds are solely dedicated to one geographical area, which makes it problematic to create a relevant distinction between local and non-local investors.

than net income because it measures the productivity of operating assets more appropriately; (2) it is problematic to compare net income across countries due to differences in tax regulation; (3) operating income is independent of financing decisions which is important as the capital structure is often significantly altered subsequent to a buyout; and (4) it is preferable to EBIT because it excludes depreciation and amortization costs and is thus independent of financing decisions (Barber and Lyon 1996).[9]

HYPOTHESES

Considering our reasoning as to why a local advantage might exist and using our proxy for value generation, we hypothesize that the EBITDA increases more for holdings owned by local investors than for holdings owned by non-local investors. Thus, we hypothesize that the advantages of local investors outweigh those of non-local investors. There are two ways to increase the EBITDA, either by increasing sales and/or by expanding the EBITDA margin, i.e. decreasing operating costs without decreasing sales. To investigate whether a potential local advantage stems from a superior ability to increase sales and/or to increase the EBITDA margin, we subsequently examine if a difference exists in the abilities of local and non-local investors to increase these measures. We hypothesize that local presence will facilitate both sales expansion and margin improvement.

IV ANALYTICAL FRAMEWORK

EMPIRICAL STRATEGY

To investigate our hypotheses, we study transactions in Scandinavia and consider it as one homogenous region. The Scandinavian setting is advantageous for three reasons: (1) Denmark, Norway and Sweden's geographic, social, political, linguistic, regulatory, economic and cultural proximity; (2) accounting information for private companies is publicly available; and (3) the region has experienced a vast amount of private equity activity during the last decade.

A potential local advantage would stem from the accumulated local knowledge and network of the firm's employees. It is a human capital factor that cannot be directly observed or measured. Due to the difficulty of measuring local expertise at the individual level, we use origins and office locations as proxies. We differentiate between: (1) Scandinavian private equity investors, (2) foreign private equity investors with a local office in Scandinavia, and (3) foreign private equity investors without local presence in Scandinavia. If a local advantage exists, we ought to find that Scandinavian investors outperform foreign investors. Moreover, foreign investors with a local office in Scandinavia should outperform those without local presence. These three subgroups are combined into the five classifications presented in Table 1. For each classification, local investors are defined as investors belonging to group (i) and non-local investors are defined as investors belonging to group (ii). This implies that foreign investors with local presence are considered as non-local investors in Classification (1) to (3) and as local investors in Classification (4) and (5). It is important to note that only Classification (1) and (5) include all observations and that Classification (2) to (4) merely compares subgroups of the total sample. We alter the definitions in order to examine whether any differences in performance pertain to the origin of the buyout sponsor or to the existence of a local office.

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[9] We refrain from studying taxes and loan terms. As transaction prices are based on multiples of EBITDA, private equity investors are not substantially rewarded for dollars saved below the EBITDA line in the income statement. In the words of one of our interviewees: "A dollar saved below the EBITDA is worth a dollar. A dollar saved above that line is worth ten". Secondly, negotiating loan terms and setting up tax structures are skills that have become more generic than they were in the early days of private equity. Investors typically hire tax advisors who implement off-the-shelf solutions and banks have commoditized their offerings by lending at more uniform terms.

Table 1. Classification of investors as local and non-local

Classification	(i) Local investors	(ii) Non-local investors
1	Acquired by Scandinavian PE investor	Acquired by foreign PE investor
2	Acquired by Scandinavian PE investor	Acquired by foreign PE investor with no presence in Scandinavia
3	Acquired by Scandinavian PE investor	Acquired by foreign PE investor with a local office in Scandinavia
4	Acquired by foreign PE investor with a local office in Scandinavia	Acquired by foreign PE investor with no presence in Scandinavia
5	Acquired by PE investor with presence in Scandinavia (Scandinavian or foreign)	Acquired by foreign PE investor with no presence in Scandinavia

The table presents the classifications used in the regression models. In the models, a dummy variable takes on the value 1 when the investor belongs to (i) and 0 when it belongs to (ii).

We run our regression models on each of the five classifications. However, designing the regression specification is fairly problematic as it is difficult to determine an appropriate benchmark against which post-transaction performance should be measured. More specifically, it is difficult to find a control measure that convincingly estimates the performance development that would have materialized in the absence of a buyout. Smart and Waldfogel (1994) discuss this issue extensively and establish that the two most robust methodologies for this type of analysis is the difference-in-differences estimation and the event study. Due to the difficulty of benchmarking post-transaction performance, we seek to improve the robustness of our results by applying both methods. As the two methods use different setups, the variables of interest are not calculated identically and the magnitudes of the coefficients derived from the two methods are not directly comparable. However, the methods offer complementing interpretations. The event study model measures, to the best extent possible, the value creation effect whereas the difference-in-differences model captures both the value creation effect and the value capturing effect.

THE EVENT STUDY MODEL SPECIFICATION

The event study method has been widely used in previous literature (see for example Alemany and Martí 2005; Andersson and Gilstring 2009; Bergström et al. 2007; Cressy, Munari and Malipiero 2007; Vinten 2008). The method is useful for explaining the operating improvements in buyouts that are in excess of the expected improvement. As discussed by Bergström et al. (2007), the expected improvements can be attributed to macro factors or other factors that affect similar companies. Such improvements are likely to materialize through a buy-and-hold strategy and therefore do not rely on the identification and implementation of operating performance improvement measures. In accordance with the framework of Berg and Gottschalg (2005), these factors can be referred to as value capturing factors. By comparing the development of the portfolio company with the development for similar companies, we exclude, to the best extent possible, the value capturing effect.

We run five independent regressions for each performance measure using the classifications of Table 1. The regression specification is

$$AOP_i = \beta_0 + \beta_1 Type_i + \tau\delta + \varepsilon_i, \tag{3}$$

where AOP_i is the abnormal operating performance of firm i at the time of the exit. $Type_i$ is a dummy variable that is assigned the value 1 if firm i belongs to category (i) and 0 if firm i belongs to category (ii), as specified in Table 1. τ denotes additional control variables and includes the log of total assets of the target company and the log of the investor's assets under management. δ is a coefficient vector. Controlling for target size is important, as it is feasible that discrepancies in performance measures could

be explained by differences in the target size. For example, small firms typically grow more quickly than large firms. It is also necessary to control for the size of the investor as larger investors potentially have more resources, a larger knowledge base and a superior financial backing, which for example could facilitate sales expansion through add-on acquisitions. Moreover, it is important to control for the duration of the holding period of the portfolio company. This is indirectly achieved through calculating EBITDA growth and sales growth as compound annual growth rates. However, we consistently apply holding period dummy variables to the EBITDA margin regressions since the change in EBITDA margin is not annualized. When using the event study method, we account for the so-called J-curve effect by studying the entire performance change between the year before entry and the exit year (see Bergström et al. 2007, Cao and Lerner 2006 and Muscarella and Vetsuypens 1990). According to Burgel (2000), the J-curve effect arises as portfolio companies tend to underperform up to assumedly the fourth year of sponsor ownership due to substantial restructurings and start to outperform from the fourth year and onward.

CALCULATING ABNORMAL OPERATING PERFORMANCE

We define abnormal operating performance as

$$AOP_i = X_i^{exit} - E(X_i^{exit}).\qquad(4)$$

Hence, abnormal operating performance is calculated by subtracting the *expected* operating performance of firm i at the time of exit from the *actual* operating performance of firm i at the time of exit. The expected operating performance should be interpreted as operating performance at the time of exit, had an acquisition not taken place. The expected operating performance is by nature unobservable and must be estimated. To approximate the expected operating performance, we produce individual estimates of expected performance for each firm by assigning peer companies to each target company. Matching the target company with a benchmark peer group has been the most common method of deriving expected performance in previous research. Barber and Lyon (1996) seek to establish the most powerful matching methodology and compare matching firms on the grounds of: (1) two-digit SIC code, (2) four-digit SIC code, (3) two-digit SIC code and similar size and (4) two-digit SIC code and similar pre-event performance.[10] The authors conclude that matching target and peers on industry and pre-event performance yields the most powerful and well-specified results in almost all cases. We therefore apply this matching technique in our study. Through this construction, time and industry fixed effects are inherently controlled for in our event study model.

We distinguish between calculating abnormal operating performance for growth measures and margins. In accordance with Alemany and Martí (2005), we specify the calculation of abnormal performance for annual growth measures as

$$AOP_i = \left(\frac{X_i^{exit}}{X_i^{entry-1}}\right)^{\frac{1}{n}} - \left(\frac{XP_i^{exit}}{XP_i^{entry-1}}\right)^{\frac{1}{n}},^{11}\qquad(5)$$

where X_i^{Exit} is the chosen performance measure at exit for target firm i, XP_i^{Exit} is the chosen performance measure at the year of the exit for the peer group of target firm i, $X_i^{Entry-1}$ is the level of the performance measure in the year before entry for target firm i, $XP_i^{Entry-1}$ is the level of the performance measure in the year before entry for the peer group assigned to target firm i and n is the holding period.

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[10] The Standard Industrial Classification (abbreviated SIC) is a United States government system for classifying industries by a four-digit code.

[11] When calculating growth rates, we recognize some inherent problems in applying equation (4) to profit measures. Growth cannot be calculated if the sign of the variable changes from positive to negative, or vice versa. Therefore, we adjust these measures. Firstly, if a company goes from making a profit in period t to a loss in period $t+1$, we record the percentage change as -100 percent. Secondly, if a company goes from making a loss in period t to a profit in $t+1$, we record the change as +100 percent.

Following the methodology of Barber and Lyon (1996), we define the calculation for changes in operating margins as

$$AOP_i = X_i^{Exit} - \left(X_i^{Entry-1} + \Delta XP_i^{Exit\,-(Entry-1)} \right). \tag{6}$$

In addition to the definitions above, $\Delta XP_i^{Exit\,-(Entry-1)}$ denotes the average change in performance of the peer group assigned to target firm i between the year before entry and the exit year. $X_i^{Entry-1} + \Delta XP_i^{Exit\,-(Entry-1)}$ thereby denotes the expected performance at the time of exit for target company i.

The event study excludes, to the greatest possible extent, the effect of value capturing. If a perfect measure for expected performance could be found, the model would solely measure differences in the investors' value creation abilities. However, since we merely can approximate expected performance, it is likely that the approximated value is not identical to the true value of expected performance. This discrepancy will introduce some unavoidable noise in the estimation of investors' value creation abilities. A drawback of the method is that it does not take information prior to *t-1* into account. Furthermore, the accuracy of this method is highly dependent on the chosen peer group, which in turn is dependent on the performance of the target at time *t-1*. We are convinced that our matching methodology is sound, but to ascertain that our results are not driven by extreme observations in the peer groups we also adopt the difference-in-differences model, as suggested by Smart and Waldfogel (1994).

THE DIFFERENCE-IN-DIFFERENCES MODEL SPECIFICATION

The difference-in-differences regression model tests how a certain treatment affects a treatment group in comparison to a control group that does not receive the treatment. This approach has been used in a number of similar papers (see Desbrières and Schatt 2002; Guo, Hotschkiss and Song 2011; Kaplan 1989; Smith 1990). The setup in this study is that the treatment group is assumed to be a sample of firms acquired by local private equity investors and the control group consists of firms acquired by non-local private equity investors, i.e., group (i) and (ii) in Table 1, respectively. Hence both treatment and control groups receive a treatment, with the key distinguishing factor being that one group receives a "local treatment" whereas the other one receives a "non-local treatment". For each performance measure, we run five independent regressions in order to compare the subgroups presented in Table 1. The model specification is

$$y_{it} = \beta_0 + \beta_1 Type_i + \beta_2 Post_{it} + \beta_3 Type_i * Post_{it} + \boldsymbol{\gamma\delta} + \varepsilon_i, \tag{7}$$

where the dependent variable y_{it} is a measure of operating performance of the target company for firm i at time *t*. *Type$_i$* is a dummy variable that denotes the characteristic of firm i and which is assigned the value 1 if firm i belongs to group (i) and 0 if it belongs to group (ii) in Table 1. *Post$_{it}$* is a time-varying dummy variable which is assigned the value 1 for every post-entry observation of firm i and 0 for every pre-entry observation of firm i. $\boldsymbol{\gamma}$ is a set of control variables and include year fixed effects, the log of the total assets of the target firm, the log of the investor's assets under management and dummy variables for the duration of private equity ownership. $\boldsymbol{\delta}$ is a coefficient vector. Since the dependent variable is not peer-adjusted, we use year fixed effects to control for the impact of changes in the business cycle on the dependent variable. We also use length-of-ownership dummies in order to control for the J-curve effect.

THE ASSUMPTION OF THE DIFFERENCE-IN-DIFFERENCES METHOD

The method tests the change in performance of "treatment companies" against the change in performance of "control companies"

$$\left[X_{exit}^{treatment} - X_{entry}^{treatment} \right] - \left[X_{exit}^{control} - X_{entry}^{control} \right], \tag{8}$$

where $X_{exit} - X_{entry}$ is the change in performance during the period of private equity ownership. Recall that value generation is the sum of value capturing and value creation. Let $E(X_{exit}) - X_{entry}$ denote the difference between the expected performance level at exit and the actual performance level at entry. In order to distinguish between value capturing and value creation, it is essential to assume

$$\left[E(X_{exit}^{treatment}) - X_{entry}^{treatment}\right] = \left[E(X_{exit}^{control}) - X_{entry}^{control}\right], \tag{9}$$

i.e., that the expected changes in performance of the treatment and control companies are equal.[12] To understand the implication of the assumption, consider target company *i,* a potential target of a "treatment investor", and target company *j,* a potential target of a "control investor". The assumption implies that in the absence of transactions, no change in the *relative* performance of the two firms should take place. If the assumption holds, there should be no difference in the two types of investors' value capturing ability since the expected performance changes should be equal in magnitude. Hence, the entire difference in post-transaction performance would be attributable to either firm's superior value creation ability. If the assumption is flawed, the difference-in-differences estimator will be affected by differences in both value creating and value capturing ability.[13]

To evaluate the validity of the assumption, consider company *j,* which belongs to a population of Scandinavian companies that will be acquired by private equity investors. As discussed by Smart and Waldfogel (1994), the population is a non-random draw from the entire population of firms as only firms with certain characteristics are acquired by buyout sponsors. However, the process that determines whether company *j* will be acquired by an investor belonging to the treatment or to the control group is possibly stochastic. The outcome of the process is typically the result of a competitive bidding process, and the type of buyer that eventually offers the highest bid could well be random. In that case, the composition of the treatment and control firms should also be random with the same expected post-transaction performance and hence the assumption would be valid. Whilst this argument is theoretically compelling, it is probably too strong in reality. For instance, a significant part of all transactions are subject to proprietary processes where the outcomes depend on the buyout firm's deal-making and screening capabilities rather than coincidence. Therefore, the most truthful interpretation of the difference-in-differences estimate is that it measures value generation as a whole and thus includes both value creation and value capturing effects.

V   DATA

DATA FOR TARGET COMPANIES

Our sample contains private equity sponsored transactions that have taken place in Denmark, Norway and Sweden between 1999 and 2008 and with a deal value larger than €5 million. We restrict our sample to deals in which the buyout sponsor has acquired a majority of the share capital. Finally, deals in which a foreign investor has co-invested with a Scandinavian buyout sponsor are excluded. In a number of cases, accounting data for eligible transactions has been unavailable, mostly because consolidated accounts have been registered outside of Scandinavia. These restrictions yield a sample of 91 target companies.[14] The dataset contains information on the name of the target company, the name of the buyout firm, whether the buyout firm is Scandinavian or foreign, if the foreign buyout firm has an office in Scandinavia, entry and exit dates of the investment, and the industry classification of the target. Moreover, we have retrieved selected accounting information from three years before the entry up until the year of the exit, or if the holding has not yet been realized, until the date of the latest available annual accounts. As remarked by

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[12] This is also known as the common trends assumption.

[13] For a graphical illustration and detailed explanation of the assumption, please refer to Appendix C.

[14] A complete list of the transactions included in our study can be found in Appendix D.

Bergström et al. (2007), it would be ideal to study only realized buyout deals as the exit implies that the restructuring of the target is complete. However, due to the limited sample size, it has been necessary to include non-realized deals. In total, 49 of the deals have been realized and 42 are still under private equity ownership. The average holding period of the realized transactions is 4.7 years and of the non-realized transactions 3.0 years. This potentially introduces a bias in our data since our analysis may fail to capture potential performance improvements in the non-realized companies that may materialize between the date of the latest reported figures and the imminent exit. However, the non-realized transactions are equally distributed across the three investor groups, which implies that a bias should not be present.[15]

The transactions have been identified through searches on the databases Mergermarket and Zephyr, as well as through systematic reviews of the current and historical holdings of a large number of international and Scandinavian private equity firms. There is a possibility that not all transactions are covered by the databases. However, nothing indicates any systematic exclusion. If a target has been acquired several times within the time period, it is observed as multiple observations. Four companies have been acquired multiple times: three of them occur two times in the dataset and one occurs three times. The time period has been chosen to include as many deals as possible to facilitate statistical inference. The period includes the most recent transactions where post-transaction accounting information can be retrieved and deals from as far back as Mergermarket and Zephyr contain information. Entry dates were typically disclosed in Mergermarket or Zephyr and exit dates were identified by going through the websites of the buyout sponsors, and through searches on Factiva, the database for press clippings.

Pre- and post-transaction accounting information for the target companies was accessed through the databases Affärsdata, Retriever and Orbis for Swedish companies, Greens for Danish companies and Ravninfo for Norwegian companies.[16] These databases publish information on all public and private companies in their respective countries. In some instances, data for certain years and companies were missing in the databases. In such cases, we ordered supplementary annual reports from the Companies Registration Office in the corresponding country to complement the data from the databases. In total, we have used accounting information from approximately 680 annual accounts. The industry classifications of the target companies were retrieved by looking up their NACE-codes in the database Orbis.[17] The NACE industry classifications have thereafter been translated into Industry Classification Benchmark (ICB) codes to allow for matching with peer companies.

The characteristics of the private equity firms, such as assets under management and office locations, have been determined by systematic study of their websites. We have also identified historical office locations by going through press clippings and through searches on Factiva. In cases where office locations have varied over time we use a time-varying variable that classifies the observation as either a foreign investor with local presence or a foreign investor without local presence, for each time t.

DATA FOR PEER COMPANIES

The peer companies have been chosen from the universe of all listed companies on Scandinavian exchanges between 1997 and 2010. For each company and year, we use Datastream to download sales, EBITDA and total assets as well as the Industry Classification Benchmark (ICB) on the 2-digit level. Each target company is matched with the ten companies with the most similar EBITDA margin in the year before the entry and within the same 2-digit level ICB code as the target company.

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[15] 45 percent of the holdings owned by Scandinavian sponsors are current. The corresponding figures for foreign investors with and without local presence are 46 and 50 percent, respectively.

[16] See www.affarsdata.se, www.retriever.se, orbis.bvdep.com, www.greens.dk and www.ravninfo.no.

[17] Classification of Economic Activities in the European Community.

Delisted peers have not been replaced with new peers because new peers cannot be appropriately selected. Each target company's peer group must be selected at time *t-1* to appropriately reflect the market conditions at the time of the entry. New peers cannot be added at time *t+k* because they will be similar to the target company at time *t+k* not at time *t-1*. Their subsequent performance development will not adequately reflect the performance development of similar companies to the target company subsequent to the entry. However, having delisted peers potentially creates a bias in the data. If a company has been delisted, it is uncertain whether the company has been privately placed, gone bankrupt or if there is an error in the database. The survivorship bias may result in overstated performance measures for the peer groups since bankruptcy cases are not captured. Over the entire time period, only four peers have been delisted: Profilgruppen AB, D. Carnegie & Co., Kapitalpleje A/S and Affärsstrategerna i Sverige. Of these, only D. Carnegie & Co. could possibly create a bias, since the other three peers were either privately placed, merged with another company or erroneously handled by Datastream. D. Carnegie & Co. is used as a peer for three companies (one owned by a Scandinavian investor and two owned by foreign investors without local presence). However, considering that only one peer could create a bias and that each peer company is assigned ten peers, such a bias is unlikely to have any impact on our overall results.

DESCRIPTION OF THE DATA

The vast majority of the transactions included in this study took place in the period 2004 to 2007. The concentration of deal activity to these years is anticipated due to the high liquidity in financial markets and the ease of borrowing prior to the financial turmoil that emanated in 2007. Table 2 shows a number of descriptive statistics for our data sample. 51 of our 91 observations are Swedish target companies, 18 are Danish and 22 are Norwegian. The average holding period across the sample is 4 years, which is consistent with the average duration of a private equity holding (Bergström et al. 2007) and also fairly consistent across the three subgroups. The average target company has total assets worth SEKm 1,708; however, there are some extreme observations with both very high and low values. The standard deviation of the total assets of targets owned by Scandinavian investors is almost double the standard deviation for the firms owned by foreign investors with local presence. Hence, Scandinavian investors acquire companies in a broader size range than foreign investors do. However, due to differences in the means and medians, it is not clearly discernable whether any subgroup of investors systematically acquires smaller or larger targets than the others. The average private equity investor has assets worth USDm 5,701 (SEKm 35,895) under management.[18] The foreign sponsors are, on average, 2 to 3 times larger than the Scandinavian sponsors but the standard deviation of their size is also 2 to 3 times larger. Moreover, the foreign investors are substantially more international than the Scandinavian investors, in the sense that they invest and have office locations in more countries. On average, the Scandinavian investor has invested in 5 different countries, whereas foreign investors with and without Scandinavian presence have invested in 12 and 10 countries respectively. The medians are distributed similarly to the means. In addition, it is also observable that the Scandinavian investor has offices in three countries on average, whereas the two other investor categories have offices in 9 and 5 countries, respectively. Again, the medians follow the same distribution. However, the majority of Scandinavian investors only have offices in Scandinavia whereas the foreign investors have offices around the world.

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[18] Exchange rate as of 27 May 2011. USD/SEK: 6.30.

Table 2. Descriptive statistics of the sample properties

		Total sample	Scandinavian	Foreign with local presence	Foreign with no local presence
No. of observations	Total sample	92	47	25	20
	Swedish target	51	20	19	12
	Danish target	19	9	6	4
	Norwegian target	22	18	0	4
Holding period (years)	Mean	4	4	5	4
	Min	1	1	2	2
	Max	9	7	9	6
Total assets of target (SEKm)	Mean	1,708	1,796	1,257	2,085
	Median	579	579	583	469
	Std. Dev.	3,428	4,033	2,009	3,369
	Min	15	100	70	15
	Max	20,000	20,000	9,664	14,000
The investor's assets under management (USDm)	Mean	5,701	3,549	9,655	8,151
	Median	3,930	1,916	6,050	5,400
	Std. Dev.	6,639	3,471	8,717	9,013
	Min	82	82	563	90
	Max	32,500	10,280	31,100	32,500
No. of countries in which the investor has invested	Mean	8	5	12	10
	Median	7	3	15	9
	Std. Dev.	6	5	4	6
	Min	1	1	6	3
	Max	24	16	19	24
No. of countries in which the investor has offices	Mean	5	3	9	5
	Median	4	2	10	4
	Std. Dev.	4	3	5	4
	Min	1	1	3	1
	Max	16	9	14	16

The table presents descriptive statistics for the sample in total and for each of the investor types (Scandinavian, foreign with local presence and foreign with no local presence). *No. of observations* presents the total number of acquisitions made by each investor type, as well as the number of acquisition made by each investor type in each Scandinavian country. *Holding period* is the number of years of private equity ownership. *Total assets of target* is measured by book values. *The investor's assets under management* is the amount invested in each private equity firm's active funds, and excludes divested funds where the assets have been redistributed to investors. *No. of countries in which the investor has invested* takes into account both current and realized holdings of each private equity investor. *No. of countries in which the investor has offices* takes only current office locations into account.

Table 3 shows descriptive statistics of the compound annual growth in EBITDA and revenue, as well as the change in the EBITDA margin between the entry date and the exit date of each transaction. Raw data denotes the actual performance measure, without reference to peer performance. Abnormal figures are the peer-adjusted figures used in the event study method. On examination of the operating statistics, it is evident that the sample contains some extreme observations. We note substantial maximum values for the compound annual growth rates in EBITDA and sales. Such large values would have been unfeasible with organic growth. However, since we do not adjust for add-on acquisitions, the sales and EBITDA growth figures are most likely driven by add-on acquisitions.[19] The extreme values in EBITDA and sales growth cause discrepancies between some means and medians. However, it is important to note that the means and median are distributed similarly across the three subgroups for all six measures.

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[19] We do not make any adjustments since add-on acquisitions are, in fact, one of many value drivers used by private equity investors, as discussed by Loos (2005). Secondly, as Bergström et al. (2007) point out, add-on acquisitions can be viewed as a substitute for organic growth.

Table 3. Descriptive statistics of the EBITDA CAGR, Sales CAGR and change in EBITDA margin between entry and exit: raw data and peer adjusted data

		Total sample	Scandinavian	Foreign with local presence	Foreign with no local presence
EBITDA CAGR (Raw)	Mean	0.187	0.122	0.143	0.366
	Median	0.093	0.044	0.094	0.149
	Std. Dev.	0.426	0.296	0.262	0.691
	Min	-0.424	-0.424	-0.380	-0.327
	Max	2.037	0.997	0.592	2.037
EBITDA CAGR (Abnormal)	Mean	0.161	0.087	0.134	0.342
	Median	0.092	0.048	0.084	0.189
	Std. Dev.	0.386	0.288	0.292	0.572
	Min	-0.505	-0.505	-0.356	-0.335
	Max	1.883	0.898	0.719	1.883
Sales CAGR (Raw)	Mean	0.101	0.084	0.048	0.208
	Median	0.067	0.068	0.022	0.116
	Std. Dev.	0.211	0.183	0.140	0.304
	Min	-0.307	-0.153	-0.307	-0.141
	Max	1.183	0.985	0.335	1.183
Sales CAGR (Abnormal)	Mean	0.067	0.060	0.007	0.155
	Median	0.028	0.024	0.011	0.064
	Std. Dev.	0.214	0.242	0.137	0.202
	Min	-0.400	-0.400	-0.240	-0.088
	Max	1.220	1.220	0.326	0.613
ΔEBITDA margin (Raw)	Mean	0.017	0.064	-0.021	-0.046
	Median	-0.005	0.001	-0.018	-0.023
	Std. Dev.	0.200	0.255	0.084	0.118
	Min	-0.332	-0.247	-0.222	-0.332
	Max	1.310	1.310	0.103	0.190
ΔEBITDA margin (Abnormal)	Mean	0.043	0.057	0.063	-0.013
	Median	0.021	0.018	0.061	0.000
	Std. Dev.	0.176	0.214	0.106	0.135
	Min	-0.549	-0.549	-0.147	-0.364
	Max	0.899	0.899	0.263	0.291

The table presents performance measures for the sample in total as well as for each type of investor. *EBITDA CAGR (Raw)* measures the absolute compound annual growth rate (CAGR) of the EBITDA between entry and exit (for deals not yet exited: from entry to the latest reported figures). *EBITDA CAGR (Abnormal)* measures the EBITDA CAGR between entry and exit in relation to the performance of the peer group. Identical methods are used to calculate both *Sales CAGR (Raw)* and *Sales CAGR (Abnormal)*. *ΔEBITDA margin (Raw)* is the absolute change in EBITDA margin between entry and exit. *ΔEBITDA margin (Abnormal)* is the change in EBITDA margin between entry and exit in relation to peer groups.

VI EMPIRICAL RESULTS

In contradiction to our hypothesis, our findings suggest that foreign private equity investors are better at improving the EBITDA of their portfolio companies than Scandinavian investors. Furthermore, we find indications that foreign investors are better at increasing revenue than their Scandinavian counterparts. We also provide evidence that Scandinavian investors tend to be better at enhancing the operational effectiveness of their investments by improving the EBITDA margin. Finally, our findings indicate that it is the existence of a local office, rather than the origin of the buyout sponsor that drive any differences in performance between local and non-local investors.

We compare and contrast the results of the two methods for each performance measure. The results of the event study are presented in Appendix A. The results of the difference-in-differences regression are

presented in Appendix B. We present the results for all five classifications. Looking at the result tables, *(i)* denotes the *Type$_i$* variable and refers to the local investor group of each classification (1) to (5). For each method, we present one table for each dependent variable. In each table, we present four panels. Firstly, in Panel A, we present the initial regressions, in which we only control for year fixed effects and the duration of the private equity ownership. Secondly, in Panel B, we control for the target size by introducing the log of the total assets of the target company as a control variable. Thirdly, in Panel C, we add the log of the private equity investor's assets under management as a control variable. Unfortunately, assets under management are not disclosed by all investors. We presume that non-disclosure is a reflection of a secretive brand image rather than a characteristic systematically exhibited by exceptionally strong or weak private equity firms. Hence the addition of the variable is not anticipated to introduce a bias. However, it reduces the number of observations to critical levels and may therefore reduce the significance of our results. In Panel D, we replicate the initial regression from Panel A but control for extreme observations using winsorized data at the 95 percent level. This is a robustness test to check whether our results are driven by extreme observations. Hence, tail observations below the 2.5th and above 97.5th percentiles are assigned the values of the 2.5th percentile and 97.5th percentile, respectively. Hence, by using winsorized data, we do not drop any observations, which is desirable given our relatively small sample.

Overall, treating foreign investors with local presence as local (Classification (5)) yields the most well-specified results and most appropriately captures the differences between the subgroups in Classification (2) to (4). In general, we find few statistically significant differences between Scandinavian-owned companies and companies owned by local foreign investors (Classification (3)). However, we do find statistically significant differences when comparing companies owned by Scandinavian investors and those owned by non-local investors (Classification (2)). We also find statistically significant differences upon comparing companies owned by local foreign investors and non-local foreign investors (Classification (4)). This suggests that a potential local advantage stems from local presence rather than local origin. Hence, we will focus our discussion on Classification (5).

COMPOUND ANNUAL GROWTH RATE OF THE EBITDA

Table A1 presents the results of the event study and Table B1 presents the results of the difference-in-differences regressions. In Panel A of Table A1, we find statistically significant evidence at the 10 percent level that non-local investors in Classification (2) and (5) outperform local investors. Classification (2) provides evidence that foreign non-local investors annually increase revenues by 25.5 percentage points more than Scandinavian investors do. When considering both foreign investors with local presence and Scandinavian investors as local investors (Classification (5)), we find that non-local investors outperform local investors by 24.1 percentage points per year. However, the results of the difference-in-differences regression, found in Panel A of Table B1, are inconclusive. The coefficients are not statistically significant at any conventional level.

We present the results of the event study, controlling for the target size, in Panel B of Table A1. The results of the initial event study are not altered. The *(i)*-coefficients of Classification (2) and (5) are still significant and of the same sign and magnitude. The coefficients of the target size variable carry their expected signs, indicating that larger target companies experience smaller increases in the EBITDA compound annual growth rate than larger target companies. Moreover, the coefficients are statistically significant at the 10 percent level for Classification (1), (2) and (4) and at the 5 percent level for Classification (5). The corresponding results of the difference-in-differences regression can be found in Panel B of Table B1. As with the event study, the target size control does not have a substantial impact on either the signs, magnitudes or t-values of the results in Panel A. The *(i)*Post*-coefficients in the difference-in-differences regression remain statistically insignificant.

In addition to control for the target size, we also control for the size of the private equity investor. The results of the augmented event study are presented in Panel C of Table A1. The inclusion of this control does not substantially alter our results. The t-values of the previously significant coefficients increase and the *(i)*-coefficient in Classification (1) also becomes statistically significant at the 10 percent level. It is also observable that the addition of the control increases the explanatory power of the regression through a substantially increased R-squared value. The results of the difference-in-differences regressions are presented in Panel C of Table B1. Upon the addition of the control, the signs of the *(i)*Post*-variable remain negative, but are insignificant in all five classifications and in both methods. Hence, we cannot find evidence that the investor size affects the improvement in EBITDA growth.

The results of the event study regressions with winsorized data can be found in Panel D in Table A1. Controlling for extreme observations, we find practically the same results as in the Panel A regression. The coefficients of interest in Classification (2) and (5) carry the same sign as in Panel A. This is reassuring and suggests that the event study results are not substantially driven by outliers. However, when applying the same technique to the difference-in-differences regression (see Panel D of Table B1), the magnitudes of the *(i)*Post*-coefficients are immediately reduced. For example, the relevant coefficient in Classification (5) is reduced from -0.924 to -0.084, although it remains statistically insignificant. Even if the results are not altered, the substantial change in the coefficient suggests that the difference-in-differences regression is more sensitive than the event study to extreme observations in the sample.

Overall, the event study finds evidence in favor of the view that non-local investors improve the EBITDA growth rate more than local investors do. The results of the difference-in-differences regression show the same tendency since the relevant coefficients carry the same signs. However, the results are never statistically significant at any conventional level. The discrepancy in the results can partly be attributed to differences in the construction of the dependent variables. Another explanation is that the event study, to the best extent possible, only tests the value creation ability of the investor whereas the difference-in-differences method tests both the value creation and the value capturing abilities. This could cause the regression results to be different if the *value capturing* ability is of substantial importance. If we assume that this explanation is correct, it would imply that whilst non-local investors have a superior *value creation* ability (as inferred from the event study), this effect is counteracted by the effect of local investors acquiring better targets to begin with. Hence, we detect no difference in the overall *value generation* ability of the investors. However, we refrain from making any definite conclusions regarding the actual existence of a value capturing effect since it cannot be directly tested.

COMPOUND ANNUAL GROWTH RATE OF SALES

Table A2 presents the results of the event study and Table B2 presents the results of the difference-in-differences regressions. Panel A shows the results of the initial regression. The *(i)*-coefficients of Classification (4) and (5) are significantly negative at the 5 percent level. The results of Classification (5) show that non-local investors increase the compound annual growth rate of sales by 11 percentage points more than local investors. As indicated by Classification (4), this result is attributed to a superior ability of non-local foreign investors to increase revenue in comparison local foreign investors. Due to the magnitudes of the coefficients, we infer that the results are economically meaningful. The results of the difference-in-differences regressions are however not concurrent. The relevant coefficient is statistically insignificant for all five classifications.

Controlling for the size of the target company does not alter the results of either the event study or the difference-in-differences regression. See Panel B in Table A2 and B2 respectively. Looking first at the event study, the control contributes substantially to the R-squared value of the regressions but does not alter the magnitudes of the statistically significant *(i)*-coefficients in Classification (4) and (5). The control variable is negative and significant at the 5 percent level, which implies that larger companies experience a

smaller increase in the sales growth. Moreover, the control variable does not have an impact on the magnitudes, signs or t-values of the relevant coefficients in the difference-in-differences regression.

When including the investor size control in the event study (Panel C of Table A2), our results strengthen considerably. In general, the R-squared value increases considerably. Looking specifically at Classification (5), the *(i)*-coefficient also becomes both stronger in magnitude and statistically significant at the one percent level. However, the investor size coefficient is both economically and statistically insignificant. On examination of the difference-in-differences regression in Panel C of Table B2, we find that the relevant coefficient in Classification (5) more than doubles in magnitude but remains statistically insignificant. However, the *(i) * Post* variable is statistically significant at the 10 percent level in Classification (1) and (3). Since the same variable is not statistically significant in Classification (4), the results suggest that the international reach of foreign investors with local presence gives them an advantage vis-à-vis Scandinavian investors in increasing the revenues of their holdings. However, in congruence with the results of the event study, the investor size variable is both economically and statistically insignificant. Hence, we do not find any indication that the sheer size of the investor affects the ability of the investor to increase the revenues of its holdings.

The results of the event study with winsorized data are presented in Panel D of Table A2. Reassuringly, the relevant coefficients in Classification (4) and (5) are not affected by this robustness check. The signs, magnitudes and t-values are consistent, which indicates that extreme observations do not substantially drive our results. Likewise, the difference-in-differences results, presented in Panel D of Table B2, are not markedly altered.

Overall, the event study finds evidence in support of the view that non-local investors improve the sales growth rate more than local investors do. Again, the results of the difference-in-differences regressions are congruent but not statistically significant. Moreover, the inconsistency of the results can again be attributed to the different constructions of the dependent variables and the different setups of the two methods. A potential explanation of the divergence is, as with the EBITDA growth, that non-local investors increase the revenues more in their holdings than local investors do. However, local investors acquire better companies which subsequently, and independently of the investors' improvement efforts, grow more quickly than the holdings of non-local investors. In aggregate, these effects largely subdue each other, and we do not detect any convincing evidence that one outperforms the other in the difference-in-differences regression. However, the same explanation would also suggest (from the results in Panel C for Classification (3)) that local foreign investors acquire intrinsically better companies than Scandinavian investors. Since we cannot test the actual impact of the value capturing effect, we cannot accurately determine the validity of the above explanation.

CHANGE IN EBITDA MARGIN

Table A3 presents the results of the event study and Table B3 presents the results of the difference-in-differences regressions. The results of the initial event study regressions are displayed in Panel A of Table A3. We find economically and statistically significant evidence in Classification (2) and (5) that local investors increase the EBITDA margin more than non-local investors. In contrast, the relevant coefficients in Classification (3) and (4) are not statistically significant, although they carry their expected signs. Given the t-values of 1.77 and 1.62 for Classification (2) and (4) respectively and 0.07 of Classification (3), the results suggests that the outperformance of local investors is driven by local presence rather than the origin of the buyout sponsor. The difference-in-differences results, presented in Panel A of Table B3, lend economically and statistically significant support to the results of the event study. To be sure, the magnitudes of the relevant coefficients are of the same magnitude and the relevant coefficients in the difference-in-differences regression are significant at the 10 percent level.

Our results are not considerably altered when controlling for the size of the target company (see Panel B of Table A3 and B3). The coefficient of interest in Classification (5) remains of the same magnitude, of the same sign and statistically significant at the 10 percent level for both methods. Once again, the coefficient of the target size variable is statistically insignificant for both methods.

Upon addition of the investor size control in Panel C, the t-values of the coefficients of interest are reduced. Looking first at the event study, the *(i)*-coefficient is statistically insignificant for all five classifications. However, the coefficient in Classification (5) is of the same sign and reasonably similar in magnitude compared to the result in Panel B. However, it is reassuring that the investor size variable is statistically insignificant for all five classifications. Moreover, the coefficient in Classification (5) can be dismissed as economically insignificant. The difference-in-differences regression, presented in Panel C of Table B3, shows the same tendency. The *(i)*Post* variable becomes statistically insignificant for all five classifications. Likewise, the investor size variable is statistically insignificant for all five classifications. Since the investor size variable is not statistically significant in either of the two methods, we cannot deduce that it explains the variation in the dependent variable. The deterioration of statistical significance of the coefficients of interest is thus expected to be attributable to the loss of observations associated with the introduction of the investor size variable rather than an endogenous relationship between the $Type_i$ variable and the investor size variable.

We present the winsorized results in Panel D of Table A3 and Table B3. Reassuringly, the results of the event study are not markedly altered from the Panel A regression. To be sure, the signs, magnitudes and t-values of the coefficients of interest are fairly similar. This is reassuring. However, when implementing the outlier control measure in the difference-in-differences regression, the t-value of the relevant coefficient in Classification (5) falls from 1.69 to 1.31. Whilst this robustness check identifies the effect of extreme observations on our results, it also alters the original data, which could be of critical importance when studying a limited sample size.

In sum, the event study and difference-in-differences regressions both find evidence in support of our hypothesis that the EBITDA margin increases more under local than non-local private equity ownership. The significance of the results deteriorate when adding the investor size variable, but we suspect that this result is due to the loss of observations. Since the two methods both show that local investors outperform non-local investors, it is difficult to discuss the relative effects of value creation and value capturing. Moreover, it may seem puzzling that local investors improve the EBITDA margin more than non-local investors, but that non-local investors seem to improve the EBITDA more than local investors. The probable explanation for this finding is that non-local investors improve the revenue growth more than local investors and that this effect trickles down through the income statement and subdues the counteracting effect of local investors' relatively superior EBITDA margin improvements.

VII CONCLUSION

In contrast to our initial hypothesis, we find indications that non-local investors are able to increase the EBITDA, and thus the firm value, of their holdings more than local investors. Our results suggest that non-local investors increase the EBITDA more effectively than local investors. Our findings also suggest that the key driver of this result is the superior ability of non-local investors to increase the revenue of their holdings. These findings lend support to the view that the advantages of being international outweigh any advantages that stem from being local in generating value. There are several reasons as to why this is plausible. For example, non-local investors may have a larger international presence and more extensive networks abroad, which they can leverage to increase revenues swiftly and substantially. Specifically, this could materialize through an advantage in the process of finding add-on acquisitions abroad and it is conceivable that non-local investors have extensive expertise in implementing

internationalization strategies. Moreover, some investors prioritize a sophisticated industry knowledge over local market knowledge. Such an investment strategy could allow the investor to leverage its industrial expertise in any geographical market and gain an informational advantage.

In line with our initial hypothesis, we find statistically and economically significant evidence that local investors improve the EBITDA margin of their holdings more than non-local investors do. This result holds using both the event study and the difference-in-differences regression. Local expertise thus seems to play a more central role in cutting costs and streamlining operations than in increasing revenue. A possible explanation for this finding is that local presence facilitates monitoring and mentoring of management teams, following up on the practical implementations of strategic decisions and fine-tuning their execution. Nevertheless, since non-local investors increase the EBITDA more than do local investors, our findings indicate that the local investors' superior ability to expand margins is not sufficient to counteract the non-local investors' superior ability to increase revenues.

This paper has sought to fill the gap in the previous literature on the human capital factors that influence the success of private equity investments. In doing so, we show that whilst a local advantage facilitates margin improvement efforts, global reach is equally, if not more, important in order to generate value. A potential caveat with this study is the limited sample size. The limited sample size reduces the statistical significance of our results and is probably a contributing reason to the slightly divergent results of our two methods. In addition, the fact that Scandinavian private equity investors are considered highly successful in an international perspective may reduce the generalizability of our results. We therefore recommend future research to apply the methodology of this thesis to other regions and larger datasets to determine whether our results persist. Moreover, to further investigate the connection between local presence and value generation, we recommend future research to qualitatively and rigorously explore the mechanisms through which non-local investors generate revenue and through which local investors improve operating efficiency in their portfolio holdings.

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APPENDICES

APPENDIX A. DETAILED RESULTS OF THE EVENT STUDY

Table A1. Dependent Variable: Compound Annual Growth Rate of the EBITDA

Classification CAGR of EBITDA		(1) (i) Scand. vs. (ii) all foreign	(2) (i) Scand. vs. (ii) foreign with no local presence	(3) (i) Scand. vs. (ii) foreign with local presence	(4) (i) Foreign with local pres. vs. (ii) foreign with no local pres.	(5) (i) All firms with local pres. vs. (ii) foreign with no local pres.
Panel A	**(i)**	**-0.145**	**-0.255***	**-0.041**	**-0.214**	**-0.241***
	t-statistic	*-1.58*	*-1.75*	*-0.48*	*-1.38*	*-1.69*
	Constant	0.232***	0.342**	0.128*	0.342**	0.342**
	t-statistic	*2.99*	*2.49*	*1.83*	*2.46*	*2.50*
	Obs.	69	51	52	35	69
	R-squared	0.035	0.085	0.005	0.056	0.073
Panel B	**(i)**	**-0.139**	**-0.264***	**-0.0332**	**-0.245**	**-0.255***
	t-statistic	*-1.54*	*-1.79*	*-0.40*	*-1.52*	*-1.76*
	Log(total assets)	-0.063*	-0.065*	-0.036	-0.101*	-0.067**
	t-statistic	*-1.97*	*-1.73*	*-1.47*	*-1.89*	*-2.08*
	Constant	1.079**	1.228**	0.607*	1.708**	1.252**
	t-statistic	*2.24*	*2.02*	*1.71*	*2.09*	*2.35*
	Obs.	68	50	52	34	68
	R-squared	0.094	0.146	0.033	0.180	0.139
Panel C	**(i)**	**-0.184***	**-0.280***	**-0.0974**	**-0.242**	**-0.261***
	t-statistic	*-1.91*	*-1.87*	*-1.03*	*-1.39*	*-1.79*
	Log(total assets)	-0.048	-0.060	-0.019	-0.106	-0.066
	t-statistic	*-1.36*	*-1.12*	*-0.80*	*-1.63*	*-1.66*
	Log(AUM)	-0.046*	-0.017	-0.041*	-0.029	-0.017
	t-statistic	*-1.92*	*-0.60*	*-1.92*	*-0.47*	*-0.79*
	Constant	1.248**	1.274*	0.745*	2.011**	1.374**
	t-statistic	*2.19*	*1.77*	*1.83*	*2.11*	*2.20*
	Obs.	58	41	45	30	58
	R-squared	0.135	0.184	0.055	0.271	0.174
Panel D	**(i)**	**-0.132**	**-0.232***	**-0.0372**	**-0.195**	**-0.219***
	t-statistic	*-1.52*	*-1.73*	*-0.44*	*-1.35*	*-1.67*
	Constant	0.223***	0.324**	0.129*	0.324**	0.324**
	t-statistic	*3.09*	*2.58*	*1.86*	*2.55*	*2.59*
	Obs.	69	51	52	35	69
	R-squared	0.033	0.081	0.004	0.054	0.068

Table A1 presents the results from the event study using EBITDA CAGR as dependent variable. All estimations are estimated by OLS using robust standard errors. * indicates that the estimate is significant at the 10 percent level. ** indicates that the estimate is significant at the 5 percent level. *** indicates that the estimate is significant at the 1 percent level. Classification (1) to (5) corresponds to the classifications presented in Table 1. *(i)* is a dummy variable that takes on value 1 if the investor is identified as local in each classification. In Panel A, the only controls used are year fixed effects. In Panel B, the log of total assets of the target firm is added. Panel C also includes the log of assets under management of the private equity investor as a control. In Panel D, we run the regression from Panel A on winsorized data at the 95 percent level to control for outliers.

Table A2. Dependent Variable: Compound Annual Growth Rate of Sales

Classification CAGR of Sales		(1) (i) Scand. vs. (ii) all foreign	(2) (i) Scand. vs. (ii) foreign with no local presence	(3) (i) Scand. vs. (ii) foreign with local presence	(4) (i) Foreign with local pres. vs. (ii) foreign with no local pres.	(5) (i) All firms with local pres. vs. (ii) foreign with no local pres.
Panel A	**(i)**	**-0.019**	**-0.095**	**0.046**	**-0.140****	**-0.110****
	t-statistic	*-0.40*	*-1.56*	*0.97*	*-2.53*	*-2.04*
	Constant	0.079***	0.155***	0.0142	0.155***	0.155***
	t-statistic	*2.75*	*3.28*	*0.50*	*3.25*	*3.30*
	Obs.	80	59	62	39	80
	R-squared	0.002	0.035	0.011	0.156	0.047
Panel B	**(i)**	**-0.020**	**-0.102***	**0.047**	**-0.151*****	**-0.118****
	t-statistic	*-0.42*	*-1.75*	*1.01*	*-2.80*	*-2.28*
	Log(total assets)	-0.037**	-0.039**	-0.031	-0.044**	-0.038**
	t-statistic	*-2.17*	*-2.10*	*-1.44*	*-2.64*	*-2.42*
	Constant	0.568**	0.679**	0.424	0.746***	0.662***
	t-statistic	*2.43*	*2.58*	*1.48*	*3.06*	*2.96*
	Obs.	79	58	62	38	79
	R-squared	0.063	0.101	0.046	0.302	0.113
Panel C	**(i)**	**-0.068**	**-0.182*****	**0.0209**	**-0.218*****	**-0.192*****
	t-statistic	*-1.40*	*-3.12*	*0.45*	*-3.92*	*-3.75*
	Log(total assets)	-0.031**	-0.037**	-0.020	-0.058***	-0.037***
	t-statistic	*-2.03*	*-2.06*	*-1.28*	*-3.23*	*-2.70*
	Log(AUM)	-0.003	0.004	0.002	0.013	0.001
	t-statistic	*-0.18*	*0.23*	*0.18*	*0.79*	*0.13*
	Constant	0.525**	0.668***	0.246	0.877***	0.684***
	t-statistic	*2.21*	*3.01*	*1.06*	*3.60*	*3.52*
	Obs.	66	46	52	34	66
	R-squared	0.100	0.261	0.028	0.475	0.263
Panel D	**(i)**	**-0.028**	**-0.096***	**0.030**	**-0.126****	**-0.106****
	t-statistic	*-0.79*	*-1.96*	*0.84*	*-2.49*	*-2.30*
	Constant	0.077***	0.145***	0.019	0.145***	0.145***
	t-statistic	*2.95*	*3.42*	*0.72*	*3.39*	*3.43*
	Obs.	80	59	62	39	80
	R-squared	0.008	0.071	0.010	0.151	0.079

Table A2 presents the results from the event study using Sales CAGR as dependent variable. All estimations are estimated by OLS using robust standard errors. * indicates that the estimate is significant at the 10 percent level. ** indicates that the estimate is significant at the 5 percent level. *** indicates that the estimate is significant at the 1 percent level. Classification (1) to (5) corresponds to the classifications presented in Table 1. *(i)* is a dummy variable that takes on value 1 if the investor is identified as local in each classification. In Panel A, the only controls used are year fixed effects. In Panel B, the log of total assets of the target firm is added. Panel C also includes the log of assets under management of the private equity investor as a control. In Panel D, we run the regression from Panel A on winsorized data at the 95 percent level to control for outliers.

Table A3. Dependent Variable: Change in EBITDA margin

Classification ΔEBITDA margin		(1) (i) Scand. vs. (ii) all foreign	(2) (i) Scand. vs. (ii) foreign with no local presence	(3) (i) Scand. vs. (ii) foreign with local presence	(4) (i) Foreign with local pres. vs. (ii) foreign with no local pres.	(5) (i) All firms with local pres. vs. (ii) foreign with no local pres.
Panel A	**(i)**	**0.045**	**0.088***	**0.003**	**0.071**	**0.083***
	t-statistic	*1.06*	*1.77*	*0.07*	*1.62*	*1.87*
	Holding period dummies	Y	Y	Y	Y	Y
	Constant	0.063	-0.087	0.063***	-0.008	-0.020
	t-statistic	*.*	*-1.25*	*n.m.*	*-0.19*	*-0.45*
	Obs.	79	59	61	38	79
	R-squared	0.082	0.088	0.092	0.213	0.103
Panel B	**(i)**	**0.042**	**0.086**	**-0.003**	**0.074**	**0.083***
	t-statistic	*0.98*	*1.66*	*-0.06*	*1.63*	*1.80*
	Log(total assets)	-0.019	-0.022	-0.031	-0.005	-0.019
	t-statistic	*-0.88*	*-0.92*	*-0.96*	*-0.33*	*-0.90*
	Holding period dummies	Y	Y	Y	Y	Y
	Constant	0.173	0.296	0.500	0.066	0.092
	t-statistic	*0.68*	*0.93*	*1.10*	*0.27*	*0.35*
	Obs.	78	58	61	37	78
	R-squared	0.101	0.113	0.128	0.224	0.124
Panel C	**(i)**	**0.046**	**0.082**	**0.029**	**0.038**	**0.066**
	t-statistic	*1.04*	*1.34*	*0.65*	*0.90*	*1.38*
	Log(total assets)	0.003	0.008	0.008	-0.002	0.006
	t-statistic	*0.27*	*0.56*	*0.64*	*-0.08*	*0.46*
	Log(AUM)	0.011	0.011	0.018	-0.011	0.008
	t-statistic	*0.76*	*0.57*	*1.23*	*-0.54*	*0.62*
	Holding period dummies	Y	Y	Y	Y	Y
	Constant	-0.197	-0.159	-0.205	0.144	-0.256
	t-statistic	*-1.16*	*-0.67*	*-0.85*	*0.52*	*-1.28*
	Obs.	65	46	51	33	65
	R-squared	0.153	0.171	0.229	0.277	0.169
Panel D	**(i)**	**0.025**	**0.058***	**-0.006**	**0.056**	**0.056***
	t-statistic	*0.91*	*1.72*	*-0.20*	*1.50*	*1.77*
	Holding period dummies	Y	Y	Y	Y	Y
	Constant	0.063***	-0.040	0.063***	0.007	0.006
	t-statistic	*n.m.*	*-0.91*	*n.m.*	*0.19*	*0.20*
	Obs.	79	59	61	38	79
	R-squared	0.139	0.127	0.202	0.220	0.168

Table A3 presents the results from the event study using change in EBITDA margin as dependent variable. All estimations are estimated by OLS using robust standard errors. * indicates that the estimate is significant at the 10 percent level. ** indicates that the estimate is significant at the 5 percent level. *** indicates that the estimate is significant at the 1 percent level. Classification (1) to (5) corresponds to the classifications presented in Table 1. *(i)* is a dummy variable that takes on value 1 if the investor is identified as local in each classification. In Panel A, the only controls used are year fixed effects. In Panel B, the log of total assets of the target firm is added. Panel C also includes the log of assets under management of the private equity investor as a control. In Panel D, we run the regression from Panel A on winsorized data at the 95 percent level to control for outliers.

APPENDIX B. DETAILED RESULTS OF THE DIFFERENCE-IN-DIFFERENCES REGRESSIONS

Table B1. Dependent Variable: Compounded Annual Growth Rate of the EBITDA

Classification CAGR of EBITDA		(1) (i) Scand. vs. (ii) all foreign	(2) (i) Scand. vs. (ii) foreign with no local presence	(3) (i) Scand. vs. (ii) foreign with local presence	(4) (i) Foreign with local pres. vs. (ii) foreign with no local pres.	(5) (i) All firms with local pres. vs. (ii) foreign with no local pres.
Panel A	(i)	0.472	0.445	0.434	-0.446	0.266
	t-statistic	*0.97*	*0.66*	*0.95*	*-0.95*	*0.59*
	Post	0.843	0	-0.023	3.598	1.583
	t-statistic	*0.67*	*.*	*-0.02*	*1.10*	*0.59*
	(i) * Post	**0.016**	**-0.929**	**0.471**	**-1.133**	**-0.924**
	t-statistic	***0.02***	***-0.46***	***0.67***	***-0.62***	***-0.50***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Constant	0.463	-2.895**	2.071	-0.595***	0.429
	t-statistic	*0.38*	*-2.46*	*1.53*	*n.m.*	*0.35*
	Obs.	630	441	491	328	630
	R-squared	0.088	0.136	0.086	0.124	0.088
Panel B	(i)	0.466	0.450	0.453	-0.439	0.285
	t-statistic	*0.94*	*0.66*	*0.95*	*-0.91*	*0.63*
	Post	1.519	0	1.595***	6.828	2.288
	t-statistic	*0.60*	*.*	*3.52*	*1.33*	*0.75*
	(i) * Post	**0.023**	**-0.918**	**0.456**	**-1.120**	**-0.923**
	t-statistic	***0.02***	***-0.46***	***0.64***	***-0.62***	***-0.50***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Log(total assets)	-0.136	-0.236	0.061	-0.066	-0.135
	t-statistic	*-0.95*	*-1.14*	*0.80*	*-0.48*	*-0.97*
	Constant	1.906	-0.332	-0.510	4.005*	1.856
	t-statistic	*1.16*	*-0.12*	*-0.23*	*1.93*	*1.13*
	Obs.	628	441	489	326	628
	R-squared	0.089	0.138	0.087	0.124	0.089
Panel C	(i)	0.283	0.361	0.570	-0.446	0.237
	t-statistic	*0.44*	*0.40*	*0.93*	*-0.88*	*0.42*
	Post	1.171	-0.590	-0.111	5.602	0
	t-statistic	*0.78*	*-0.31*	*-0.16*	*1.32*	*.*
	(i) * Post	**-0.655**	**-2.534**	**0.368**	**-1.940**	**-2.299**
	t-statistic	***-0.66***	***-1.36***	***0.43***	***-1.15***	***-1.40***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Log(total assets)	0.046	-0.010	0.036	0.104	0.040
	t-statistic	*0.47*	*-0.06*	*0.34*	*0.78*	*0.39*
	Log(AUM)	-0.426	-0.459	0.019	-0.468	-0.410
	t-statistic	*-1.18*	*-1.20*	*0.08*	*-1.24*	*-1.51*
	Constant	2.112	4.162	-0.428	4.452***	5.437
	t-statistic	*0.80*	*1.31*	*-0.14*	*4.00*	*1.08*
	Obs.	537	359	418	297	537
	R-squared	0.126	0.226	0.091	0.178	0.138
Panel D	(i)	0.145	0.0894	0.197	-0.203	-0.0106
	t-statistic	*0.92*	*0.43*	*1.19*	*-1.07*	*-0.06*
	Post	0.918***	0	1.098***	0.641*	0.962**
	t-statistic	*3.59*	*.*	*3.66*	*1.68*	*3.02*
	(i) * Post	**-0.037**	**-0.139**	**0.014**	**0.026**	**-0.084**
	t-statistic	***-0.20***	***-0.58***	***0.07***	***0.11***	***-0.39***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Constant	-0.555**	-1.798***	0.639	-0.595***	-0.570**
	t-statistic	*-2.10*	*-6.86*	*1.04*	*n.m.*	*-2.15*
	Obs.	630	441	491	328	630
	R-squared	0.067	0.102	0.070	0.147	0.065

Table B1 presents the results from the difference-in-differences estimation using EBITDA CAGR as dependent variable. All estimations are estimated by OLS using robust standard errors. * indicates that the estimate is significant at the 10 percent level. ** indicates that the estimate is significant at the 5 percent level. *** indicates that the estimate is significant at the 1 percent level. Classification (1) to (5) corresponds to the classifications presented in Table 1. *(i)* is a dummy variable that takes on value 1 if the investor is identified as local in each classification. *Post(i)* is a dummy variable that takes on value 1 when the target is under private equity ownership. *(i) * Post* is our variable of interest and denotes a target under ownership of a local private equity investor. In Panel A, the only controls used are year fixed effects and dummies for holding period. In Panel B, the log of total assets of the target firm is added. Panel C also includes the log of assets under management of the private equity investor as a control. In Panel D, we run the regression from Panel A on winsorized data at the 95 percent level to control for outliers.

Table B2. Dependent Variable: Compounded Annual Growth Rate of Sales

Classification CAGR of Sales		(1) (i) Scand. vs. (ii) all foreign	(2) (i) Scand. vs. (ii) foreign with no local presence	(3) (i) Scand. vs. (ii) foreign with local presence	(4) (i) Foreign with local pres. vs. (ii) foreign with no local pres.	(5) (i) All firms with local pres. vs. (ii) foreign with no local pres.
Panel A	(i)	0.118	-0.018	0.244	-0.449**	-0.196
	t-statistic	*0.64*	*-0.06*	*1.53*	*-2.47*	*-0.90*
	Post	0.331**	0	0.023	-0.899***	0
	t-statistic	*2.38*	*.*	*0.05*	*-3.42*	*.*
	(i) * Post	**-0.190**	**-0.133**	**-0.257**	**0.299**	**0.054**
	t-statistic	***-1.01***	***-0.46***	***-1.60***	***1.45***	***0.23***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Constant	0.001***	0.020	0.546	0.001	0.271
	t-statistic	*n.m.*	*0.09*	*0.99*	*.*	*1.15*
	Obs.	655	450	512	348	655
	R-squared	0.054	0.069	0.076	0.144	0.057
Panel B	(i)	0.103	-0.022	0.233	-0.426**	-0.189
	t-statistic	*0.55*	*-0.08*	*1.44*	*-2.41*	*-0.87*
	Post	-1.229***	0	-1.147***	0.167	-1.255***
	t-statistic	*-4.06*	*.*	*-2.91*	*0.66*	*-3.71*
	(i) * Post	**-0.173**	**-0.122**	**-0.245**	**0.289**	**0.054**
	t-statistic	***-0.91***	***-0.42***	***-1.49***	***1.41***	***0.23***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Log(total assets)	-0.046*	-0.054	-0.026	-0.046	-0.046*
	t-statistic	*-1.83*	*-1.60*	*-0.91*	*-1.58*	*-1.87*
	Constant	1.790**	0.543	1.992**	0.786**	1.998**
	t-statistic	*2.34*	*1.57*	*1.97*	*2.19*	*2.46*
	Obs.	652	450	509	345	652
	R-squared	0.060	0.076	0.077	0.153	0.063
Panel C	(i)	0.236	0.167	0.287	-0.407**	-0.071
	t-statistic	*1.14*	*0.56*	*1.45*	*-2.14*	*-0.32*
	Post	-1.232***	-0.756	-1.151**	0.190	-1.178***
	t-statistic	*-3.45*	*-1.49*	*-2.29*	*0.82*	*-3.27*
	(i) * Post	**-0.359***	**-0.371**	**-0.367***	**0.207**	**-0.124**
	t-statistic	***-1.73***	***-1.18***	***-1.96***	***1.01***	***-0.51***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Log(total assets)	-0.030	-0.054	-0.008	-0.046	-0.035
	t-statistic	*-1.06*	*-1.09*	*-0.30*	*-1.27*	*-1.23*
	Log(AUM)	0.006	0.044	-0.024	0.048	0.008
	t-statistic	*0.18*	*0.86*	*-0.63*	*0.88*	*0.25*
	Constant	1.575**	0.975*	0.892	0.342	1.817**
	t-statistic	*2.15*	*1.73*	*1.19*	*1.01*	*2.28*
	Obs.	561	368	438	316	561
	R-squared	0.077	0.107	0.101	0.161	0.075
Panel D	(i)	0.013	-0.075	0.087	-0.235**	-0.141*
	t-statistic	*0.22*	*-0.84*	*1.57*	*-2.73*	*-1.72*
	Post	0.313***	0	0.320**	-0.353**	0
	t-statistic	*4.51*	*.*	*3.21*	*-2.79*	*.*
	(i) * Post	**-0.084**	**-0.052**	**-0.114***	**0.120**	**0.022**
	t-statistic	***-1.25***	***-0.51***	***-1.74***	***1.18***	***0.23***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Constant	0.001***	-0.032	0.413	0.001	0.322**
	t-statistic	*n.m.*	*-0.37*	*1.31*	*.*	*3.03*
	Obs.	655	450	512	348	655
	R-squared	0.119	0.154	0.139	0.186	0.131

Table B1 presents the results from the difference-in-differences estimation using EBITDA CAGR as dependent variable. All estimations are estimated by OLS using robust standard errors. * indicates that the estimate is significant at the 10 percent level. ** indicates that the estimate is significant at the 5 percent level. *** indicates that the estimate is significant at the 1 percent level. Classification (1) to (5) corresponds to the classifications presented in Table 1. *(i)* is a dummy variable that takes on value 1 if the investor is identified as local in each classification. *Post(i)* is a dummy variable that takes on value 1 when the target is under private equity ownership. *(i) * Post* is our variable of interest and denotes a target under ownership of a local private equity investor. In Panel A, the only controls used are year fixed effects and dummies for holding period. In Panel B, the log of total assets of the target firm is added. Panel C also includes the log of assets under management of the private equity investor as a control. In Panel D, we run the regression from Panel A on winsorized data at the 95 percent level to control for outliers.

**Table B3. Dependent Variable: Change in the EBITDA margin**

Classification / ΔEBITDA margin		(1) (i) Scand. vs. (ii) all foreign	(2) (i) Scand. vs. (ii) foreign with no local presence	(3) (i) Scand. vs. (ii) foreign with local presence	(4) (i) Foreign with local pres. vs. (ii) foreign with no local pres.	(5) (i) All firms with local pres. vs. (ii) foreign with no local pres.
Panel A	(i)	-0.031	-0.086*	0.006	-0.076	-0.078
	t-statistic	*-1.25*	*-1.66*	*0.42*	*-1.46*	*-1.56*
	Post	-0.205***	-0.268***	-0.001	-0.193**	0
	t-statistic	*-6.19*	*-3.59*	*-0.04*	*-3.26*	*.*
	(i) * Post	**0.052***	**0.105***	**0.015**	**0.076**	**0.091***
	t-statistic	***1.81***	***1.86***	***0.74***	***1.34***	***1.69***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Constant	0.056	-0.163***	-0.026	-0.209***	-0.161**
	t-statistic	*0.89*	*-3.54*	*-0.56*	*-3.76*	*-2.64*
	Obs.	622	434	484	326	622
	R-squared	0.048	0.067	0.065	0.121	0.058
Panel B	(i)	-0.033	-0.086*	0.005	-0.070	-0.077
	t-statistic	*-1.29*	*-1.68*	*0.33*	*-1.43*	*-1.57*
	Post	-0.227***	-0.271***	-0.187***	-0.083	-0.274***
	t-statistic	*-4.85*	*-3.59*	*-6.16*	*-1.33*	*-4.65*
	(i) * Post	**0.054***	**0.107***	**0.016**	**0.073**	**0.091***
	t-statistic	***1.85***	***1.88***	***0.79***	***1.33***	***1.70***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Log(total assets)	-0.008	-0.010	-0.002	-0.011	-0.007
	t-statistic	*-1.40*	*-1.49*	*-0.40*	*-1.38*	*-1.40*
	Constant	-0.082	-0.060	-0.003	-0.096	-0.095**
	t-statistic	*-1.47*	*-1.01*	*-0.04*	*-1.57*	*-2.03*
	Obs.	620	434	482	324	620
	R-squared	0.054	0.075	0.066	0.132	0.063
Panel C	(i)	0.000	-0.039	0.023	-0.063	-0.046
	t-statistic	*-0.01*	*-1.12*	*1.46*	*-1.41*	*-1.25*
	Post	-0.223***	-0.171***	-0.182***	-0.049	-0.252***
	t-statistic	*-5.85*	*-5.49*	*-6.65*	*-0.91*	*-4.63*
	(i) * Post	**0.017**	**0.052**	**-0.004**	**0.048**	**0.048**
	t-statistic	***0.80***	***1.21***	***-0.21***	***1.02***	***1.14***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Log(total assets)	-0.005	-0.009	-0.001	-0.010	-0.005
	t-statistic	*-1.14*	*-1.06*	*-0.32*	*-1.44*	*-1.05*
	Log(AUM)	0.009	0.015	0.005	0.015	0.008
	t-statistic	*1.53*	*1.42*	*1.18*	*1.34*	*1.25*
	Constant	-0.163***	-0.179***	0.172	-0.195***	-0.158***
	t-statistic	*-4.26*	*-5.48*	*1.00*	*-3.74*	*-4.23*
	Obs.	529	352	411	295	529
	R-squared	0.077	0.105	0.105	0.154	0.082
Panel D	(i)	-0.003	-0.019	0.008	-0.020	-0.018
	t-statistic	*-0.25*	*-1.24*	*0.63*	*-1.23*	*-1.25*
	Post	-0.184***	-0.189***	0.001	-0.156***	0
	t-statistic	*-8.77*	*-7.32*	*0.02*	*-5.06*	*.*
	(i) * Post	**0.011**	**0.026**	**0.001**	**0.020**	**0.023**
	t-statistic	***0.79***	***1.38***	***0.05***	***0.97***	***1.31***
	Year dummies	Y	Y	Y	Y	Y
	PE ownership dummies	Y	Y	Y	Y	Y
	Constant	0.035	-0.142***	-0.028	-0.182***	-0.152**
	t-statistic	*0.62*	*-6.42*	*-0.64*	*-7.45*	*-2.81*
	Obs.	622	434	484	326	622
	R-squared	0.071	0.088	0.080	0.152	0.073

Table B3 presents the results from the difference-in-differences estimation using EBITDA CAGR as dependent variable. All estimations are estimated by OLS using robust standard errors. * indicates that the estimate is significant at the 10 percent level. ** indicates that the estimate is significant at the 5 percent level. *** indicates that the estimate is significant at the 1 percent level. Classification (1) to (5) corresponds to the classifications presented in Table 1. *(i)* is a dummy variable that takes on value 1 if the investor is identified as local in each classification. *Post(i)* is a dummy variable that takes on value 1 when the target is under private equity ownership. *(i) * Post* is our variable of interest and denotes a target under ownership of a local private equity investor. In Panel A, the only controls used are year fixed effects and dummies for holding period. In Panel B, the log of total assets of the target firm is added. Panel C also includes the log of assets under management of the private equity investor as a control. In Panel D, we run the regression from Panel A on winsorized data at the 95 percent level to control for outliers.

APPENDIX C. THE ASSUMPTION OF THE DIFFERENCE-IN-DIFFERENCE MODEL

Graph C1 illustrates the case when the assumption of equal change in expected performance is true.

Graph C1. The assumption holds.
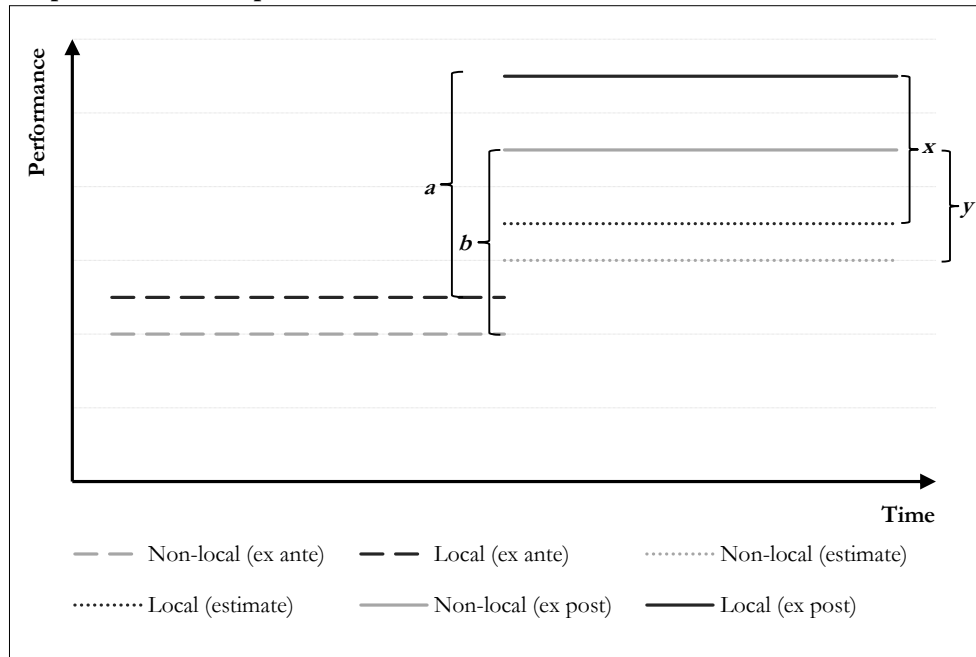
The graph illustrates the difference-in-differences estimation when the assumption holds. The dashed lines illustrate the performance of the targets prior to acquisition. The dotted lines illustrate the expected performance after acquisition. When the assumption holds, the distances between the dashed lines and the dotted lines are equal. The continuous lines represent the actual performance after acquisition. The difference-in-differences estimate captures the difference between *a* and *b*. The relative change in performance attributable to the interventions of the private equity investors is estimated by the difference between *x* and *y*. When the assumption holds, the two estimates are equal and the difference-in-differences measures only the change attributable to the interventions of the private equity firms.

The difference-in-differences method measures the difference between the improvement of targets owned by local firms, *a*, and the improvement of targets owned by non-local firms, *b*.

It might be the case that only parts of the improvements of the targets' performances *ex-post* are a result of the private equity firms' interventions. This is illustrated by dotted lines in the graph, which represent the *expected* performance of the target firms, i.e., the expected performance of the targets, had the transactions not taken place. In the case illustrated in the graph, we can see that there would be an increase in the performance of the targets even *without* the intervention of the private equity firms. Therefore, it is only the change *x* that is attributable to the intervention of the local investor, and *y* for the non-local investor. *x* and *y* are improvements that arise as a result of the investors' value creation abilities.
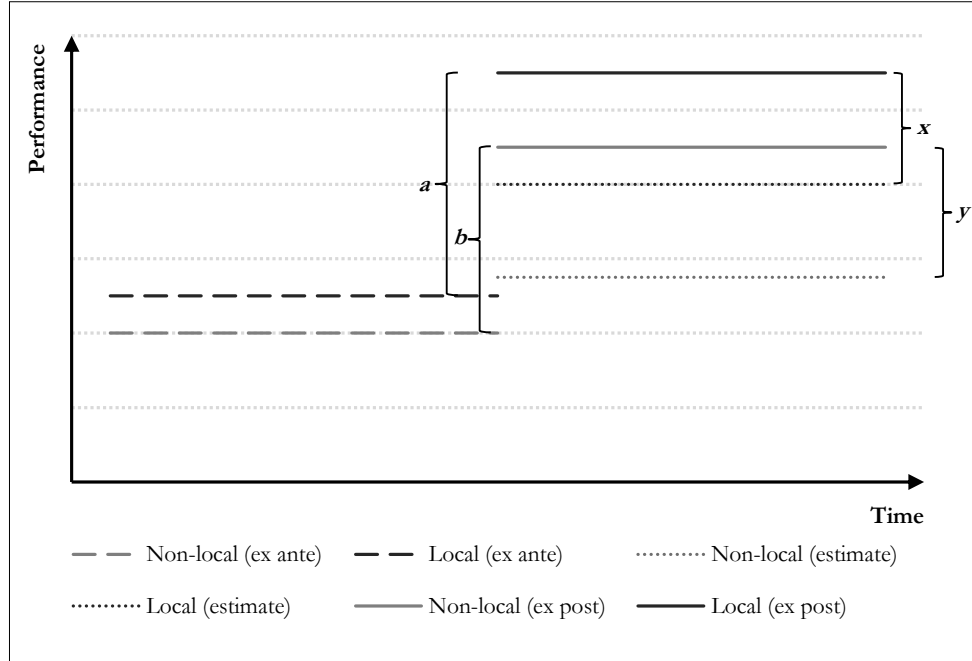
When the assumption holds, then

$$a - b = x - y,$$

and the difference-in-differences method will accurately capture the relative improvements in the performance of the target companies caused by the intervention of the investors, i.e. their relative value creation abilities.

Now assume that the assumption does not hold. This case is illustrated in Graph C2.

Graph C2. The assumption does not hold.

The graph illustrates the difference-in-differences estimation when the assumption does not hold. The dashed lines illustrate the performance of the targets prior to acquisition. The dotted lines illustrate the expected performance after acquisition. When the assumption does not hold, the distances between the dashed lines and the dotted lines are not equal. The continuous lines represent the actual performance after acquisition. The difference-in-differences estimate captures the difference between *a* and *b*. The relative change in performance attributable to the interventions of the private equity investors is estimated by the difference between *x* and *y*. When the assumption does not hold, the difference-in-differences estimate will capture the relative performance change attributable to both the ability to foresee future changes in performance *ex ante* and the ability to improve operational performance *ex post*.

In the example described in Graph C2, the non-local investor do not have as good an ability as the local investor to foresee future improvements (i.e., not as good value capturing ability). As a result, the difference between the targets' expected performance *ex post* is greater than the difference between the actual performance *ex ante* and the assumption is violated.

When the assumption does not hold, then

$$a - b \neq x - y,$$

i.e., the estimate captured by the difference-in-differences method is not equal to the relative performance change attributable to the intervention of the investors. Instead, the difference-in-differences method now measures the *combined* effect of the investors' relative value capturing and value creation abilities.

APPENDIX D. LIST OF THE TRANSACTIONS INCLUDED IN OUR SAMPLE

Table D1. List of transactions included in the sample: Scandinavian investors

Investor type	Buyer	Target	Country	Entry tear	Exit year
Scandinavian investors	Accent Equity	Acando Consulting	Sweden	2000	2002
	〃	BakeMark Sverige	Sweden	2004	2005
	〃	Elmo Leather	Sweden	1999	2004
	〃	Tribon Solutions	Sweden	2002	2003
	Altor	Aalborg	Denmark	2005	2010
	〃	SPT Group	Norway	2006	Current holding
	〃	Wrist Group	Denmark	2007	Current holding
	〃	AGR Group	Norway	2008	Current holding
	Axcel Industriinvestor	Junckers Industrier	Denmark	2004	Current holding
	〃	Svenska Fönster Produktion	Sweden	2000	2003
	Borea	Ocea	Norway	2008	Current holding
	〃	Software Innovation	Norway	2008	Current holding
	Canica	Jernia	Norway	2005	Current holding
	EQT	Bewator	Sweden	2002	2005
	〃	Bodilsen	Denmark	2006	2009
	〃	BTX Group	Denmark	2005	Current holding
	〃	Com Hem	Sweden	2002	2005
	〃	Eldon	Sweden	2000	2005
	FSN	Via Travel	Norway	2005	Current holding
	Herkules	Aibel	Norway	2007	Current holding
	〃	EFG	Norway	2007	Current holding
	〃	Handicare	Norway	2005	2010
	〃	Hatteland Display	Norway	2007	Current holding
	〃	Micro Matic Norge	Norway	2007	Current holding
	〃	Nille	Norway	2006	Current holding
	〃	Pronova Biopharma	Norway	2004	Current holding
	IK	Alfa Laval	Sweden	2000	2004
	〃	MSI Holding	Sweden	2000	2004
	〃	Perstorp	Sweden	1999	2003
	〃	NVS Installation	Sweden	2001	2005
	Kistefos	SecuriNet	Norway	2004	2005
	LD Equity	Bramming Plast-Industri	Denmark	2007	Current holding
	〃	Gram Commercial	Denmark	2005	2008
	Nordic Capital	Ahlsell	Sweden	1999	2005
	〃	C More Entertainment	Sweden	2003	2004
	〃	Unomedical	Denmark	2002	2008
	Norvestor	BecoTek	Norway	2006	Current holding
	〃	Panorama	Norway	2005	Current holding
	Polaris Private Equity	Skamol	Denmark	2007	Current holding
	Ratos	Fastighets AB Tornet	Sweden	2003	2005
	〃	Hilding Anders	Sweden	2000	2003
	Reiten	Brubakken Truckservice	Norway	2008	Current holding
	〃	Notabene	Norway	2006	Current holding
	Segulah	CCS	Sweden	2002	2004
	Triton Partners	Elitfönster	Sweden	1999	2004
	〃	Frigoscandia	Sweden	2001	2005
	〃	Semper	Sweden	2003	2005

Table D2. List of transactions included in the sample: foreign investors, with and without local presence in Scandinavia

Investor type	Buyer	Target	Country	Entry tear	Exit year
Foreign investors with a local office in Scandinavia	3i	Alimak Hek	Sweden	2001	2006
	"	Balco	Sweden	2003	2010
	"	Coor Service Management	Sweden	2004	2007
	"	Damcos	Denmark	2004	2006
	"	DIAB International	Sweden	2001	2009
	"	Dotcom Solutions	Sweden	2000	2004
	"	IVT Industrier	Sweden	1998	2002
	"	Lekolar	Sweden	2007	Current holding
	"	Q-Matic	Sweden	2004	2007
	"	Teknikmagasinet	Sweden	2004	Current holding
	AAC Capital Partners	Flexlink	Sweden	2005	Current holding
	"	Glud & Marsstrand	Denmark	2005	Current holding
	"	IVT	Sweden	2002	2004
	"	Kreatel Communications	Sweden	2000	2006
	"	Tylö	Sweden	2008	Current holding
	Apax Partners	Mölnlycke Healthcare	Sweden	2005	2007
	Argan	GCE Holding	Sweden	2005	Current holding
	Bridgepoint	Attendo Care	Sweden	2005	2007
	Doughty Hanson & Co	LM Wind Power	Denmark	2001	Current holding
	KKR	VSM Group	Sweden	2006	Current holding
	Macquaire Group	A-Train	Sweden	2004	Current holding
	Montagu Private Equity	Unifeeder	Denmark	2007	Current holding
	PAI Partners	Chr. Hansen	Denmark	2005	2010
	Riverside	Vokes-Air Group	Sweden	2008	Current holding
Foreign investors without a local office in Scandinavia	AlpInvest Partners N.V.	Eurogran AS	Denmark	1999	2004
	Arcapita	Roxar ASA	Norway	2006	2007
	BC Partners	Dometic	Sweden	2005	2009
	Candover	Hilding Anders (Candover)	Sweden	2006	2010
	Carlyle	B2 Bredband	Sweden	2002	2004
	Carlyle & Providence	Com Hem (Carlyle)	Sweden	2005	Current holding
	Change Capital Partners	Buksesnedkeren ApS	Denmark	2004	2009
	Cinven	Coor Service (Cinven)	Sweden	2007	Current holding
	"	Phadia	Sweden	2007	Current holding
	Englefield Capital	Bluestep	Sweden	2008	Current holding
	Fabrel Lotos	Schades A/S	Denmark	2004	Current holding
	Gilde	Arovit Petfood A/S	Denmark	2006	Current holding
	"	Plastal	Sweden	2001	2004
	GMT Communication Partners	Multicom Security (GMT)	Sweden	2005	Current holding
	GS Capital Partners & Quadrangle Capital Partners	Get AS (GSCP)	Norway	2007	Current holding
	HgCapital	Visma	Norway	2006	2010
	Investcorp	Hilding Anders (Investcorp)	Sweden	2003	2006
	Next Wave Partners	Crendo	Sweden	2007	Current holding
	Palamon Capital Partners	Espresso House Sweden	Sweden	2006	Current holding
	Warburg Pincus	ElectroMagnetic GeoServices	Norway	2004	2007