

Profit Seeking and the Quality of Eldercare

An empirical study of private equity's impact on the Swedish eldercare market:
implications for financial performance and quality of care.

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This paper contributes to the public discussion on whether private equity firms are suitable owners of Swedish nursing home operators. We investigate: (1) if private equity owned nursing home operators are more profit seeking than other private nursing home operators, and (2) if private equity ownership is associated with adverse effects on the quality of eldercare. By a cross sectional comparison of financial statements, we find that private equity owned operators outperform other private operators in terms of EBIT-Margin and Employee Efficiency. Adjusted for industry trends, the average primary buyout on the Swedish eldercare market generates significant upturns in Revenue Growth, EBIT-Margin, and Employee Efficiency. By studying the Swedish National Board of Health and Welfare's annual quality survey, and categorizing nursing homes by mode of provision, we find that private equity ownership is associated with a lower number of employees per resident and a higher proportion of staff employed on an hourly basis. Albeit negative deviations in staffing related quality indicators, nursing homes run by private equity owned operators are associated with a reasonable duration between meals; a high proportion of residents participating in formulating the care plan design; and a high proportion of residents assessed for risk of falling, -pressure ulcers, -and malnutrition.

Keywords: Eldercare, Privatization, Mode of provision, Private equity, Financial performance, Quality of care

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1.0 INTRODUCTION

Events within the Swedish eldercare industry during the fall of 2011 caused a heated debate on whether for-profit organizations are suitable to shoulder the responsibilities of taking care of one of the weakest groups in society, the elderly living in nursing homes. The debate is a continuation of a long-standing discussion regarding modes of provision within the delivery of welfare services. The central question is whether education, healthcare, and social care should be supplied by the government, private organizations, or through a hybrid arrangement. Proponents of privatization typically argue that privately owned companies are more efficient than similar state owned firms (Megginson and Netter, 2001). Critics, on the other hand, claim that privatization often is characterized by short-term gains for certain stakeholders with little regard to long-term effects for society's most vulnerable groups affected by public sector agencies (Prizzia, 2001). The eldercare industry demonstrates many characteristics of a quasi-market. Residents of nursing homes are usually weak end-consumers. Approximately two thirds are demented and only 4 percent ever exercise their right to switch nursing home (Anell et al., 2011). The government is supposed to represent them as customers, but is also the main provider of services and financier. Moreover, it is often difficult for the government to evaluate service quality and the chances to fully anticipate, describe, enforce and regulate quality requirements, are limited (Shleifer, 1998). As highlighted by Hart et al. (1996), while private producers often manage to increase operational efficiency and hence lower costs, they also have incentives to shirk given incompleteness of contracts.

What is fundamentally new in the public discussion on Swedish eldercare is that the old distinction between public and private seems to be insufficient. Now, distinctions between different types of private service providers are emphasized and particularly eldercare providers operated by private equity firms are profoundly questioned. As an example, the right of center Swedish Minister of Finance, Anders Borg, described private equity firms to be particularly "profit aggressive" in an opinion piece published in one of Sweden's largest daily newspapers (Borg et al. 2011). The public debate on eldercare in Sweden is underpinned by two implicit assumptions: (1) that private equity firms stand out among Swedish private nursing home operators as particularly profit seeking, and (2) that profit seeking is associated with adverse effects on the quality of eldercare. Previous empirical research give little support for either of these assumptions. Finance scholars, such as Kaplan and Strömberg (2008) and Bergström et al. (2007), provide general support for private equity firms' ability to improve operating profitability, but results specific to the eldercare sector do not exist. Researchers within the social sciences have studied the quality of eldercare as related to mode of provision based on a private-public dichotomy (see for example Stolt et al. (2011)) or a 'for-profit'-'not-for-profit' dichotomy (see for example Comondore et al. (2009)). But so far, researchers have not further sub-categorized private modes of provision in the eldercare industry. This fact makes it problematic to apply earlier findings on the current public discussion, where private equity firms in particular are questioned as suitable owners of nursing home operators. The two objectives of this paper are therefore to evaluate: (1) if private equity owned operators are more profit seeking than

other Swedish nursing home operators, and (2) if private equity ownership is associated with adverse effects on the quality of eldercare.

We make a cross sectional comparison of Revenue Growth, EBIT-Margin, and Employee Efficiency, between private equity owned operators (N=6) and a peer group (N=5). We find that the private equity owned operators outperform the peer group in terms of EBIT-Margin and Employee Efficiency, but not in terms of Revenue Growth. By following the same three financial performance metrics, pre- and post-buyouts (N=3), and benchmarking observed changes against a dynamic peer group, we find that private equity firms, active in the Swedish eldercare industry, are successful. On average, a nursing home operator that has undergone a buyout outperforms the peer group on all three financial performance metrics. Although based on a small number of observations, our results strongly suggest that private equity owned operators are more profit seeking than other Swedish nursing home operators.

Next, we investigate the core of the public discussion by examining the impact of private equity ownership on the quality of care, as measured by a quality survey carried out by the Swedish National Board of Health and Welfare (NBHW), covering 99 percent of Swedish nursing homes. Firstly, we conduct a cross sectional comparison for 2010. We classify Swedish nursing homes in four mutually exclusive but collectively exhaustive categories with regards to mode of provision: *Private Equity* (N=185), *Private For Profit* (N=118), *Private Not For Profit* (N=49), and *Public* (N=2316). We compare means between *Private Equity* and the other three modes of provision for 16 quality indicators, and adjust for demographic differences between Swedish municipalities using a multiple linear regression model. Then, we introduce panel data in an attempt to determine if the differences we observe in the cross sectional comparison is a causal consequence of *Private Equity* as mode of provision, or if quality indicators and the mode of provision simply co-vary. We observe differences between *Private Equity* and all other modes of provision with regards to staffing related quality indicators. In the cross sectional comparison we find that, on average, nursing homes belonging to *Private Equity* has about 5 percent fewer employees per resident than nursing homes belonging to the two other private modes of provision, and about 10 percent fewer employees per resident than nursing homes belonging to *Public*. When we follow nursing homes on an individual basis, before and after Operational Takeovers (N=76) (defined as any type of event generating a change in mode of provision to *Private Equity*), we observe an average drop in employees per resident of 20 percent in one year. This finding indicates that the low level of employees per resident observed in the cross sectional comparison, is not merely a co-varying phenomenon, but a causal consequence from *Private Equity*. Additionally, the average nursing home belonging to *Private Equity* is run with a significantly higher proportion of employees working for an hourly wage than the average nursing home belonging to *Private For Profit* and *Public*.

Albeit a lower number of employees per resident and a higher proportion of employees working for an hourly wage, private equity operated nursing homes outperform other modes of provision in terms of process related quality aspects. When evaluating: the proportion of residents participating in formulating

the care plan design; the proportion of residents with a duration between meals that is at the most 11 hours; the proportion of residents assessed for risk of falling, -pressure ulcers and -malnutrition; and the frequency of drug prescription assessments, *Private Equity* gets the highest scores of all modes of provision on four out of the seven quality indicators. Noteworthy is also that *Private Equity* deviates positively with statistical significance from *Public*, on all seven process related quality indicators included in the study. Based on our results we cannot conclusively say that private equity ownership is associated with adverse effects on the quality of eldercare. We do observe that *Private Equity* exhibit lower scores on staffing related quality indicators, which could be considered prerequisites for good quality of care. However, on the majority of process related quality indicators, we observe that *Private Equity* exhibits higher scores than the other modes of provision.

The rest of this paper is structured as follows: In Chapter 2 we present the historical development and current characteristics of the Swedish eldercare sector, as well as previous research on the nature of private equity firms, and in particular, research on the impact of private equity firms on outside stakeholders. Furthermore, we review literature in which the authors, like ourselves, have studied the quality of eldercare as related to mode of provision. In Chapter 3 we outline the methodology used for this study. In Chapter 4, we present the results found in our financial performance analysis. In Chapter 5, we present the results found in our quality of care analysis. Finally, in Chapter 6, we discuss our findings in the context of the public discussion and provide ideas for the course of future research.

2.0 BACKGROUND AND PREVIOUS LITERATURE

In this chapter we start off by describing the historical development and current characteristics of the Swedish eldercare sector. Thereafter, we present previous research on the nature of private equity firms, and in particular, research on the impact of private equity firms on outside stakeholders. Finally, we review literature in which the authors, like ourselves, have studied the quality of eldercare as related to mode of provision.

2.1 Eldercare in Sweden

The welfare states of Sweden and the other Nordic countries have historically been broad in scope. Most welfare services are financed and provided by the government, including regional and local authorities, and hence jointly paid for by the citizens through the tax system. When it comes to eldercare, the state rather than the family is perceived as ultimately responsible (Trydegård, 2000).

During an era spanning from the post-war days until the late 1980s, the government, through a shared responsibility between the regional county councils and the municipalities, was unchallenged as the sole provider of eldercare. In 1992 an “Elderly Reform” was introduced in which the responsibility for the

social eldercare was concentrated to the municipalities. Approximately 55,000 employees were moved from the country councils to the municipalities. An important rationale for the reform was to promote a more efficient use of society's resources by minimizing the eldercare sector's overuse of medical care and technical facilities, creating crowding-out effect and long waiting lines to the specialized care. The idea was for county councils to focus on health care in hospitals, and when the treatment was completed, for the responsibility to go over to the municipalities.

In the early 1990's, a recession hit the Swedish economy and state finances became constrained. Public spending was revisited along most dimensions and new organizational approaches for the provision of welfare services were frequently discussed. A stream of new ideas with elements from private sector management and the efficiency of private markets were considered crucial and were in Sweden, as well as the rest of Europe, labeled the New Public Management (see for example Hood (2000)). In Sweden, such ideas led to the introduction of a purchaser-provider separation within the public sector. However, this also opened up for the municipalities to purchase services not only from public providers but also to contract out to private providers. Many municipalities have since this reform, to an increasing extent, practiced the contracting-out approach of eldercare. In 1990, private contractors provided one percent of the publically financed eldercare services in Sweden. In 2008, this proportion had grown to 14 percent, and 36 percent of all municipalities used private providers to some extent (Stolt and Winblad, 2009). In 2012, when this paper is written, the contracting-out approach is by far the most common way for municipalities to use private organizations for the provision of eldercare. A decision to contract out is typically followed by a tendering process in which the municipality invites eldercare providers, both public and private, to provide competing bids. The competition can be based on price, commitments to care quality, or a combination thereof. In the first case, the municipality defines minimum quality requirements for a bid to be taken into account. Then, among the bids satisfying the defined requirements the one with the lowest price wins. In the second case, when competition is based on quality, the process is inverted: The municipality declares what it is willing to pay for operations of the nursing home in question. The providers then compete by demonstrating what level of care quality they can provide based on the given price. In the third case, when competition is based on both price and quality, an aggregate score, based on both price level and quality commitments, is calculated for each bid. The tendering processes generally imply a large amount of paper work and administrative complexity. Hence, to gain success as a bidder, resources required to handle this complexity must be in place (Anell et al., 2011).

Privatization in its full scope, meaning a transfer from publically to privately funded eldercare, is still rare in Sweden. However, a small number of municipalities have tried to empower the end-users by the practice of a voucher system, in which the elderly can individually choose among care providers certified by the municipality. Still though, when the term *privatization* is referred to in the context of Swedish eldercare, the contracting-out approach is largely what is referred to. In theoretical terms the Swedish eldercare sector can be described as a quasi-market. Typical characteristics of such a market, first

theorized by Bartlett and Le Grand (1993), is that not all market competitors are for-profit, that the market demand is largely defined by the state budget as opposed to the end-customers purchasing power and willingness to pay, and that the choice of provider is not made by the end-customer but by the public entity responsible for financing the production. On welfare quasi-markets, it is often difficult for the government to evaluate service quality and the chances to fully anticipate, describe, enforce and regulate quality requirements, are limited (Shleifer, 1998). As highlighted by Hart et al. (1996), while profit seeking producers often manage to increase operational efficiency and hence lower costs, they also have incentives to shirk given incompleteness of contracts.

The nature of private nursing home operators in Sweden is versatile. In all municipalities you will find nursing homes operated by the municipality itself, and in many municipalities also nursing homes run by private organizations. Among the private operators, some are for-profit and some are not. Among the for-profit, some are small or even single nursing home operators, which have been taken over by former employees, while others are private equity owned chains operating a large number of nursing homes. The private equity owned nursing home operators, which are the focus of this paper, have been particularly successful in the tendering processes in which municipalities contract out eldercare. In 2011, the two largest private equity owned nursing home chains represented more than half of the Swedish market for privately provided eldercare (Anell et al., 2011).

The global private equity firms' interest for the Swedish eldercare sector is relatively new and was first manifested through a buyout wave in early 2005. Private equity firms then acquired three of the largest private nursing home operators in Sweden: Bridgepoint acquired Attendo, 3i Group acquired Carema, and EQT acquired Aleris. In 2012, all three private equity firms from the 2005 buyout wave have exited their investments. In late 2006, Bridgepoint sold Attendo to IK Investment Partners and in early 2010, 3i Group sold Carema to Triton and Kohlberg Kravis Roberts & Co (KKR). All buyers are other private equity firms. During the summer of 2010, EQT sold Aleris to Investor AB, a financial holding company.

Beside the cases of Attendo, Carema, and Aleris, global private equity firms have also approached the Swedish market for eldercare through investments in companies providing home-help and assistance to elderly and disabled. In late 2007, Polaris Equity acquired Frösunda LSS, a firm working with the disabled, and expanded the service scope to include nursing home operations. In 2010, Polaris Equity sold Frösunda LSS to HG Capital, another private equity firm. In 2008, Argan Capital Providers acquired Humana, a recently founded firm partly offering eldercare services. Finally, in 2010, the private equity firm Valedo Partners accessed the Swedish eldercare market by the add-on acquisition of Partnergruppen by its portfolio company INOM. When Valedo Partners first acquired INOM in 2009 the company was focused on the provision of psychiatric care, but through the acquisition of Partnergruppen, INOM's service scope came to include eldercare as well. All private equity owned eldercare providers active in 2012 are listed in Table 2.1.

Table 2.1

Owner and description of acquisition for private equity owned nursing home operators in Sweden 2012

<i>Eldercare provider</i>	<i>Private equity owner</i>	<i>Description of acquisition</i>
Attendo	IK Investment Partners	Secondary buyout from Bridgepoint in 2006
Carema	Triton, KKR	Secondary buyout from 3i Group in 2010
Frösunda LSS	HG Capital	Secondary buyout from Polaris Equity in 2010
Humana	Argan Capital	Buyout from founders in 2008
INOM	Valedo Partners	Add-on acquisition (Partnergruppen) in 2010

During the fall of 2011, media reported on a number of serious deficiencies observed at Swedish nursing homes. Since some of the troubled nursing homes were operated by large for-profit enterprises owned by private equity firms, the potential conflict between profit seeking and the quality of care came to be an intense topic of discussion. When reports were simultaneously published on the advanced financing structures applied by private equity firms in order to minimize tax expenses, much of the debate came to particularly concern the suitability of private equity firms involvement in the eldercare sector.

2.2 Private equity and leveraged buyouts

Private equity firms traditionally engage in leveraged buyouts, a form of acquisition where the financing constitutes only a small part of equity and a comparatively large part of debt. During the 1980s the number of private equity deals increased significantly and Jensen (1989) argued that the publically owned corporation had outlived its usefulness¹. He further argued that the corporate organizational form of a private equity firm resolves the central weakness of the large public corporation, namely the conflict between owners and management over the control of company resources. A private equity firm raises capital through a private equity fund. Outside investors, such as insurance companies, pension funds and wealthy individuals, commit a certain amount of capital, which the fund has a contractual right to collect, when an investments opportunity arises. Under normal circumstances the fund has a fixed life of ten years, but can be extended for another three years if needed. Typically, the private equity firm has up to five years to invest the capital committed to the fund after which a period of five to eight years follow when the fund aims to return the capital to the investors (Kaplan and Strömberg, 2008). The median private equity investment is held for around 9 years (Strömberg, 2008). The exit from an investment is one of the most crucial aspects. The most common exit is to sell to a strategic buyer (a firm in the same industry); historically this accounts for 38 percent of all exits. The second most common exit is to sell to another private equity fund; this is called a ‘secondary buyout’. The third most common exit is that the

¹ When Jensen (1989) speaks of “public” companies he refers to publically listed companies and not government owned companies.

private equity firm lists the company on a stock exchange through an initial public offering (IPO), and subsequently sells its shares on the open market (Kaplan and Strömberg, 2008).

2.2.1 Means of value creation

Jensen (1989) declares that private equity firms make remarkable gains in operating efficiency, employee productivity, and shareholder value. He even refers to the private equity boom of the 1980s as “the rebirth of active investors”. Empirical evidence on the performance of private equity portfolio companies is almost conclusively positive. Kaplan (1989a) goes over several financial measures for public-to-private deals in the United States and finds all but one to have increased the ratio of capital expenditure to sales. Leveraged buyouts also experience significant increases in total factor productivity following the buyout (Lichtenberg and Siegel, 1990). Empirical work on private equity and leveraged buyouts in the 1990s and 2000s has primarily focused on Europe due to data availability. Results found are in line with previous research in the United States. Also consistent with international findings, Bergström et al. (2007) show that operating performance and productivity improve significantly for companies that have undergone a buyout in Sweden between 1998 and 2006.

Generally, private equity firms apply three sets of actions to increase the value of their investments. Often these are referred to as financial-, governance- and operational engineering (see for example Kaplan and Strömberg (2008)).

Financial Engineering

Financial engineering primarily refers to the use of increased leverage, which simply is increasing the debt to equity level. Financial engineering has two main purposes. First of all it puts pressure on managers to increase capital efficiency, since there is less cash on hand after any given time period due to the increased interest rate payments. Otherwise managers might be inclined to invest in projects with low or negative net present value, simply because it increases the size of the company, but not necessarily because it is in the best interest of the owners. This problem is often referred to as the free cash flow problem. Secondly, there are tax benefits of debt as opposed to equity. Since taxes are deducted subsequently to interest rate expenses, any payments made to debt holders decrease the amount of tax paid (Acharya et al., 2009).

Governance Engineering

Governance engineering includes for the private equity firm to be an active participant on the board and thus be more involved in decision-making compared to the board of other companies. Boards of private equity portfolio companies are ordinarily smaller and meet more often (Cornelli and Karakas, 2008). Acharya et al. (2009) investigate the behavior of private equity portfolio companies' boards and find that they meet about twelve times per year and in addition have many more informal contacts.

In addition, governance engineering includes providing key management personnel with equity stakes in order to incentivize them to work harder and also to align management's potential upside with that of the private equity firm. To put further pressure on management the equity is most often sold at a price of

some consequential value for the individual manager. Further, the equity stake is often combined with an individual performance-based managerial compensation (Kaplan and Strömberg, 2008).

Operational Engineering

Lean management is one of the key ingredients in improving the operating efficiency. This includes reducing overhead costs and utilizing economies of scope and scale where applicable. It is achieved through various measures such as employing a competent and often impressive board. Further, some key managers might be recruited in order to add valuable expertise, experience, and industry knowledge. One third of chief executive officers are exchanged in the first 100 days after a buyout and another third before the four-year anniversary of the investment (Acharya et al., 2009).

2.2.2 Critical perspectives on private equity

Some scholars have taken on a more critical perspective when revising the success of private equity firms. A concern raised has been that firms engaging in buyouts are too interested in short term gains and hence in maximizing current cash flows, but potentially upset future cash flows. A possible indication of this is that earlier studies have found that the relation of capital expenditure to sales tend to decrease after a buyout (see for example Kaplan (1989a)). One reason could be that more capital has to be allocated to service the large amounts of debt in leveraged buyouts. Cao and Lerner (2009) address this concern by investigating the stock performance of leveraged buyout companies after they have made an IPO and find that, on the contrary, industry adjusted stock returns are positive after an IPO. Another paper by Lerner et al. (2008) investigates long-term effects of private equity ownership on innovation and finds no significant decline in innovation. In fact, innovations made post-buyout even seem more economically important.

Others have approached the private equity phenomenon applying a stakeholder perspective. Operational value creation is then regarded only as a partial explanation of the high economic returns achieved by the private equity firms. Next to operational value creation, value reallocations from outside stakeholders, such as (i) the government, (ii) the employees, or even (iii) the customers, are considered partially explanatory components.

- (i) The additional debt taken on in most buyouts gives rise to a valuable interest tax shield. This fact follows naturally from the characteristics of the modern tax regime, in which interest payments, unlike dividends, are tax deductible. In practice, the value arising from the tax shield is difficult to estimate, but Kaplan (1989b) suggests that 4 to 40 percent of a firm's value originates from the tax shield. The result is underpinned by a number of assumptions but suggests that the financial success of private equity firms to some extent can be explained by a corresponding drop in government tax revenue.
- (ii) Another critical perspective examined is the effect from private equity ownership on the employment in portfolio companies. The case has been made that buyout transactions benefit

investors at the expense of workers who suffer job and wage cuts. Kaplan (1989c) finds that American firms that have undergone a buyout display relatively lower employment growth than industry peers. Lichtenberg and Siegel (1990) and Davis et al. (2011) provide further support for this relationship, albeit only for the American retail sector. Boucly et al. (2009), on the contrary, present results indicating the opposite relationship, that firms that have undergone a buyout experience higher employment growth compared to industry peers.

- (iii) Few have investigated whether private equity ownership has an impact on customer value. Hardly surprising, one might think, since the possibilities for private equity firms – or other enterprises for that matter – to extract value at the expense of customers seem small under the assumption of efficient market mechanisms. If operational engineering initiatives in a portfolio company have negative effects on product quality, customers in an efficient market will choose to buy the product from a competitor, leading to a lower firm value and a drop in investment return for the private equity fund. Still, Matsa (2007) discusses that leveraged buyouts might be followed by adverse effects on product quality when cash flows are dedicated to serve debt repayments. When it comes to the publically financed welfare sector, in which the taxpayers represent the end-consumers, Lundsten and Löfqvist (2011) take an empirical approach to study the impact of private equity ownership on the Swedish private school sector. They conclude that private equity owners have positive effects both on the financial performance and on the educational quality, operationalized as teachers per student and academic results. The study was preceded by a public debate in Sweden where concerns were raised that the high profits harvested by private equity owned school groups might partly be attributed to a drop in the educational quality.

To sum up, prevailing research do not provide sufficient evidence to conclude that private equity is associated with deteriorating conditions for other stakeholders. Understandably though, increased operational efficiency may lead to lower employment growth, and increased leverage to less tax payments.

2.3 Empirical studies on quality of care as related to mode of provision

An initial challenge for anyone interested in measuring the quality of eldercare is how to define and operationalize the concept of quality. As expressed by Donabedian (2005) the definition of health care quality may be “almost anything anyone wishes it to be, although it is, ordinarily, a reflection of values and goals current in the medical care system and in the larger society of which it is a part”. One way, commonly used, to concretize the care quality concept is to make distinctions between structure-, process-, and outcome related quality aspects. The eldercare sector does however stand out as a particularly problematic case to assess quality for. The primary reason is that the possibilities to define and measure outcome quality are largely nonexistent. In other healthcare sectors outcome quality is measured by for instance the number of patients cured, or the observed mortality rate. In the eldercare sector however, the objective is not to cure a patient or to minimize mortality rates overall, but to provide a safe

and worthy environment during the final period of a person's life. Based on this inherent characteristic, most initiatives to quantify quality in the eldercare sector target indicators in the structure or process quality dimensions. Structure quality generally concerns metrics such as the number of employees per resident in a nursing home and educational level of the employees. Process quality indicators instead focus on whether the provided service lives up to known principles of good care practice, for example with regards to food served, facility status, and the possibility for the elderly to participate in formulating their own care plan design.

Both Swedish and international scholars, mostly within the social and medical sciences have applied empirical approaches to study the quality of eldercare as related to the mode of provision. In the typical study design, a population of nursing homes is categorized by mode of provision. Most commonly, a private-public or a 'for-profit'-'not-for-profit' dichotomy are used.

2.3.1 The private-public dichotomy

In Sweden, where the existence of private welfare service providers has only recently become more popular, researchers have focused on comparing publically and privately operated nursing homes. The underlying question of such research is generally whether the move towards privatization has, positively or negatively, affected the quality of Swedish eldercare. Stolt et al. (2011) conduct a cross sectional quality study of Swedish eldercare in 2007, separating nursing homes operated by private and public providers. Findings suggest that private contractors operate with fewer employees per resident compared to publically operated nursing homes. In contrast, private contractors seem to provide superior care quality when it comes to the proportion of residents participating in formulating the care plan design; proportion of residents with duration between meals that is at the most 11 hours, and the provision of food alternatives. The findings of Stolt et al. (2011) are of great interest in the context of our own research since the secondary quality data used is partially the same as we use in this study.

2.3.2 The 'for-profit'-'not-for-profit' dichotomy

In other economies, such as the United States of America, where private welfare service providers have been common for decades, research has to a greater extent reflected private nursing home providers as a heterogeneous group. Especially, quality of care has been studied applying a 'for-profit'-'not-for-profit' dichotomy. Harrington et al. (2001) analyze American data from 1998 for all nursing homes that are certified for payments from Medicare and Medicaid². By demonstrating that for-profit nursing homes are overrepresented in reported deficiency data, the authors conclude that not-for-profit care providers deliver superior quality. Comondore et al. (2009) provide a systematical review and meta-analysis of observational studies comparing care quality among for-profit and not-for-profit American nursing homes. Of the 82 articles meeting the inclusion criteria, 40 provide results in favor of not-for-profit nursing homes, 39 provide uncertain findings, and just 3 provide results in favor of for-profit nursing

² Medicare and Medicaid are publicly funded healthcare programs in the United States of America.

homes. Conclusions presented in the 82 articles hence imply that on average, not-for-profit nursing homes deliver higher quality of care than for-profit nursing homes. In spite of the conclusion drawn from the meta-analysis, the large amount of uncertain findings in previous research explains the continued academic efforts and intense political discussions.

2.3.3 Further sub-categorization of mode of provision

Sub-categorization that goes beyond the public-private dichotomy and the ‘for-profit’-‘not-for-profit’ dichotomy are essentially absent in existing empirical studies. Harrington et al. (2001) do however discuss that some for-profit operators are part of chains, and that chain ownership per se might be associated with a further decrement in quality. This expectation is based on the observation that chains extract the highest profits, and the assumption that profit seeking diverts focus from the clinical care. The idea to analyze care quality as related to an extended sub-categorization of nursing home operators along a profit-seeking dimension is noted, but not operationalized, in recent literature. In a recent report, the Swedish SNS (Centre for Business and Policy Studies) stresses that the presence of global private equity firms on the Swedish eldercare market is particularly strong and that existing research does not shed light on this fact (Anell et al., 2011). By studying quality of care under the private-public dichotomy, all private nursing home operators, from the non-profit foundation to the private equity owned nursing home chain, are labeled and regarded as equal. This fact makes it problematic to apply available research findings on the current public discussion, where private equity firms in particular are questioned as suitable owners of nursing home operators.

3.0 METHODOLOGY AND DATA USED

This chapter is divided into three main parts. Firstly, we present secondary data sources used in our study. Secondly, we explain the approach we take to analyze and benchmark the financial performance of private equity owned nursing home operators. Thirdly, we explain the approach we take to study the impact from private equity ownership on the quality of care.

3.1 Data gathering and construction of the dataset

The financial data we use in this study is publically available financial statements. We collect financial statements from the Retriever database and crosscheck against the AffärsData database. This procedure goes for both the private equity owned companies and the companies included in the peer groups.

The quality of care data we use in this study originates from the annual Swedish National Board of Health and Welfare (NBHW) quality survey³. The NBHW is the Swedish government’s expert body in the

³ In Swedish the dataset is referred to as ”Äldreguiden”.

welfare area. The collection of surveys is organized so that every nursing home receives a questionnaire asking management to provide statistics covering several different quality indicators. The choice of included indicators reflects previous research on what elderly, care personnel, and municipality representatives view as high quality of care. For example, investigations conducted by the NBHW (2008) indicate that the elderly themselves value quality aspects such as participating in formulating the care plan design, accessibility to care services, social stimulation, continuity, and staff competence. Among care personnel, partly different indicators are considered important, namely staff attitude, care plan, food and sleep. Municipality representatives are concerned with indicators such as food alternatives, staff attitude, pressure ulcers, and medication routines. The quality indicators chosen in the NBHW quality surveys represent an effort to combine the different stakeholder perspectives, also assuming that the suggested indicators are realistic to operationalize and not too costly to measure. The NBHW quality surveys are publically available through the website www.socialstyrelsen.se on a per nursing home or per municipality basis. We recommend that anyone interested in replicating or varying this study contact the NBHW to receive the full dataset.

In order to complete our dataset we begin by establishing which organization operates each of the nursing homes included in the NBHW 2010⁴ quality survey. There is no universal one-way solution to finding the individual operators but rather it is a process of searching for individual websites of the homes or groups operating them. We further use the Retriever database to establish if the company operating a given nursing home is a subsidiary of a larger group or a standalone entity. By use of the Capital IQ database we conclude that Aleris, Attendo, Carema, Frösunda, Humana, and INOM are private equity owned nursing home operators in 2010. We divide all nursing homes into four mutually exclusive but collectively exhaustive sub-categories with regards to mode of provision: (i) *Private Equity* (ii) *Private For Profit*, (iii) *Private Not For Profit*, and (iv) *Public*. The term ‘mode of provision’ hence refers to the nature of the organization responsible for operating a given nursing home. A full categorization of nursing homes can be found in Appendix Table C1. Lastly, we have complemented our data gathering process by conducting three, one-hour semi structured, interviews with professionals representing two private nursing home operators in Sweden. We have interviewed professionals at the ownership level and in the nursing home organization. These interviews are not intended to triangulate empirical findings but rather to assist us in the process of interpreting our results from the quantitative analysis.

3.2 Financial performance analysis

We conduct the financial performance analysis to evaluate if private equity owned operators are more profit seeking than other Swedish nursing home operators. The analysis is conducted in two steps. Firstly, we examine cross sectional differences for 2010 with regards to *Revenue Growth*, *Earning Before Interest and Tax-Margin (EBIT-Margin)* and *Employee Efficiency*. Employee Efficiency is defined as revenue per

⁴ The NBHW’s 2010 quality survey is published in 2011 and therefore referred to as the 2011 Quality Survey at <http://www.socialstyrelsen.se>

employee less personnel cost per employee. Secondly, we assess the impact of private equity buyouts on each of the three financial metrics using panel data. Ideally, one would also like to include some measure of capital efficiency, such as return on invested capital. However, large deviations in group accounting practices, both in terms of allocation of internal assets and the amount of group contributions made, make comparisons of such performance metrics highly problematic. Therefore we limit our analysis to financial performance metrics solely driven by basic income statement items. A summary providing complete definitions for the three financial metrics analyzed can be found in Table 3.1.

Table 3.1

Metrics and definitions used for financial performance analysis.

<i>Financial performance metric</i>	<i>Definition</i>
Revenue growth (%)	$= \frac{\text{Revenue}_t - \text{Revenue}_{t-1}}{\text{Revenue}_{t-1}}$
EBIT-margin (%)	$= \frac{\text{EBIT}_t}{\text{Revenue}_t}$
Employee efficiency (SEK)	$= \frac{\text{Revenue}_t}{\text{Number of Employees}_t} - \frac{\text{Personnel costs}_t}{\text{Number of Employees}_t}$

3.2.1 Investigating cross sectional differences in financial performance

We separate out the six nursing home operators owned by private equity firms in 2010: Aleris, Attendo, Carema, Frösunda, Humana, and INOM (N=6). The two basic inclusion criteria we use are that each firm must be private equity owned, and engaged in operating nursing homes in Sweden. With regards to the second inclusion criteria; the proportion of revenues that can be attributed to a firm's nursing home operations vary between the operators. For example, all firms included to some extent also provide home-help services for elderly. This is a problem that cannot be fully mitigated, but to the best of our abilities we attempt to single out financial statements of sub-units that are as close to the nursing home operations as possible. Next, we form a peer group consisting of private for profit nursing home operators not owned by private equity firms. In order to provide the best possible basis for the comparative analysis we only include operators that exhibit revenues larger than SEK 20 million. Given such inclusion criteria the peer group is formed by the following five nursing home operators: A&O, Förenade Care, Kosmo, Norlandia Care, and Temabo (N=5). We compile financial statements for all nursing home operators included through the Retriever database and crosscheck against the AffärsData database to confirm their validity. We calculate weighted group averages for each of the three financial performance metrics, based on the total number of residents served by each operator.

3.2.2 Investigating buyout effects on financial performance

We use panel data to measure the impact from private equity buyouts on each of the three financial performance metrics over time. Effectively, we do this by comparing financial performance metrics for the private equity owned nursing home operators, pre- and post-buyouts, with a peer group. We only analyze primary buyouts since we are interested in events allowing us to observe the impact from private equity ownership on financial performance. A secondary buyout, referring to a transaction between two different private equity owners, does not represent such an event.

In order to conclude which primary buyouts to use in the analysis we use the Capital IQ database to map all historical private equity activity on the Swedish eldercare market. In 2005 private equity firms acquired three of the largest private nursing home operators in Sweden: Bridgepoint acquired Attendo, 3i Group acquired Carema, and EQT acquired Aleris. Beside those cases, global private equity firms have also approached the Swedish market for eldercare through investments in companies providing home-help and assistance to elderly and disabled. In late 2007, Polaris Equity acquired Frösunda LSS, a firm working with the disabled, and expanded the service scope to include nursing home operations. In 2008, Argan Capital Providers acquired Humana, a recently founded firm partly offering eldercare services. Finally, in 2010, the private equity firm Valedo Partners gained access to the Swedish eldercare market by the add-on acquisition of Partnergruppen by its portfolio company INOM. When Valedo Partners first acquired INOM in 2009 the company was focused on the provision of psychiatric care, but through the acquisition of Partnergruppen, INOM's service scope came to include eldercare as well. Since we are only interested in primary buyouts, in which private equity firms have acquired already established nursing home operators, we include three buyouts in the analysis. These are the 2005 buyouts of Aleris, Attendo, and Carema.

The peer group consists of private for profit nursing home operators not owned by private equity firms. Our inclusion criteria is that the operators need to exhibit yearly revenue greater than SEK 20 million two years before and two years after the analyzed buyout. By this inclusion criteria the peer group includes A&O, Förenade Care, and Kosmo. For all nursing home operators included in both groups, we collect publicly available financial statements through the Retriever database and crosscheck against the AffärsData database to confirm their validity⁵. Attendo has made a large change to its corporate structure during the past years, which is adjusted for⁶. In addition, several of the companies have fiscal years other than the calendar year or have changed its fiscal year during our comparison period; these factors are also adjusted for⁷.

⁵ During this crosscheck we realize that the financial statements of Humana for the period of 2009/04 – 2010/04 are missing in the Retriever database, we complete the set of financial statements with information from AffärsData.

⁶ Up until 2006/12 we use financial statements for Attendo Sverige AB, after this point we use Attendo AB (publ).

⁷ We assume that all revenues have flowed to the companies evenly distributed over each year; from there we annualize all financial statements so that they correspond to the calendar year.

We benchmark the financial performance by looking at the two-year average of each metric pre- and post-buyout for the private equity owned companies. We compare these to the same metrics for the companies in the peer group for the same period. We use the peer group to control for industry trends, so that if revenue growth or profitability increases or decreases for the whole industry during that particular period, this is adjusted for. We can therefore identify the relative performance of each buyout. For Revenue Growth and EBIT-Margin we use Equation 3.1 to evaluate the average buyout performance.

Equation 3.1

Average buyout performance. Revenue Growth and EBIT-Margin.

$$\text{Average buyout performance} = \frac{\sum_i^n (PE_{\text{post-buyout}, i} - PE_{\text{pre-buyout}, i}) - (PG_{\text{post-buyout}, i} - PG_{\text{pre-buyout}, i})}{n}$$

The equation expresses the buyout effect on a particular financial metric for the private equity owned operators, less the expected change, operationalized as the peer group's change for the same period. Each part of the formula expresses a two-year arithmetic mean where 'PE' stands for private equity and 'PG' stands for peer group. An example: $PE_{\text{post-buyout}}$ could be the two-year arithmetic mean of the EBIT-Margin after the buyout for one of the private equity owned providers, we then subtract $PE_{\text{pre-buyout}}$ which is the two-year arithmetic mean of the EBIT-Margin before the buyout. We now have the buyout effect on EBIT-Margin for this particular provider. We then subtract the expected change during that period. The expected change is calculated as the two-year arithmetic mean of the peer group, after the buyout; less the two-year arithmetic mean of the peer group, before the buyout. We go over the same procedure for all primary buyouts, add them together, and divide by the number of primary buyouts to get the average buyout performance with regards to EBIT-Margin.

Since Employee Efficiency, unlike Revenue Growth and EBIT-Margin, is expressed in monetary terms and not as a percentage, we use Equation 3.2 to get the change pre- and post-buyout expressed in percent. The equation expresses the percentage change for the private equity owned operators from which the expected change is subtracted. Again, each part of the formula expresses a two-year arithmetic mean.

Equation 3.2

Average buyout performance, Employee Efficiency.

$$\text{Average buyout performance} = \frac{\sum_i^n \left(\frac{PE_{\text{post-buyout}, i} - PE_{\text{pre-buyout}, i}}{PE_{\text{pre-buyout}, i}} - \frac{PG_{\text{post-buyout}, i} - PG_{\text{pre-buyout}, i}}{PG_{\text{pre-buyout}, i}} \right)}{n}$$

3.3 Quality of Care Analysis

Quality of care is problematic to define and is characterized by its subjectivity. In literature, one of the more popularly used quality of care conceptualizations is to divide quality in three dimensions: structure, process and outcome. The framework was developed by Donabedian (1983). The structure quality dimension refers to indicators such as employees per resident or the educational level of employees. The process quality dimension refers to indicators such as how long a resident has to wait between meals or if the resident is invited to participate in formulating his or her care plan design. The last quality dimension, outcome, refers to patient satisfaction or mortality. The idea of the framework is that the three dimensions together should capture the whole quality space. With regards to eldercare, outcome indicators are scarce in nature and this is further constrained by the lack of collected data. We therefore analyze quality of care using a quality survey provided by the NBHW which include indicators covering the structure and process quality dimensions. While the dataset does not conclusively reflect an individual nursing home's quality, it provides quantitative scores on a large number of sensible quality indicators.

Our analysis of the quality of care is divided in two parts: a cross sectional comparison based on data from 2010, and a panel data analysis based on data from 2007 through 2010 to assess the impact of a private equity owned provider taking over a nursing home.

3.3.1 Investigating cross sectional differences in the quality of care

We compare 185 nursing homes belonging to *Private Equity*, in 82 municipalities⁸, against three other modes of provision: (i) *Private For Profit* that accounts for 118 nursing homes, in 69 municipalities; (ii) *Private Not For Profit* that accounts for 49 nursing homes, in 29 municipalities; and (iii) *Public* that accounts for 2316 nursing homes, in 315⁹ municipalities or urban districts. Home-help services in the elderly's own homes, or care facilities that do not provide accommodation are not included. In total, the 2010 NBHW survey covers more than 99 percent of all nursing homes in Sweden, or 2668 nursing homes, providing 96,058 elderly with accommodation over the short and long term. The survey consists of 41 questions that cover 16 different quality indicators. A list of the indicators with an explanation of each can be found in Table 3.2. Statistically, we compare differences in means for each given quality indicator between *Private Equity* and the three other modes of provision using *t*-tests.

⁸ The dataset is also divided over urban districts in the larger cities, which is included in this number.

⁹ All of Sweden's 290 municipalities are represented except for the municipality of Varberg that elected to not participate in 2010.

Table 3.2

Definitions of quality indicators included in the study.

<i>Quality Indicator</i>	<i>Description</i>	<i>Quality Dimension</i>
Employees per Resident	Number of employees divided by number of residents.	Structure
Hourly Employment	Proportion of hours worked by employees working on an hourly basis.	Structure
Full-time Employment	Proportion of employees working at least 85 percent of full time.	Structure
Employee Turnover	Proportion of employees who quit in the last year.	Structure
Employees per Manager	Number of employees divided by number of managers.	Structure
Basic Education	Proportion of employees with an upper secondary school health care education.	Structure
Professional Education	Proportion of employees with a university or college health care education.	Structure
Individual Accommodation	Proportion of residents with individual bedrooms.	Structure
Individual Kitchen	Proportion of employees with individual cooking facilities.	Structure
Participation	Proportion of residents or appointed representatives participating in formulating the care plan design.	Process
Participation in Update	Proportion of residents or appointed representatives participating in updating the care plan design.	Process
Nightly Fast	Proportion of residents with a duration between meals that is at the most 11 hours.	Process
Medication Review	Proportion of residents that has had his/her prescribed medication assessed within the last 12 months.	Process
Risk of Falling	Proportion of residents assessed for risk of falling.	Process
Risk of Pressure Ulcers	Proportion of residents assessed for risk of pressure ulcers.	Process
Risk of Malnutrition	Proportion of residents assessed for risk of malnutrition.	Process

Adjusting for Socioeconomic Factors

It has been shown that privatization of eldercare in Sweden positively correlates to population density (Suzuki, 2001). This relationship also holds true for our dataset. Private nursing home operators are particularly common in the Stockholm area. Furthermore, there is evidence from the Swedish eldercare market suggesting that large cities have lower quality of care (NBHW, 2011). In addition to this it is

conceivable that municipal economic factors could indirectly affect the quality of care. Although, municipality finances are balanced through a tax equalization system in Sweden, the municipalities' willingness to spend on eldercare varies. For those reasons we conduct a regression analysis to understand if demographic differences explain the relationships between quality indicators and mode of provision.

We use linear regression to model the relationship between each quality indicator and the mode of provision. We set the respective quality indicator as the dependent variable in each regression and the modes of provision as the independent variables, using dummy variables for *Private For Profit*, *Private Not For Profit* and *Public*, leaving *Private Equity* out to avoid perfect multicollinearity. To control for the possibility that quality of care vary with population density we include a dummy variable for this. In addition, we include the natural logarithm of average income per person, and the yearly amount of money spent by a municipality on eldercare and assistance divided by the number of people over 65, in an attempt to control the socio-economic climate and a municipality's willingness to spend.

3.3.2 Investigating effects from Operational Takeovers on the quality of care

We further complete the dataset from the cross sectional analysis of 2010 with data from the years 2007 through 2009 to get a total of four years of data. Unfortunately the datasets from previous years are not quite as extensive as the 2010 quality survey and only seven indicators are observed compared to the 16 in 2010. A list of the indicators with an explanation of each can be found in Table 3.3. In the panel data analysis we want to study the quality indicators in each of the 185 nursing homes now operated by a private equity owned provider, before and after a nursing home has undergone an *Operational Takeover*. An Operational Takeover is defined as any type of event generating a change in mode of provision to Private Equity. Essentially Operational Takeovers happen for one of three reasons: (i) the mode of provision changes to Private Equity as a result of a buyout by a private equity firm of a care provider; (ii) the mode of provision changes to Private Equity as a result of an add-on acquisition of a care provider by another private equity owned provider; or most commonly (iii) the mode of provision changes to Private Equity as a result from a tendering process in which the municipality assign a private equity owned provider as the new operator of a nursing home.

We identify at which points in time Operational Takeovers have occurred for the nursing homes included in *Private Equity*. This is a time-consuming process, mainly consisting of calling nursing home staff and people in charge of procurement of eldercare at the municipalities, as well as going through annual reports of municipalities and nursing home operators. To some extent, we also use OPIC, a database holding information on business relations between the public and private sector.

A constraint is that a large amount of Operational Takeovers have taken place outside the time span covered by the NBHW quality surveys. Another constraint is that since we have data for four years, 2007 through 2010, the only observations that allow us to make an impact analysis of the Operational Takeover are those that occur in 2008 through 2010 since we use the year before the Operational Takeover for

comparison. A last constraint is that the questions related to a particular quality indicator needs to have been answered in the survey for both the year before the Operational Takeover and for the year of the Operational Takeover. Given these constraints the number of homes included in our study vary between 66 and 76 depending on which indicator we observe. Naturally an Operational Takeover does not always take place in the beginning of the calendar year. To adjust for this we make the assumption that those nursing homes that have undergone an Operational Takeover in the first half of the year are assumed to have changed on the 1st of January of that year, while nursing homes that have undergone an Operational Takeover in the second half of the year are assumed to do so on the 1st of January the following year. A full list of the nursing homes that have undergone an Operational Takeover can be found in Appendix Table E1.

Finally, we use the panel data to compare quality indicators before and after Operational Takeovers. Statistically we compare differences in means for the quality indicators the year before and the year of the Operational Takeover for the entire sample using *t*-tests to assess significance.

Table 3.3

Definition of quality indicators used for 2007-2010 panel-data analysis.

<i>Quality Indicator</i>	<i>Description</i>	<i>Quality Dimension</i>	<i>Time Series</i>
Employees per Resident	Number of employees divided by number of residents.	Structure	2007-2010
Basic Education	Percentage of employees with an upper secondary school health care education.	Structure	2007-2010
Full-time Employment	Percentage of employees working at least 85 percent of full time.	Structure	2007-2010
Employee Turnover	Percentage of employees who quit in the last year.	Structure	2007-2010
Individual Accommodation	Percentage of residents with individual bedrooms.	Structure	2007-2010
Individual Kitchen	Percentage of employees with individual kitchens.	Structure	2007-2010
Participation in Update	Percentage of residents or appointed representatives participating in the updating of the care plan design.	Process	2007-2010

4.0 EMPIRICAL RESULTS FROM FINANCIAL PERFORMANCE ANALYSIS

The main purpose of the financial performance analysis is to evaluate the idea that private equity owned care providers stand out among Swedish nursing home operators in terms of profit seeking. As a starting point, we present a cross sectional analysis benchmarking private equity owned operators' Revenue Growth, EBIT-Margin and Employee Efficiency against a peer group consisting of other private for profit operators. Thereafter, we evaluate the impact on financial performance from private equity buyouts, by comparing pre- and post-buyout levels for each of the three financial metrics.

4.1 Cross sectional differences in financial performance

Findings with regards to EBIT-Margin and Employee Efficiency, but not Revenue Growth, support the preconception that private equity owned nursing home operators are better at achieving operating profitability than their peers. Findings from the cross sectional comparison are summarized in Table 4.1.

Table 4.1

Cross sectional comparison of financial metrics for 2010.

	<i>Revenue Growth</i> (%)	<i>EBIT-Margin</i> (%)	<i>Employee Efficiency</i> (KSEK)
Private equity owned operators	11.9%	5.1%	131
Peer group operators	46.2%	1.6%	101

Private Equity (N=6), Peer Group (N=5). Each metric is calculated as a weighted average within the group based on the total number of residents served by the that nursing home operator.

In terms of revenue growth, private equity owned nursing home operators do not stand out as better than their competitors. The average Revenue Growth observed for private equity owned operators is 11.9 percent, while the operators in the peer group exhibit an average revenue growth of 46.2 percent. One explanation for this finding is however differences with regards to size. While the average private equity owned operator serve around 1400 residents and exhibit yearly revenue of almost SEK 1,700 million, the average peer group operator serve 530 residents and exhibit yearly revenue of SEK 400 million. Hence, considerably different revenue growth in relative terms corresponds to similar revenue growth in monetary terms.

With regards to EBIT-Margin, private equity owned operators are successful compared to the peer group. The average EBIT-Margin of 5.1 percent realized by private equity owned operators is actually more than three times the average EBIT-Margin of 1.6 percent realized by operators in the peer group. Since personnel costs make up a significant part of the cost structure when operating nursing homes, we find it reasonable to expect a corresponding cross sectional difference in Employee Efficiency. We find support for this expectation when comparing the level of Employee Efficiency for the two groups. Private equity

owned operators exhibit an average Employee Efficiency of SEK 131 thousand while the peer group operators display an average of SEK 101 thousand. This difference in Employee Efficiency can be derived from both higher revenues per employee and lower personnel costs per employee compared to the peer group. A breakdown of underlying drivers of Employee Efficiency can be found in Appendix Table A3.

4.2 Buyout effects on financial performance

When analyzing the effects from private equity buyouts on the financial metrics of nursing home operators, we find support for a causal relationship between private equity ownership and increased financial performance. Findings from the buyout performance analysis are summarized in Table 4.2.

Table 4.2

Average buyout performance with regards to Revenue Growth, EBIT-Margin, and Employee Efficiency.

	<i>Revenue Growth (%)</i>			<i>EBIT-Margin (%)</i>			<i>Employee Efficiency (KSEK)</i>		
	Pre	Post	Post-Pre	Pre	Post	Post-Pre	Pre	Post	(Post-Pre)/Pre
Private Equity	20.0	22.6	+2.6	2.1	7.7	+5.6	70	115	+64.3
Peer Group	19.4	14.4	-5.0	2.4	4.1	+1.6	108	110	+1.8
Average Buyout Performance			+7.6%			+3.9%			+62.5%

Private Equity: Aleris, Attendo, Carema (N=3). Peer Group: A&O, Förenade Care, Kosmo (N=3). Equation 3.1 is used to derive the average buyout performance of Revenue Growth and EBIT-Margin. Equation 3.2 is used to derive the average buyout performance of Employee Efficiency.

On average, a buyout generates a positive Revenue Growth-effect of 2.6 percentage units, meanwhile the peer group in the sample exhibit a negative Revenue Growth-effect of 5.0 percentage units. When observing EBIT-Margin, we find that on average a buyout generates a 5.6 percentage units upturn. The nursing home operators acquired by private equity firms exhibit an average EBIT-Margin of 2.1 percent pre-buyout and 7.7 percent post-buyout. The EBIT-Margin development observed for the peer group is also positive, but significantly smaller with a change of 1.6 percentage units. The increase in EBIT-Margin, following a private equity buyout, is largely driven by an upturn in Employee Efficiency. In the average buyout, the Employee Efficiency metric goes from SEK 70 thousand pre-buyout, to SEK 115 thousand post-buyout, representing an increase of 64 percent. The peer group's Employee Efficiency is nearly unchanged for the same period. The large impact on Employee Efficiency can be derived from a small increase in personnel costs per employee accompanied by a significant upturn in revenue per employee. The notably low Employee Efficiency for the private equity group pre-buyout imply that private equity firms have targeted nursing home operators with low levels of Employee Efficiency historically.

Overall, the findings from our financial performance analysis indicate that private equity owned operators are more profit seeking than other Swedish nursing home operators. Our results are strong both with regards to cross sectional differences and looking at effects from buyouts.

5.0 EMPIRICAL RESULTS FROM QUALITY OF CARE ANALYSIS

The main purpose of the quality of care analysis is to evaluate if private equity ownership is associated with adverse effects on the quality of eldercare. We divide all Swedish nursing homes into four mutually exclusive but collectively exhaustive categories with regards to mode of provision: (i) *Private Equity* (ii) *Private For Profit*, (iii) *Private Not For Profit*, and (iv) *Public*. We begin by conducting a cross sectional comparison of quality indicators between the four modes of provision. Demographic differences between municipalities are controlled for using a multiple linear regression model. Thereafter, we introduce panel data to evaluate the impact on care quality of a private equity provider taking over operations of a nursing home.

5.1 Cross sectional differences in the quality of care

When we compare mean values for quality indicators from the 2010 NBHW survey, categorizing Swedish nursing homes into *Private Equity* (N=185), *Private For Profit* (N=118), *Private Not For Profit* (N=49), and *Public* (N=2316), we observe some deviations between *Private Equity* and the two other private modes of provision. However, we observe numerous deviations between *Private Equity* and *Public*. We divide our findings from the comparison with regards to structure and process related quality indicators.

The structure quality dimension

Looking at structure quality indicators we see differences between *Private Equity* and all other modes of provision on some important quality indicators related to staffing. Findings on structure quality indicators are summarized in Table 5.1.

Table 5.1

The structure quality dimension. Cross sectional means and differences in 2010 for four modes of provision. Private Equity is the reference group.

Mode of provision:		<i>Private Equity</i>	<i>Private For Profit</i>	<i>Private Not For Profit</i>	<i>Public</i>
N =		185	118	49	2 316
Structure Quality Dimension	Quality Indicator				
	Employees per Resident (#)	0.79	0.83	0.84	0.88
	<i>Mean difference</i>	-	+0.04*	+0.05*	+0.09***
	Hourly Employment (%)	18.7	14.6	16.9	12.8
	<i>Mean difference</i>	-	-4.0**	-1.7	-5.8***
	Full-time Employment (%)	46.3	44.2	47.9	45.5
	<i>Mean difference</i>	-	-2.1	+1.5	-0.9
	Employee Turnover (%)	11.0	12.1	12.1	12.5
	<i>Mean difference</i>	-	1.1	+3.2	+1.5
	Employees per Manager (#)	28.9	26.2	28.5	32.6
	<i>Mean difference</i>	-	-2.6	-0.3	+3.7***
	Basic Education	76.2	81.9	82.5	81.9
	<i>Mean difference</i>	-	+5.8***	+6.3**	+5.7***
	Professional Education (%)	11.0	9.9	10.7	9.1
	<i>Mean difference</i>	-	-1.0	-0.3	-1.8***
	Individual Accommodation (%)	93.9	87.7	89.8	94.0
	<i>Mean difference</i>	-	-6.2**	-4.1	+0.1
	Individual Kitchen (%)	73.4	56.7	57.5	67.2
	<i>Mean difference</i>	-	-16.8***	-15.9**	-6.2*
<i>t</i> -test results:					
*		p<0.1			
**		p<0.05			
***		p<0.01			

One of the most hotly debated quality indicators in the public discussion is the number of Employees per Resident. From our tests we find that there are differences in means of statistical significance, between *Private Equity* and all other modes of provision. On average a nursing home belonging to *Private Equity* has 5 percent fewer employees per resident than nursing homes belonging to the two other private modes of provision, and 10 percent fewer employees per resident than a nursing home belonging to *Public*.

With this in mind we take a closer look at the employees form of employment and educational background. We observe no deviations of statistical significance looking at ‘the proportion of employees working at least 85 percent of full time’ between *Private Equity* and any of the other modes of provision. Looking at ‘the proportion of employees working on an hourly basis’ we see no difference of statistical

significance between *Private Equity* and *Private Not For Profit*. There is however fewer employees working on an hourly basis in nursing homes operated by *Public* or *Private For Profit*, possibly giving rise to residents at those nursing homes having a stronger sense of familiarity with the staff. The conclusion we draw is somewhat clouded by the fact that all four modes of provision have about the same proportion of full time employees, and that the people not employed on an hourly basis or on a full-time basis are employed on part time contracts on which we have no information.

With regards to Employee Turnover we observe no differences in means of statistical significance between *Private Equity* and any of the three other modes of provision. One of three structure indicators that suggest *Private Equity* nursing homes to be better than *Public* is Employees per Manager. *Private Equity* does not deviate significantly from *Private For Profit* or *Private Not For Profit* but has on average fewer employees per manager than *Public*. Although a somewhat unclear quality indicator, it should stand to reason that fewer employees per manager yields more effective operations.

In terms of employee education the quality indicators' differences in means show mixed but statistically significant results. With regards to 'the proportion of employees with an upper secondary school health care education' *Private For Profit*, *Private Not For Profit* and *Public* deviate positively from *Private Equity*. On the other hand, looking at 'the proportion of employees with a university or college health care education', *Private Equity*'s mean deviates positively from all other modes of provision, although only with statistical significance in comparison to *Public*.

The last two structure quality indicators included in the analysis concern the availability of individual facilities in the nursing homes. We observe that a lower proportion of residents in nursing homes belonging to *Private For Profit* have individual bedrooms compared to *Private Equity*. In comparing *Private Not For Profit* and *Public* with *Private Equity*, we see no significant deviations. With regards to 'the proportion of residents that have access to an individual kitchen' we see that *Private Equity* outperform all other modes of provision. Regarding both of the quality indicators concerning nursing home facilities, the relationship to mode of provision can be questioned. Since in general, a private nursing home operator does not own the facilities, any link between mode of provision and these indicators is likely a co-varying phenomenon rather than a causal one.

The process quality dimension

Looking at process quality indicators we see large differences between the private modes of provision and *Public*. *Private Equity* display the highest scores of all modes of provision on four out of seven quality indicators analyzed. Findings on process quality indicators are summarized in Table 5.2.

Table 5.2

The process quality dimension. A cross sectional comparison of means between the four modes of provision in 2010. Private Equity is the reference group.

Mode of provision:		<i>Private Equity</i>	<i>Private For Profit</i>	<i>Private Not For Profit</i>	<i>Public</i>
N =		185	118	49	2 316
Process Quality Dimension	Quality Indicator				
	Participation	93.2	90.1	90.4	85.4
	Mean difference	-	-3.2	-2.8	-7.8***
	Participation in Update (%)	85.8	79.6	73.8	65.1
	Mean difference	-	-6.3*	-12.0**	-20.7***
	Nightly Fast (%)	93.7	95.8	82.9	74.7
	Mean difference	-	+2.1	-10.8**	-19.0***
	Medication Review (%)	77.6	80.1	89.7	65.9
	Mean difference	-	+2.5	+12.1**	-11.8***
	Risk of Falling (%)	78.2	69.5	76.9	51.2
	Mean difference	-	-8.7**	-1.3	-27.0***
	Risk of Pressure Ulcers (%)	69.6	64.1	67.2	42.0
	Mean difference	-	-5.5	-2.4	-27.6***
	Risk of Malnutrition (%)	75.7	68.2	76.1	50.8
	Mean difference	-	-7.5	+0.5	-24.9***
<i>t</i> -test results:					
*		p<0.1			
**		p<0.05			
***		p<0.01			

We begin by looking at ‘the proportion of residents participating in formulating the care plan design’ and observe that *Public* has a significantly lower average than *Private Equity*. In comparing *Private Equity* with the two other groups of private operators, deviations are small and of no statistical significance. Next, we look at ‘the proportion of residents participating in updating the care plan design’ and again find that *Public* has a lower average than *Private Equity*. Unlike the previous indicator *Private Equity* also has a higher average than both other private modes of provision. Our findings on the participation quality indicators are noteworthy since the NBHW previously have found that the elderly themselves rate these indicators as important aspects of care quality (NBHW, 2008).

Concerning ‘the proportion of residents with a duration between meals that is at the most 11 hours’, *Public* and *Private Not For Profit* deviate negatively from *Private Equity*. With regards to *Private for Profit* we observe no difference of statistical significance. Next, we observe that ‘the proportion of residents that has had the prescribed medication assessed within the last 12 months’ are fewer in nursing homes belonging to *Public* as compared to *Private Equity*. However, on this quality indicator *Private Equity* has a statistically significantly lower average than *Private Not For Profit*. Overall we find it somewhat surprising that yearly medication assessments are not more common than 68 percent on average for the nursing

home population, implying that almost one third of the residents in Swedish nursing homes have not had their prescribed medication assessed within the last 12 months.

Finally, we compare differences with regards to three types of risk assessments that the nursing homes undertake. We begin by looking at ‘the proportion of residents assessed for risk of falling’ and conclude that *Private For Profit* and *Public* has a lower average than *Private Equity*. Concerning *Private Not For Profit*, we observe no deviation of statistical significance. When comparing means for ‘the proportion of residents assessed for risk of pressure ulcers’ we observe that *Private Equity* has a higher mean than *Public*, while we observe no statistical significance in terms of deviations against the two other private modes of provision. Lastly, we look at ‘the proportion of residents assessed for risk of malnutrition’ where results are identical to the previously mentioned quality indicator: *Public* deviates negatively from *Private Equity* while we observe no significant differences in means among the private modes of provision.

Results adjusted for demographic factors

To control for demographic effects highlighted in previous research we conduct a multiple linear regression analysis to model the relationship between each quality indicator and the mode of provision. We include control variables for population density, average income per person, and the yearly amount of money spent by a municipality on eldercare and assistance. Overall, we see little difference compared to the unadjusted cross sectional analysis. Results adjusted for demographic effects are summarized in Table 5.3.

Table 5.3

Significance levels and betas for mode of provision dummy variables after adjusting for demographic factors in a multiple linear regression analysis.

Mode of provision:		<i>Private For Profit</i>		<i>Private Not For Profit</i>		<i>Public</i>	
N =		118		49		2 316	
		Sig.	Beta	Sig.	Beta	Sig.	Beta
<i>Quality Indicator</i>							
Structure Quality Dimension	Employees per Resident (#)	-	+0.04	-	+0.04	***	+0.09
	Hourly Employment (%)	**	-3.08	-	-1.74	***	-3.95
	Full-time Employment (%)	-	-0.39	-	-3.10	***	+4.81
	Employee Turnover (%)	-	+0.93	-	+3.40	-	+1.14
	Employees per Manager (#)	-	-2.46	-	-0.77	*	+4.16
	Basic Education (%)	**	+5.14	**	+7.04	***	+4.52
	Professional Education (%)	-	-0.46	-	-0.65	-	-0.39
	Individual Accommodation (%)	**	-5.81	-	-4.33	-	+0.76
	Individual Kitchen (%)	***	-16.01	**	-14.52	-	-3.55
Process Quality Dimension	Participation (%)	-	-2,02	-	-2,25	**	-4,73
	Participation in Update (%)	-	-4,90	*	-10,56	***	-16,45
	Nightly Fast (%)	-	+3,76	*	-12,99	***	-12,73
	Medication Review (%)	-	+3,75	-	+10,40	**	-8,10
	Risk of Falling (%)	-	-5,63	-	-3,85	***	-18,91
	Risk of Pressure Ulcers (%)	-	-3,02	-	-4,10	***	-19,63
	Risk of Malnutrition (%)	-	-5,86	-	-0,62	***	-19,35
t-test results:							
*		p<0.1					
**		p<0.05					
***		p<0.01					

In terms of structure quality, findings from the previous analysis are confirmed with a few variations. In terms of Employees per Resident we no longer see statistically significant deviations between *Private Equity* and the two other private modes of provision. Still though, the model coefficients indicate with some certainty that Employees per Resident is higher for these two modes of provision compared to *Private Equity*.

Furthermore, we see that the dummy variable indicating that a nursing home belongs to *Public* has significant explanatory power on ‘the proportion of employees working at least 85 percent of full time’.

This finding was not observable in the unadjusted comparison. The proportion of employees working on an hourly basis is still significant and favoring *Private For Profit* and *Public* compared to *Private Equity*. Next, we note that the difference between *Public* and *Private Equity* with regards to Individual Kitchen, which favored *Private Equity* before, is not significant after we adjust for demographic factors. As pointed out, private equity owned operators run the vast majority of their homes on contract, and the municipalities usually own the buildings, which makes this finding unsurprising.

For process quality indicators, findings from the unadjusted analysis are confirmed with three exceptions. Firstly, the difference between *Private Equity* and *Private For Profit*, with regards to ‘the proportion of residents participating in updating the care plan design’, is no longer of statistical significance. The quality indicator favored *Private Equity* compared to *Private For Profit* in the unadjusted analysis. Additionally, the difference between *Private Equity* and *Private Not For Profit* in ‘the proportion of residents that has had the prescribed medication assessed within the last 12 months’ is no longer of statistical significance. One should however keep in mind that the number of observations in *Private Not For Profit* is small. Lastly, we observe that the deviation in means between *Private Equity* and *Private For Profit* with regards to ‘the proportion of residents assessed for risk of falling’ no longer is of statistical significance.

5.2 Effects from Operational Takeovers on the quality of care

In an attempt to determine if the differences we observe between private equity and the other modes of provision is a causal consequence, or if quality indicators and mode of provision simply co-vary, we introduce panel data. The panel data allows us to study quality indicators in nursing homes before and after “Operational Takeovers”, defined as any type of event generating a change in mode of provision to *Private Equity*. The analysis is limited by the fact that fewer quality indicators existed in earlier versions of the NBHW quality survey. A further limitation is put on the analysis since the number of nursing homes that underwent an Operational Takeover during 2008 through 2010 are limited to 76 in total. Results on Operational Takeovers’ impact on the quality of care are summarized in Table 5.4.

Table 5.4

Mean quality differences before and after an operational takeover by a private equity owned provider.

<i>Quality Indicator</i>	<i>Before Operational Takeover</i>	<i>After Operational Takeover</i>	<i>Mean Difference</i>
Employees per Resident	0,97	0,78	-0,20***
Full-time Employment (%)	46,01	44,74	-1,27
Employee Turnover (%)	7,21	10,38	3,17
Basic Education (%)	70,93	74,62	3,69
Individual Accommodation (%)	97,33	95,79	-1,54
Individual Kitchen (%)	82,73	82,15	-0,57
Participation in Update (%)	76,01	72,16	-3,85

t-test results:

*** p<0.01

When looking at one of the more important structure quality indicators, Employees per Resident, we note two things. Firstly, the nursing homes that have undergone an Operational Takeover on average have a high number of employees per resident before the Operational Takeover. Secondly, there is a significant drop in Employees per Resident after the Operational Takeover. The analysis includes Operational Takeovers that occurred in three different years. The average number of employees per resident in a year prior to an Operational Takeover is 0.97, considerably more than the 2010 average for the entire population of nursing homes of 0.87. From that we conclude that private equity owned providers are not in a position where they take over understaffed nursing homes, rather the opposite is true. However, the average number of employees per resident after an Operational Takeover is 0.78, considerably less than both the number before an Operational Takeover and the 2010 average. This finding indicates that the differences in Employees per Resident, observed in the cross sectional comparison, is not a co-varying phenomenon, but a causal consequence from private equity ownership.

When comparing ‘the proportion of employees working at least 85 percent of full time’, variations are small before and after an Operational Takeover. This finding is not surprising since variations regarding this quality indicator were of no statistical significance in the unadjusted cross sectional comparison. Similar to the proportion of full-time employed, we see no differences with regards to Employee Turnover before and after Operational Takeovers.

With regards to ‘the proportion of employees with an upper secondary school health care education’ we observed statistically significant differences in our cross sectional comparison. Nursing homes belonging to *Private Equity* had a smaller ‘proportion of employees with an upper secondary school health care education’ than *Private For Profit*, *Private Not For Profit* and *Public*. When looking at this quality indicator before and after Operational Takeovers we observe no change of statistical significance. It is however reasonable to think that when it comes to changing the employees, or their level of education, it could take some time before effects from private equity ownership fully materialize. We therefore follow the nursing homes that underwent an Operational Takeover in 2008 and 2009 to see what happens up until 2010. We then notice that those nursing homes had a low amount of employees with Basic Education prior to the Operational Takeover, 66 percent for both years coincidentally, compared to an average in 2010 for the entire population of nursing homes of 81 percent. When we compare means in educational level for those homes taken over in 2008 and 2009, with the levels reached at the end of 2010, we observe a statistically significant increase in means, indicating that private equity owned operators work to increase the amount of people with a relevant high school education. We do however note that nursing homes that underwent an Operational Takeover in 2010 had a comparatively high proportion of employees with a relevant high school education, which dropped somewhat after the Operational Takeovers. The difference is however not statistically significant. Although not entirely conclusive, it seems as the difference observed in Basic Education in the cross sectional comparison could be an inherited problem rather than a causal effect from private equity ownership, especially since many more nursing homes

underwent an Operational Takeover in 2008 and 2009 (N=54) than in 2010 (N=19). A yearly breakdown of quality indicators before and after Operational Takeovers can be found in Appendix Table E2.

When it comes to quality indicators related to nursing homes' facilities we observe small variations between the year before and after an Operational Takeover. Both when looking at 'the proportion of residents with individual bedrooms' and 'the proportion of employees with individual kitchens' we see no statistically significant impact from Operational Takeovers. This finding is hardly surprising since a new nursing home operator, not being the owner of the property, have small incentives to make improvements to the facilities of the nursing home.

The only quality indicator in the process quality dimension that we follow over time is 'the proportion of residents participating in updating the care plan design'. In the unadjusted cross sectional comparison *Private Equity* had a statistically significant higher average than all other modes of provision. However, we observe no difference of statistical significance in means before and after the Operational Takeovers. We find it somewhat surprising that, although not statistically significant, there is small drop in 'the proportion of residents participating in updating the care plan design' after Operational Takeovers.

6.0 PROFIT SEEKING AND THE QUALITY OF ELDERCARE

In this paper we have attempted to make a contribution to the public discussion on whether profit seeking has adverse effects on the quality of eldercare. We have evaluated if private equity owned operators are more profit seeking than other nursing home operators, and if private equity ownership is associated with adverse effects on the quality of eldercare. The point of departure was the public debate resulting from a number of reported deficiencies in privately operated, but publically funded, nursing homes. Many expressed concern that an increased degree of profit seeking could have adverse effects on the quality of eldercare. Emblematic of this debate became private equity owned operators such as Attendo and Carema that were thought to extract large profits and hence, in many people's minds, deliver worse quality of care. One fear of people skeptic of private operators is that the eldercare industry demonstrates many of the characteristics of a quasi-market. Residents of nursing homes are usually weak end-consumers. The government is supposed to represent them as customers, but is also the main provider and financier of eldercare services. Moreover, it is often difficult for the government to evaluate service quality and as highlighted by Hart et al. (1996) while profit seeking private producers often manage to increase operational efficiency and hence lower costs, they also have incentives to shirk given incompleteness of contracts. With this in mind it is completely understandable that private equity operators on the elder care market have been questioned. The problem in the discussion on eldercare has not been a lack of theoretical logic, but that there is little sector specific empirical research. We therefore hope that this paper will serve as a valuable contribution in the area.

Are private equity owned operators more profit seeking than other nursing home operators?

In order to evaluate if private equity owned operators are more profit seeking than other Swedish nursing home operators, we compared three financial performance metrics for private equity owned nursing home operators and a peer group of other private for profit operators. Firstly, we made a cross sectional comparison between the two groups and found that private equity owned operators outperform the peer group with regards to EBIT-Margin and Employee Efficiency, but not Revenue Growth. When we studied the impact of private equity ownership on the same financial performance metrics, in an analysis of primary buyouts on the Swedish eldercare market, we found that a nursing home operator that has undergone a buyout, on average, outperforms a peer group of other for profit operators on all three financial performance metrics. Hence, we draw the conclusion that private equity owned nursing home operators stand out from other operators in terms of profit seeking. By itself, the only interpretation possible to make based on this finding is that: among a group of private nursing home operators, which are all for profit organizations, a certain sub-group, the private equity owned operators, seem to be particularly successful in terms of profitability. A number of factors explaining the success of private equity owned nursing home operators can be thought of. Firstly, they on average operate a larger amount of nursing homes than their peers do; therefore, economies of scale most likely materialize through smaller per-unit overhead expenses. Secondly, just like a particular group of producers could be exceptionally efficient in the production procedure in another industry, it is conceivable that private equity owned operators could be exceptionally efficient in the delivery of services in the eldercare industry. For example, one might hypothesize that private equity owned operators exhibit superior abilities in processes related to employee scheduling, handling medical records and serving food. However, the eldercare quasi-market probably represents one of very few contextual settings where higher operating profitability could be interpreted as anything else than a natural market economy characteristic. In fact, in most other industries, this achievement would likely be well regarded. Only when applying this chain of thought: that there could be an inherent conflicting relationship between profit seeking and quality of care in quasi markets, does one comprehend the possible problems arising from private equity ownership in the eldercare market.

Is private equity ownership associated with adverse effects on the quality of eldercare?

In order to assess if nursing homes belonging to private equity owned operators are associated with lower quality of care, we analyzed the NBHW quality survey on eldercare. We began by dividing 2668 Swedish nursing homes in four groups, based on mode of provision: *Private Equity*, *Private For Profit*, *Private Not For Profit*, and *Public*. We conducted a cross sectional comparison of 16 quality indicators, and adjusted for demographic differences between Swedish municipalities using a multiple linear regression model. Then, we introduced panel data in an attempt to determine if cross sectional differences in the quality of care are a causal consequence of mode of provision, or if quality indicators and the mode of provision simply co-vary. We found that private equity ownership is associated with a lower number of employees per resident and a higher proportion of staff employed on an hourly basis. Moreover, given that *Private Equity* is the

most profit seeking mode of provision, and that *Public* and *Private Not For Profit* are the least profit seeking, with *Private For Profit* somewhere in between, our results indicate that the number of employees per resident decrease with degree of profit seeking. In spite of these negative deviations in staffing related quality indicators, which could be considered prerequisites for good quality of care, we found that nursing homes run by private equity owned operators are associated with a reasonable length of the nightly fast; a high proportion of residents participating in formulating the care plan design; a high proportion of residents that has had the prescribed medication assessed within the last 12 months; and a high proportion of residents assessed for risk of falling, -pressure ulcers, -and malnutrition. Hence, we cannot draw the conclusion that private equity ownership is associated adverse effects on eldercare.

An interpretation

Our results do not conclusively support that the Swedish eldercare sector is characterized by a conflicting relationship between profit seeking and quality of care. We have established that private equity owned nursing home operators are more profit seeking than other operators in the industry but find little evidence that they provide worse quality of care. From our analysis it is apparent that they deviate negatively from other modes of provision with regards to staffing related quality indicators. However, they outperform all, or most, of their peers on other quality indicators related to processes. One could argue that a high number of employees per residents in itself does little for quality of care. It rather comes down to the quality of services the employees manage to give residents living in nursing homes. To assess this, one would preferably like to look at some measurement of customer satisfaction. However, in its absence, perhaps process related quality indicators give the best indication of quality of care. What is interesting is that within each mode of provision the number of employees per resident almost conclusively correlates positively with the process quality indicators. The relationship does indicate that if a nursing home has more employees per resident, it has a greater chance of managing important processes that allows for better quality of care. This relationship makes it surprising that private equity owned nursing home operators, albeit their significantly lower staff levels, manage to outperform their peers on most process quality indicators reviewed in this study.

Applications and suggestions for future research

We are hopeful that the findings of this paper can serve as an empirical contribution to the public discussion on eldercare. Especially in the context of private equity firms' involvement in the eldercare sector, but also in the more general context of how profit seeking impacts the quality of welfare services.

For municipalities, the financiers of eldercare, the findings of this paper make an important contribution on what effects that should be expected from a contracting-out decision. If nursing homes are contracted out to private equity owned operators, the number of employees per resident will most likely decrease and larger proportion of the staff will be employed on an hourly basis. Municipalities can relate to this fact in at least two different ways: Firstly, they can trust in that private equity owned operators manage to run the nursing homes with maintained or improved quality of care, albeit a lower staff level and a larger

proportion of employees working for an hourly wage. This seems plausible based on the results presented in this paper, suggesting that private equity operated nursing homes are on average run with 10 percent fewer employees per resident than publically operated nursing homes, but still display higher scores on most process related quality indicators. Secondly, municipalities believing that certain staff levels and a low proportion of employees working for an hourly wage are important attributes not to compromise the quality of care, can specify minimum requirements on these metrics when contracting out nursing homes. Among care quality metrics, the number of employees per resident and the proportion of employees working for an hourly wage, are probably the most quantifiable and measurable ones. Hence, to formulate minimum requirement levels should not be difficult in a contracting-out process.

Put in the context of previous research, our results both verify, and expand, on the main findings of Stolt et. al (2011). Using the NBHW quality survey from 2007, and by distinguishing between public and private nursing homes, Stolt et al. (2011) found that private care providers emphasize service aspects rather than staffing related quality prerequisites when operating nursing homes. Our results verify this finding, but do also imply that different private care providers deviate from the public standard with varying magnitudes. The most profit seeking private nursing home operators, the ones owned by private equity firms, deviate the most. This goes both for the negative deviations in terms staffing related quality indicators and for the positive deviations in terms of process related quality indicators. Based on these findings, we hope that future research does not limit its scope to the private-public dichotomy, but to an increasing extent emphasize the heterogeneity of private eldercare providers. So far in Sweden, nationwide quality data reflecting the actual outcome of good eldercare: the customer satisfaction, has not been available on an individual nursing home basis. When, or if, such data becomes available, our study design can be reused to further investigate the relationship between profit seeking and quality of eldercare.

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APPENDIX

Table A1-A3: Cross sectional comparison of financial metrics in 2010

Table A1

Cross sectional comparison between Private Equity Operators and Peer Group Operators of Revenue Growth, 2010.

	Revenue Growth	Number of residents
Private Equity Operator 1	3,7%	570
Private Equity Operator 2	6,8%	3197
Private Equity Operator 3	15,1%	4175
Private Equity Operator 4	-41,5%	40
Private Equity Operator 5	46,8%	326
Private Equity Operator 6	-0,1%	99
Average Revenue Growth*	11,9%	
Peer Group Operator 1	90,7%	538
Peer Group Operator 2	24,6%	1156
Peer Group Operator 3	83,5%	318
Peer Group Operator 4	21,2%	331
Peer Group Operator 5	37,6%	314
Average Revenue Growth*	46,2%	

* Group averages are weighted based on the number of residents served by each operator

Table A2

Cross sectional comparison between Private Equity Operators and Peer Group Operators of EBIT-Margin, 2010.

	EBIT-Margin	Number of residents
Private Equity Operator 1	6,1%	570
Private Equity Operator 2	7,9%	3197
Private Equity Operator 3	3,2%	4175
Private Equity Operator 4	3,3%	40
Private Equity Operator 5	0,3%	326
Private Equity Operator 6	4,7%	99
Average Revenue Growth*	5,1%	
Peer Group Operator 1	1,3%	538
Peer Group Operator 2	3,0%	1156
Peer Group Operator 3	-1,3%	318
Peer Group Operator 4	1,1%	331
Peer Group Operator 5	0,2%	314
Average Revenue Growth*	1,6%	

* Group averages are weighted based on the number of residents served by each operator

Table A3

Cross sectional comparison between Private Equity Operators and Peer Group Operators of Employee Efficiency and underlying drivers, 2010.

	Revenue per Employee	Personnel Cost per Employee	Employee Efficiency*	Number of residents
Private Equity Operator 1	701	512	189	570
Private Equity Operator 2	498	361	137	3 197
Private Equity Operator 3	533	411	123	4 175
Private Equity Operator 4	143	123	19	40
Private Equity Operator 5	454	397	57	326
Private Equity Operator 6	705	434	270	99
Average Revenue Growth*			131	
Peer Group Operator 1	547	407	140	538
Peer Group Operator 2	487	386	100	1 156
Peer Group Operator 3	509	442	67	318
Peer Group Operator 4	541	458	83	331
Peer Group Operator 5	514	428	86	314
Average Revenue Growth**			101	

* Employee Efficiency = Revenue per Employee – Personnel Cost per Employee

** Group averages are weighted based on the number of residents served by each operator

Table B1-B3: Buyout effects on financial performance

Table B1

Buyout performance for Revenue Growth

	Revenue Growth			
	Pre-Buyout		Post-Buyout	
	-1	0	1	2
Buyout 1	-11,7%	-9,1%	-3,3%	-18,7%
Peer Group	32,1%	6,7%	15,1%	13,6%
Buyout 2	0,0%	9,2%	25,1%	92,9%
Peer Group	32,1%	6,7%	15,1%	13,6%
Buyout 3	115,4%	7,2%	17,4%	22,2%
Peer Group	32,1%	6,7%	15,1%	13,6%
Arithmetic means pre- and post-buyout				
Buyouts	20,0%		22,6%	2,6%
Peer Groups	19,4%		14,4%	-5,0%
Average Buyout Performance				7,6%

Table B2

Buyout performance for EBIT-Margin

	EBIT-Margin			
	Pre-Buyout		Post-Buyout	
	-1	0	1	2
Buyout 1	1,4%	6,3%	8,3%	4,9%
Peer Group	2,2%	2,7%	3,1%	5,1%
Buyout 2	6,2%	11,0%	9,8%	9,5%
Peer Group	2,2%	2,7%	3,1%	5,1%
Buyout 3	-9,3%	-3,0%	7,0%	6,6%
Peer Group	2,2%	2,7%	3,1%	5,1%
Arithmetic means pre- and post-buyout				
Buyouts	2,1%		7,7%	5,6%
Peer Groups	2,4%		4,1%	1,6%
Average Buyout Performance				3,9%

Table B3

Buyout performance for Employee Efficiency with breakdown of underlying drivers.

	Revenue per Employee (KSEK)			
	Pre-Buyout		Post-Buyout	
	-1	0	1	2
Buyout 1	253	426	524	413
Peer Group	467	472	531	461
Buyout 2	392	420	349	410
Peer Group	467	472	531	461
Buyout 3	395	432	509	487
Peer Group	467	472	531	461

Arithmetic means pre- and post-buyout

Buyouts	386		449	62
Peer Groups	470		496	26
Average Buyout Performance				36

	Personnel Cost per Employee (KSEK)			
	Pre-Buyout		Post-Buyout	
	-1	0	1	2
Buyout 1	210	341	407	330
Peer Group	356	368	413	359
Buyout 2	311	316	256	302
Peer Group	356	368	413	359
Buyout 3	344	377	371	338
Peer Group	356	368	413	359

Arithmetic means pre- and post-buyout

Buyouts	317		334	17
Peer Groups	362		386	25
Average Buyout Performance				-7

	Employee Efficiency (KSEK)*			
	Pre-Buyout		Post-Buyout	
	-1	0	1	2
Buyout 1	43	85	117	83
Peer Group	111	104	118	102
Buyout 2	80	104	93	108
Peer Group	111	104	118	102
Buyout 3	51	55	138	148
Peer Group	111	104	118	102

Arithmetic means pre- and post-buyout

Buyouts	70		115	45
Peer Groups	108		110	2
Average Buyout Performance				43

* Employee Efficiency = Revenue per Employee - Personnel Cost per Employee

Table C1: Classification of privately operated Swedish nursing homes**Table C1**

Mode of provision and responsible operator for Swedish nursing homes in 2010.

<i>Nursing Home</i>	<i>Municipality</i>	<i>Nursing Home Operator</i>	<i>Mode of Provision</i>
Agatens gruppböende	Göteborg, Centrum	Metafysen Vård AB	Private For Profit
Akalla äldreboende	Stockholm, Rinkeby Kista	Attendo	Private Equity
Allégården	Täby	Vårdstyrkan i Stockholm AB	Private For Profit
Allégården	Täby	Vårdstyrkan i Stockholm AB	Private For Profit
Almens äldreboende	Järfälla	Carema	Private Equity
Ametisten	Solna	Carema	Private Equity
Andreas Ands Minne	Uppsala	Andreas Ands Minne Stiftelse	Private Not For Profit
Arödsdals äldreboende	Uddevalla	Stiftelsen Bräcke Diakoni	Private Not For Profit
Aspen	Vellinge	Nordlandia Care	Private For Profit
Aspen	Ärjäng	Carema	Private Equity

Kista vård och omsorgsboende	Stockholm, Rinkeby Kista	Attendo	Private Equity
Attendo Långbrogården	Stockholm, Älvsjö	Attendo	Private Equity
Attundagården vårdboende	Täby	Attendo	Private Equity
Attendo	Täby	Attendo	Private Equity
Augustendal	Vallentuna	Carema	Private Equity
Axeltorps vårdhem	Kristianstad	JUTAS AB / Axeltorps vårdhem AB	Private For Profit
Backebo Sjukhem AB	Hässleholm	Backebo vård och omsorg AB	Private For Profit
Balder	Uppsala	Förenade Care AB	Private For Profit
Bastuplan	Linköping	Stiftelsen Bräcke Diakoni	Private Not For Profit
Bellevuegården	Malmö, Hyllie	Attendo	Private Equity
Berga omvårdnadsboende	Solna	Temabo	Private For Profit
Bergkälla	Sollentuna	Carema	Private Equity
Bernadotte	Uppsala	Kosmo	Private For Profit
Berzelius äldreboende	Mölndal	Göteborgs Kyrkliga Stadsmission	Private Not For Profit
Björkbacka	Östersund	Carema	Private Equity
Björkbacken	Åtvidaberg	Carema	Private Equity
Björkbacken	Lund	Carema	Private Equity
Björkbladet	Motala	Attendo	Private Equity
Björkegrenska gården	Gävle	Förenade Care	Private For Profit
Björkgården	Solna	Förenade Care	Private For Profit
Björkgården	Stockholm, Farsta	Stiftelsen Stora Sköndal	Private Not For Profit
Björkhaga	Perstorp	Björkhaga Kompetens AB	Private For Profit
Björklingegården	Uppsala	Förenade Care	Private For Profit
Björksätra	Stockholm, Skärholmen	Kavat Vård AB	Private For Profit
Blommelund	Upplands Väsby	Frösunda LSS AB	Private Equity
Bokebo Vårdhem	Höör	Kosmo	Private For Profit
Borgerskapets äldrehem	Stockholm, Södermalm	Stockholms Borgerskap	Private Not For Profit
Bra Hem	Stockholm, Östermalm	Kavat Vård AB	Private For Profit
Brismarksgården	Strömsund	Rådomsgården aktiebolag	Private For Profit
Broby gård	Täby	Carema	Private Equity
Brobygårds gruppboende	Täby	Carema	Private Equity
Broängen	Kristinehamn	Broängskyrkan	Private Not For Profit
Brunkullan	Östersund	Carema	Private Equity
Brushanen äldreboende	Linköping	Carema	Private Equity
Brålanda	Vänersborg	Carema	Private Equity
Bunkeflosgården	Malmö, Limhamn Bunkeflo	Attendo	Private Equity
Byavången	Tomelilla	Förenade Care	Private For Profit
Byholmens Vårdboende	Stockholm, Skärholmen	Carema	Private Equity
Byttorpsklint	Borås	Carema	Private Equity
Bäckbacka	Umeå	Bäckbacka Partners AB	Private For Profit
Daggkäpan	Höör	Ekonomisk Förening	Private For Profit
Dalbyhemmet	Uppsala	Förenade Care	Private For Profit
Daljungaregården	Falun	Temabo	Private For Profit
Danvikshem	Nacka	Stiftelsen Danviks Hospital	Private Not For Profit
Demensboende	Ängelholm	Kosmo	Private For Profit
Demensboende Bokhöjden	Ängelholm	Victum Omsorg	Private For Profit
Demensboende Solängen	Ängelholm	Attendo	Private Equity
Duvans vårdboende	Linköping	Attendo	Private Equity
Ebbagården	Uppsala	Diakonistiftelsen Samariterhemmet	Private Not For Profit
Edsby slott	Upplands Väsby	GF Gästhemmens Förvaltnings AB	Private For Profit
Ekbacken	Höör	Ekonomisk Förening	Private For Profit
Ekbacken Hus F	Sundbyberg	Carema	Private Equity
Ekbacken Hus H	Sundbyberg	Attendo	Private Equity
Ekehöjden demensboende	Danderyd	Attendo	Private Equity
Eken	Årjäng	Carema	Private Equity
Ekhaga äldreboende	Kungsbacka	Förenade Care	Private For Profit
Elinsborgs Vård- och omsorgsboende	Stockholm, Spånga Tensta	Kavat Vård	Private For Profit
Enebackens äldreboende	Österåker	HSB Omsorg	Private Not For Profit
Enskede Nya Servicehus	Stockholm, Enskede Årsta Vantör	Carema	Private Equity
Enskededalens servicehus	Stockholm, Enskede Årsta Vantör	Äldre i Stockholm AB	Private For Profit
Eskilsgården	Vellinge	Humana Omsorg AB	Private Equity
Eskilshem	Eskilstuna	Attendo	Private Equity
Evelid	Växjö	Carema	Private Equity
Ferlin	Uppsala	Kosmo	Private For Profit
Finskt Äldrecentrum	Stockholm, Enskede Årsta Vantör	äldringar	Private Not For Profit
Fiskebäck äldreboende	Göteborg, Västra Göteborg	Attendo	Private Equity
Floragårdens	Falkenberg	Floragårdens ekonomiska förening	Private For Profit
Fridhemmet	Malmö, Västra Innerstaden	Attendo	Private Equity
Fridhemmens servicehus	Stockholm, Kungsholmen	Temabo AB	Private For Profit
Fridkullagatans äldreboende	Göteborg, Centrum	Attendo	Private Equity
Fristad servicehus	Stockholm, Spånga Tensta	Attendo	Private Equity
Fruängsgårdens B-hus	Stockholm, Hägersten Liljeholmen	Carema	Private Equity
Frösunda	Solna	Attendo	Private Equity
Furan	Täby	Carema	Private Equity
Furuhöjden	Täby	Reaktivering Furuhöjden AB	Private For Profit
Fäladshöjden	Lund	Carema	Private Equity
Föreningen Tunabergs gruppboende	Södertälje	Föreningen Tunabergs Gruppboende	Private Not For Profit
Gammelgården	Linköping	Kosmo AB	Private For Profit
Gammeluddshemmet	Nacka	Gammeluddshemmet AB	Private For Profit
Ginstgården	Alingsås	Stiftelsen Bräcke Diakoni	Private Not For Profit
Glimmervägen Vårdboende	Uppsala	Aleris	Private Equity
Gnejsen	Uppsala	Aleris	Private Equity

Gotlands sjukhem	Gotland	Stiftelsen Gotlands Sjukhem	<i>Private Not For Profit</i>
Gottfridsbergs Gård	Linköping	Stiftelsen Bräcke Diakoni	<i>Private Not For Profit</i>
Granparkens äldreboende	Norrälje	Nordlandia Care	<i>Private For Profit</i>
Grönskogen	Sundbyberg	Carema	<i>Private Equity</i>
Grönskogen Opalen	Sundbyberg	Carema	<i>Private Equity</i>
Gullogården	Mora	Personal Kooperativet Gullogården	<i>Private For Profit</i>
Gullvivan	Höör	Ekonomisk Förening	<i>Private For Profit</i>
Götaholms Äldreboende	Göteborg, Östra Göteborg	Göteborgs Kyrkliga Stadsmission	<i>Private Not For Profit</i>
Hagalund	Linköping	Kosmo AB	<i>Private For Profit</i>
Hagundagården	Uppsala	Förenade Care	<i>Private For Profit</i>
Hattstugan Vård och Utbildning	Gotland	hattstugan Vård och Utbildning AB	<i>Private For Profit</i>
Hemmet för Gamla	Stockholm, Skarpnäck	Carema	<i>Private Equity</i>
Herdens Äldreboende	Stockholm, Kungsholmen	Bruka Äldrevård AB	<i>Private For Profit</i>
Hjulebo	Kinda	Hjulebo Omsorg AB	<i>Private For Profit</i>
Hyllie Park Äldreboende	Malmö, Limhamn Bunkeflo	Hyllie Park Aktiebolag	<i>Private For Profit</i>
Häggens sjukhem	Hörby	Häggens Sjukhem AB	<i>Private For Profit</i>
Högalid	Trelleborg	Förenade Care	<i>Private For Profit</i>
Höganäs	Uppsala	Förenade Care AB	<i>Private For Profit</i>
Högdalen	Stockholm, Enskede Årsta Vantör	Carema	<i>Private Equity</i>
Höstfåbblan	Täby	Carema	<i>Private Equity</i>
Ingelshov	Växjö	Carema	<i>Private Equity</i>
Johannesgården	Stockholm, Farsta	Stiftelsen Stora Sköndal	<i>Private Not For Profit</i>
Josephinahemmet	Stockholm, Bromma	Stiftelsen Josephinahemmet	<i>Private Not For Profit</i>
Judiska hemmet	Tyresö	Föreningen Judiska Hem	<i>Private Not For Profit</i>
Järdalavägen sjukhem & demens	Linköping	Carema	<i>Private Equity</i>
Kalkstensgatan 16. Morängatan 34-36.			
Brearedsvägen 6	Varberg	Carema	<i>Private Equity</i>
Kalkstensgatans äldreboende	Norrköping	Attendo	<i>Private Equity</i>
Kampementets	Stockholm, Östermalm	Attendo	<i>Private Equity</i>
Karbyhemmet	Danderyd	Karbyhemmet	<i>Private For Profit</i>
Karl Nordströms väg 1.15. 9A. 9B	Varberg	Nordlandia Care	<i>Private For Profit</i>
Karl-Johansgården	Uppsala	Kosmo	<i>Private For Profit</i>
Karlslund	Ängelholm	Adium Omsorg AB	<i>Private For Profit</i>
Kasper	Malmö, Centrum	Förenade Care	<i>Private For Profit</i>
Kastanjen	Linköping	Carema	<i>Private Equity</i>
Kastanjens korttidsboende	Järfälla	Carema	<i>Private Equity</i>
Klövedals äldreboende	Tjörn	Carema	<i>Private Equity</i>
Kolla äldreboende	Kungsbacka	Aleris	<i>Private Equity</i>
Konstantinopel	Norrköping	A&O i Sverige Aktiebolag	<i>Private For Profit</i>
Koppargården	Åtvidaberg	Attendo	<i>Private Equity</i>
Koppargården	Stockholm, Hässelby Vällingby	Carema	<i>Private Equity</i>
Korsnäsgården	Falun	Carema	<i>Private Equity</i>
Kronodalsgården	Vellinge	Förenade Care	<i>Private For Profit</i>
Krusmyntan	Tyresö	Carema	<i>Private Equity</i>
Kullen	Ekerö	Carema	<i>Private Equity</i>
Kvarnbacken	Linköping	Aleris	<i>Private Equity</i>
Kvarnåsen	Ärjäng	Carema	<i>Private Equity</i>
Kyrkbyns Gästhem och Äppelbo	Stockholm, Farsta	Stiftelsen Stora Sköndal	<i>Private Not For Profit</i>
Kärna Vårdby Demens o Korttids	Linköping	Carema	<i>Private Equity</i>
Kärsgården	Habo	Carema	<i>Private Equity</i>
Legevisitten AB	Nynäshamn	Legesvitten AB	<i>Private For Profit</i>
Lenalundsgården	Sollentuna	Aleris	<i>Private Equity</i>
Lidingö sjukhem plan 5 t.o.m. 8	Lidingö	Attendo	<i>Private Equity</i>
Lällängen	Nacka	Carema	<i>Private Equity</i>
Lindens äldreboende	Järfälla	A&O i Sverige Aktiebolag	<i>Private For Profit</i>
Lindgården	Östra Göinge	Attendo	<i>Private Equity</i>
Lindgården	Jönköping	Stiftelsen Torpahemmet	<i>Private Not For Profit</i>
Lindhovshemmet	Botkyrka	Attendo	<i>Private Equity</i>
Lindåsa	Kristianstad	Stiftelsen Lindåsa	<i>Private Not For Profit</i>
Lindögården	Västervik	Attendo	<i>Private Equity</i>
Linghems vårdboende	Linköping	Carema	<i>Private Equity</i>
Lingården	Laholm	Humana Omsorg AB	<i>Private Equity</i>
Linné	Uppsala	Kosmo	<i>Private For Profit</i>
Linnégårdens	Stockholm, Östermalm	Carema	<i>Private Equity</i>
Liseberg	Stockholm, Älvsjö	Blomsterfonden	<i>Private Not For Profit</i>
Ljung Attendo Care	Värdö	Attendo	<i>Private Equity</i>
Ljunghem	Östersund	Attendo	<i>Private Equity</i>
Ljungkullens vårdboende	Partille	Carema	<i>Private Equity</i>
Ljuskällan	Ystad	Attendo	<i>Private Equity</i>
Lotsens äldreboende	Göteborg, Majorna-Linné	Carema	<i>Private Equity</i>
Lovisa gården	Haninge	Lovisagården Vård Aktibolag	<i>Private For Profit</i>
Lundgården	Uppsala	Förenade Care AB	<i>Private For Profit</i>
Lussembäckgården	Helsingborg	Humana Omsorg AB	<i>Private Equity</i>
Lyktan gruppboende	Täby	HSB Omsorg	<i>Private Not For Profit</i>
Långbroberg Parkinsonboende	Stockholm, Älvsjö	Attendo	<i>Private Equity</i>
Långbroberg vård och omsorgsboende	Stockholm, Älvsjö	Attendo	<i>Private Equity</i>
Löjtnantsgården	Stockholm, Östermalm	Immanuelkyrkans Vård Aktiebolag	<i>Private For Profit</i>
Lönnen äldreboende	Järfälla	A&O i Sverige Aktiebolag	<i>Private For Profit</i>
Malin omvårdnadsboende	Enköping	Aleris	<i>Private Equity</i>
Mariebergs äldreboende	Stockholm, Kungsholmen	Carema	<i>Private Equity</i>
Minerva	Sollentuna	Aleris	<i>Private Equity</i>
MiniKungsgården	Enköping	Nordlandia Care	<i>Private For Profit</i>

Mosebackehemmet	Norrtälje	Vård med proffs i Norrort AB	<i>Private For Profit</i>
Murteglet	Helsingborg	Carema	<i>Private Equity</i>
Mytlblomman	Berg	Förenade Care	<i>Private For Profit</i>
Myran	Östersund	Carema	<i>Private Equity</i>
Månstorpshemmet	Vellinge	Carema	<i>Private Equity</i>
Mörbylund gruppboende	Danderyd	Attendo	<i>Private Equity</i>
Nacka hemmet	Nacka	Finskt Seniorboende AB	<i>Private For Profit</i>
Nattsländan	Malmö, Limhamn Bunkeflo	Carema	<i>Private Equity</i>
Neuberghska/Bambergerska	Göteborg, Centrum	Neuberghska och Bambergers Stiftelse	<i>Private Not For Profit</i>
Nibblegården	Lund	Carema	<i>Private Equity</i>
Nissanstrand vårdboende	Halmstad	Attendo	<i>Private Equity</i>
Nockebyhöjdens äldreboende	Stockholm, Bromma	Sällskapet Vänner till Pauvres Honteux	<i>Private Not For Profit</i>
Norggården	Sollentuna	Attendo	<i>Private Equity</i>
Norshöjden	Falun	Carema	<i>Private Equity</i>
Nymilen	Stockholm, Bromma	Carema	<i>Private Equity</i>
Nysättrahemmet	Norrtälje	Attendo	<i>Private Equity</i>
Näsbyrarks Parkinsonboende	Täby	HSB Omsorg	<i>Private Not For Profit</i>
Nömmebergs vårdhem	Stockholm, Skärholmen	Nommeberg vårdehem AB	<i>Private For Profit</i>
Oasen vård- och omsorgsboende	Stockholm, Enskede Årsta Vantör	Attendo	<i>Private Equity</i>
Odinslund äldreboende	Danderyd	Aleris	<i>Private Equity</i>
Omvårdnad skönvik	Vansbro	Omvårdnad i Skönvik AB	<i>Private For Profit</i>
Omvårdnadshuset	Danderyd	Carema	<i>Private Equity</i>
Orion omvårdnadsboende	Enköping	Aleris	<i>Private Equity</i>
Oskarsro	Solna	Carema	<i>Private Equity</i>
Otium	Göteborg, Centrum	Tre Stiftelser	<i>Private Not For Profit</i>
Oxbackshemmet/Cederströmska	Södertälje	A&O i Sverige Aktiebolag	<i>Private For Profit</i>
Oxie Vårdhem	Malmö, Oxie	Attendo	<i>Private Equity</i>
Parkgården	Kalmar	Parkgården i Kalmar Aktiebolag	<i>Private For Profit</i>
Partnergruppen Björklunda	Kristianstad	INOM-Innovativ omsorg i norden AB	<i>Private Equity</i>
Partnergruppen Eslöv	Eslöv	INOM-Innovativ omsorg i norden AB	<i>Private Equity</i>
Partnergruppen Norra Vram	Bjuv	INOM-Innovativ omsorg i norden AB	<i>Private Equity</i>
Persikan	Stockholm, Spånga Tensta	Kavat Vård AB	<i>Private For Profit</i>
Pettersbergs gruppboende	Västerås	Carema	<i>Private Equity</i>
Pjäsgatan 10-12	Gotland	Attendo	<i>Private Equity</i>
Polhemsgården	Solna	Förenade Care AB	<i>Private For Profit</i>
Pomona. hus 2	Håbo	Attendo	<i>Private Equity</i>
Postiljonen	Vellinge	Förenade Care	<i>Private For Profit</i>
Postiljonens äldreboende	Stockholm, Farsta	Attendo	<i>Private Equity</i>
Ragnvallagården	Helsingborg	Humana Omsorg AB	<i>Private Equity</i>
Rallarosen	Täby	Ekonomisk Förening	<i>Private For Profit</i>
Revalyckan	Höganäs	Revalyckans Vård Aktiebolag	<i>Private For Profit</i>
Riddarstensgården	Lerum	Stiftelsen Bräcke Diakoni	<i>Private Not For Profit</i>
Riggargatan	Nyköping	Förenade Care	<i>Private For Profit</i>
Rio vård- och omsorgsboende	Stockholm, Östermalm	Attendo	<i>Private Equity</i>
Rosengården	Karlskrona	Vårdteam Blekinge AB	<i>Private For Profit</i>
Rosengården	Enköping	Attendo	<i>Private Equity</i>
Rosengården	Stockholm, Hägersten Liljeholmen	Attendo	<i>Private Equity</i>
Rosenhill	Tingsryd	Rosenhill Vård och Omsorg AB	<i>Private For Profit</i>
Rotsunda Strand	Danderyd	Carema	<i>Private Equity</i>
Rubinsens äldreboende	Upplands Väsby	Frösunda LSS AB	<i>Private Equity</i>
Rådans äldreboende	Sollentuna	Aleris	<i>Private Equity</i>
Rådomsgården	Sollefteå	Helgums församling	<i>Private Not For Profit</i>
S:t Anna	Nyköping	A&O i Sverige Aktiebolag	<i>Private For Profit</i>
S:t Knut	Vellinge	Norlandia Care	<i>Private For Profit</i>
Sabbatsbergsbyns äldreboende	Stockholm, Norrmalm	Stockholms Äldreboende AB	<i>Private For Profit</i>
Safiren	Järfälla	Frösunda LSS AB	<i>Private Equity</i>
Saltsjöbadens Sjukhus	Nacka	Carema	<i>Private Equity</i>
Sandstugan	Botkyrka	Carema	<i>Private Equity</i>
Sannagården	Varberg	Humana Omsorg AB	<i>Private Equity</i>
Sarvträsk äldreboende	Nacka	Aleris	<i>Private Equity</i>
Segevångsgården	Malmö, Västra Innerstaden	Förenade Care AB	<i>Private For Profit</i>
Sjätte Tvärgatan	Gävle	Carema	<i>Private Equity</i>
Sjöberga gård	Stockholm, Hässelby Vällingby	Sjöberga Gård AB	<i>Private For Profit</i>
Sjöängen	Östersund	Carema	<i>Private Equity</i>
Skogsbyn	Stockholm, Farsta	Stiftelsen Stora Sköndal	<i>Private Not For Profit</i>
Skogsbyns Gästhem med gruppboende	Stockholm, Farsta	Stiftelsen Stora Sköndal	<i>Private Not For Profit</i>
Skogsglantan vård och omsorgsboende	Stockholm, Enskede Årsta Vantör	Äldre i Stockholm AB	<i>Private For Profit</i>
Skogsgården	Motala	Attendo	<i>Private Equity</i>
Skogslyckan äldreboende D-hus	Uddevalla	Stiftelsen Bräcke Diakoni	<i>Private Not For Profit</i>
Skogslyckans äldreboende B-hus	Uddevalla	Stiftelsen Bräcke Diakoni	<i>Private Not For Profit</i>
Skräddaren	Umeå	Carema	<i>Private Equity</i>
Skräddargården	Linköping	Stiftelsen Bräcke Diakoni	<i>Private Not For Profit</i>
Skäpplandsgården	Örebro	Norlandia Care	<i>Private For Profit</i>
Slottsovalen	Värmdö	Attendo	<i>Private Equity</i>
Smedbygården	Österåker	Redolaris AB	<i>Private For Profit</i>
Smedsgård. Alstermo	Uppvidinge	Vidingegårdens Sjukhem Aktiebolag	<i>Private For Profit</i>
Sofiedals äldreboende	Uddevalla	Stiftelsen Bräcke Diakoni	<i>Private Not For Profit</i>
Solbacka	Krokum	Förenade Care	<i>Private For Profit</i>
Solbacka Demensboende	Norrtälje	Silverhemmet vård och omsorg AB	<i>Private For Profit</i>
Solbacken	Lund	Carema	<i>Private Equity</i>
Solbacken Vård	Nacka	Digni Care AB	<i>Private For Profit</i>
Solbackens Äldreboende	Stockholm, Kungsholmen	Carema	<i>Private Equity</i>

Solberga-Solhaga vårdhem	Örkellunga	Solklatrt Vård AB	Private For Profit
Solglimman	Östra Göinge	Solklatrt Vård AB	Private For Profit
Solgläntan	Simrishamn	Förenade Care	Private For Profit
Solgården	Ärjäng	Carema	Private Equity
Solgården	Laholm	Humana Omsorg AB	Private Equity
Solgården	Stockholm, Farsta	Stiftelsen Stora Sköndal	Private Not For Profit
Solrosen Demensboende	Gotland	Gotlands serviceboende AB	Private For Profit
Soltorp	Sollentuna	HSB omsorg	Private Not For Profit
St Jörgens gruppboende	Göteborg, Norra Hisingen	Attendo	Private Equity
Stattenhemmet	Helsingborg	Carema	Private Equity
Mathildagården	Norrköping	Stiftelsen John och Mathilda Lenning	Private Not For Profit
Stiftelsen Skaraborgs län sjukhem	Skövde	Stiftelsen Skaraborgs län sjukhem	Private Not For Profit
Stiftelsen Stockholms Sjukhem	Stockholm, Kungsholmen	Stiftelsen Stockholms Sjukhem	Private Not For Profit
Stigslunds Äldreboende	Gävle	Carema	Private Equity
Strandgården	Sollentuna	Carema	Private Equity
Strandhemmet	Malmö, Västra Innerstaden	Carema	Private Equity
Strandängsgatan vårdboende 2	Lomma	Carema	Private Equity
Strandängsgatan vårdboende 3	Lomma	Carema	Private Equity
Strandängsgatan vårdboende 4	Lomma	Carema	Private Equity
Strandängsgatan. vårdboende 1	Lomma	Carema	Private Equity
Stångberga sjukhem	Vallentuna	Tre Individer	Private For Profit
Sudergården Attendo Care	Gotland	Attendo	Private Equity
Svalnäs äldreboende	Danderyd	Blomsterfonden	Private Not For Profit
Sveagatan	Karlstad	Carema	Private Equity
Sälgen	Höganäs	Attendo	Private Equity
Sävegården/Ekebacken	Lerum	Attendo	Private Equity
Södergården	Norrköping	Attendo	Private Equity
Södergården älderdomshem	Västerås	Attendo	Private Equity
Sörgården	Växjö	Attendo	Private Equity
Tallbohovs äldreboende	Järfälla	Carema	Private Equity
Tallgården äldreboende	Danderyd	Blomsterfonden	Private Not For Profit
Tangon	Laholm	Humana Omsorg AB	Private Equity
Tapiren	Kristinehamn	Nordlandia Care	Private For Profit
Tellusvägen	Växjö	Attendo	Private Equity
Tibblehemmet	Täby	Attendo	Private Equity
Tomtebogården	Mora	Carema	Private Equity
Tornets äldreboende	Jönköping	Carema	Private Equity
Tors backe servicehus	Sollentuna	Aleris	Private Equity
Trollängen äldreboende	Tyresö	Carema	Private Equity
Trollängen. Korttidsboende	Tyresö	Carema	Private Equity
Trumslagarbacken älderdomshem	Västerås	Carema	Private Equity
Trygg vård i Mellanfjärden	Nordanstig	Trygg vård i Mellanfjärden AB	Private For Profit
Trygghetens äldreboende	Solna	Aleris	Private Equity
Tuehagen	Helsingborg	Nordlandia Care	Private For Profit
Tyringe sjukhem	Hässleholm	Tyringe sjukhem AB	Private For Profit
Täppan	Trelleborg	Carema	Private Equity
Tölö Smedja	Kungsbacka	Attendo	Private Equity
Uggslans gruppboende	Härnösand	Carema	Private Equity
Ullstämna vårdboende.			
Valthornsgatan	Linköping	Ullstämna vårdboende i Linköping AB	Private For Profit
Valkyrian	Tomelilla	Carema	Private Equity
Valla Park äldreboende	Linköping	Attendo	Private Equity
Vammarhöjden	Valdemarsvik	Geriacare AB	Private For Profit
Vasahemmet	Göteborg, Centrum	Betlehemsrykans Missionsförsamling	Private Not For Profit
Vasallparken	Kalmar	Kosmo	Private For Profit
Vasastadens Vårdbostäder	Linköping	Attendo	Private Equity
Veckobo äldreboende	Stockholm, Farsta	Stiftelsen Stora Sköndal	Private Not For Profit
Vega. vän 1	Lomma	Carema	Private Equity
Vega. vän 2	Lomma	Carema	Private Equity
Vega. vän 3	Lomma	Carema	Private Equity
Vegahusen	Göteborg, Centrum	Tre Stiftelser	Private Not For Profit
Vickan	Kungsbacka	Förenade Care AB	Private For Profit
Victoria Vård och Omsorgsboende	Malmö, Limhamn Bunkeflo	Förenade Care AB	Private For Profit
Vidhöge	Varberg	Humana Omsorg AB	Private Equity
Vigmund	Uppsala	Förenade Care AB	Private For Profit
Vikings Vårdhem	Flen	Vikings Vårdhem AB	Private For Profit
Villa Cederschiöld	Stockholm, Södermalm	Ersta Diakoni	Private Not For Profit
Villa Sjöängen	Norrköping	Villasjöingen Äldreboende AB	Private For Profit
Villa Vesta demensgruppboende	Stockholm, Hässelby Vällingby	Vingslaget Omsorgs AB	Private For Profit
Villa Vånga	Malmö, Västra Innerstaden	Villa Vånga Vårdhem AB	Private For Profit
Vinddraget	Gävle	Förenade Care	Private For Profit
VrinneviHus	Norrköping	A&O i Sverige Aktiebolag	Private For Profit
Vård i Rosstorp	Salem	Filadelfiaförsamlingen	Private Not For Profit
Vårdbo	Norrälje	Attendo	Private Equity
Vårdbo	Vallentuna	Attendo	Private Equity
Vårdbo	Österåker	Attendo	Private Equity
Vårdbo vallentuna	Stockholm, Spånga Tensta	Attendo	Private Equity
Vårdboende	Ängelholm	Kosmo	Private For Profit
Vårdboende Bäckgården	Ängelholm	Carema	Private Equity
Vårdhemmet Sjöstjärnan	Malmö, Limhamn Bunkeflo	Aktiebolag Sjöstjärnan	Private For Profit
Västergård	Malmö, Centrum	Förenade Care	Private For Profit
Västergården	Uppsala	Kosmo	Private For Profit

Västra Varvsgatan	Malmö, Centrum	Attendo	Private Equity
Åkerby äldreboende	Täby	Ekonomisk Förening	Private For Profit
Ånestad Herrgårdsboende	Linköping	Carema	Private Equity
Årstabergshemmet	Stockholm, Enskede Årsta Vantör	Attendo	Private Equity
Åsbacka	Karlstad	Carema	Private Equity
Åsengården	Stockholm, Hägersten Liljeholmen	Vingslaget Omsorgs AB	Private For Profit
Ålandsgårdens gruppboende	Härnösand	Carema	Private Equity
Äldreboendet Klippan	Haparanda	Carema	Private Equity
Äldreboendet Ribbings backe	Sollentuna	Temabo	Private For Profit
Äldrecentret Vigs Ångar	Ystad	Vigsångar AB	Private For Profit
Älvsjö vård- och omsorgsboende	Stockholm, Älvsjö	Carema	Private Equity
Ångabogården/Kaptenen	Älingsås	Attendo	Private Equity
Änggårdbacken	Göteborg, Centrum	Tre Stiftelser	Private Not For Profit
Ångsö äldreboende	Stockholm, Farsta	Attendo	Private Equity
Årtan	Lund	Carema	Private Equity
Österbo	Lund	Carema	Private Equity

Table D1: Adjusting for demographic differences between municipalities

Table D1

Cross sectional multiple linear regression output for 2010. The relationship between quality indicators and mode of provision controlled for demographic differences.

	Controlled for:				Dummy Variables for Mode of Provision		
	<i>Average Income*</i>	<i>Population Density**</i>	<i>Municipality Spending***</i>		<i>Private For Profit</i>	<i>Private Not For Profit</i>	<i>Public</i>
Employees per Resident	x	x	x	Beta Sig.	0,039 0,023	0,044 0,330	0,085 0,000
Hourly Employment	x	x	x	Beta Sig.	-3,08 0,023	-1,74 0,330	-3,95 0,000
Full-time Employment	x	x	x	Beta Sig.	0,39 0,873	-3,10 0,348	4,81 0,004
Employee Turnover	x	x	x	Beta Sig.	0,93 0,738	3,40 0,319	1,14 0,534
Employees per Manager	x	x	x	Beta Sig.	-2,46 0,445	-0,77 0,859	4,16 0,056
Basic Education	x	x	x	Beta Sig.	5,14 0,014	7,04 0,011	4,52 0,001
Professional Education	x	x	x	Beta Sig.	-0,46 0,586	-0,65 0,567	-0,39 0,495
Individual Accommodation	x	x	x	Beta Sig.	-5,81 0,024	-4,33 0,214	0,76 0,662
Individual Kitchen	x	x	x	Beta Sig.	-16,01 0,002	-14,52 0,042	-3,55 0,319
Participation	x	x	x	Beta Sig.	-2,02 0,550	-2,25 0,631	-4,73 0,040
Participation in Update	x	x	x	Beta Sig.	-4,90 0,270	-10,56 0,078	-16,45 0,000
Nightly Fast	x	x	x	Beta Sig.	3,76 0,482	-12,99 0,073	-12,73 0,000
Medication Review	x	x	x	Beta Sig.	3,75 0,449	10,40 0,114	-8,10 0,017
Risk of Falling	x	x	x	Beta Sig.	-5,63 0,256	-3,85 0,558	-18,91 0,000
Risk of Pressure Ulcers	x	x	x	Beta Sig.	-3,02 0,559	-4,10 0,549	-19,63 0,000
Risk of Malnutrition	x	x	x	Beta Sig.	-5,86 0,264	-0,62 0,929	-19,35 0,000

* The natural logarithm of municipality average income per person.

** Dummy variable: equals 1 if municipality population density is greater than 500 people per square kilometer, otherwise 0.

*** Money spent by a municipality on eldercare and assistance divided by the number of people over 65.

Table E1-E2: Operational Takeovers' impact on the quality of care

Table E1

Operational Takeovers* of Swedish nursing homes between 2008 and 2010.

<i>Nursing Home</i>	<i>Municipality</i>	<i>Date of Operational Takeover</i>	<i>Assumed Date of Operational Takeover</i>
Akalla äldreboende	Stockholm, Rinkeby Kista	2008-01-01	2008-01-01
Almens äldreboende	Järfälla	2008-07-01	2008-01-01
Ametisten	Solna	2010-03-01	2010-01-01
Attundagården	Täby	2008-10-01	2009-01-01
Attundagården	Täby	2008-10-01	2009-01-01
Augustendal	Vallentuna	2009-11-01	2010-01-01
Bergkälla	Sollentuna	2007-09-01	2008-01-01
Björkbacken	Lund	2008-09-01	2009-01-01
Björkbacken	Åtvidaberg	2008-09-01	2009-01-01
Björkbladet	Motala	2009-05-04	2009-01-01
Blommelund	Upplands Väsby	2009-01-01	2009-01-01
Bryggeriet	Sala	2010-01-01	2010-01-01
Demensboende Solängen	Ängelholm	2008-01-01	2008-01-01
Ekbacken Hus H	Sundbyberg	2008-04-01	2008-01-01
Eskilsgården	Vellinge	2010-01-01	2010-01-01
Fruängsgårdens B-hus	Stockholm, Hägersten Liljeholmen	2008-09-01	2009-01-01
Fäladsbjörden	Lund	2008-09-01	2009-01-01
Glimmervägen Vårdboende	Uppsala	2007-10-15	2008-01-01
Gnejsen	Uppsala	2007-10-15	2008-01-01
Hemmet för Gamla	Stockholm, Skarpnäck	2008-09-01	2009-01-01
Ingelshov. Carema	Växjö	2007-11-01	2008-01-01
Järdalavägen sjukhem & demens	Linköping	2009-01-01	2009-01-01
Kalkstensgatan 16. Morängatan 34-36.			
Brearedsvägen 6	Varberg	2008-10-01	2009-01-01
Kampementet	Stockholm, Östermalm	2007-12-01	2008-01-01
Kista vård- och omsorgsboende	Stockholm, Rinkeby Kista	2009-11-01	2010-01-01
Klövedals äldreboende	Tjörn	2008-04-01	2008-01-01
Kolla äldreboende	Kungsbacka	2007-11-01	2008-01-01
Koppargården	Åtvidaberg	2008-01-01	2008-01-01
Koppargården	Stockholm, Hässelby Vällingby	2008-09-01	2009-01-01
Korsnäsgränd	Falun	2008-05-01	2008-01-01
Kvarnåsen	Årjäng	2009-01-01	2009-01-01
Kärna Vårdby	Linköping	2009-04-01	2009-01-01
Kärnsgården	Habo	2007-12-01	2008-01-01
Lenalundsgården	Sollentuna	2007-09-01	2008-01-01
Linghems vårdboende	Linköping	2009-01-01	2009-01-01
Lingården	Laholm	2009-01-01	2009-01-01
Ljung Attendo Care	Värmdö	2009-09-01	2010-01-01
Lussembäcksgården	Helsingborg	2008-08-25	2009-01-01
Murteget. Carema	Helsingborg	2008-04-01	2008-01-01
Norrgränd	Sollentuna	2008-04-01	2008-01-01
Norsbjörden	Falun	2008-05-01	2008-01-01
Nysättrahemmet	Norrälje	2008-06-01	2008-01-01
Oskarsro	Solna	2008-01-01	2008-01-01
Partnergruppen Eslöv	Eslöv	2010-03-15	2010-01-01
Partnergruppen Norra Vram	Bjuv	2010-03-15	2010-01-01
Pomona. hus 2	Häbo	2010-01-01	2010-01-01
Postiljonens äldreboende	Stockholm, Farsta	2009-11-01	2010-01-01
Ragnvallagården	Helsingborg	2008-08-25	2009-01-01
Rio vård- och omsorgsboende	Stockholm, Östermalm	2009-11-01	2010-01-01
Rosengården	Enköping	2008-01-01	2008-01-01
Rotsunda Strand	Danderyd	2009-06-01	2009-01-01
Rubinsens äldreboende	Upplands Väsby	2009-01-01	2009-01-01
Safiren	Järfälla	2009-01-01	2009-01-01
Sandstugan	Botkyrka	2010-05-31	2010-01-01
Sannagården	Varberg	2010-04-01	2010-01-01
Skogsgården	Motala	2009-05-04	2009-01-01
Solbacken	Lund	2008-09-01	2009-01-01
Solgården	Årjäng	2009-01-01	2009-01-01
Solgården	Laholm	2009-01-01	2009-01-01
Stattenahemmet. Carema	Helsingborg	2008-04-01	2008-01-01
Stigslunds Äldreboende	Gävle	2009-11-01	2010-01-01
Strandgården	Sollentuna	2008-01-01	2008-01-01
Sudergården Attendo Care	Gotland	2009-01-01	2009-01-01
Sveagatan	Karlstad	2009-03-01	2009-01-01
Södergården	Norrköping	2009-01-01	2009-01-01
Södergården äldreomsorgshem	Västerås	2009-03-01	2009-01-01
Sörsgården. Attendo	Växjö	2010-01-01	2010-01-01
Tangon	Laholm	2009-01-01	2009-01-01
Tomtebogården	Mora	2009-09-01	2010-01-01
Täppan	Trelleborg	2010-01-11	2010-01-01
Tölö Smedja. Attendo	Kungsbacka	2008-10-01	2009-01-01
Valkyrian	Tomelilla	2010-02-01	2010-01-01
Valla Park äldreboende	Linköping	2009-01-01	2009-01-01
Vidhöge	Varberg	2010-04-01	2010-01-01

* An Operational Takeover is defined any type of event generating a change in mode of provision to Private Equity as

Table E2

Quality of care before and after an Operational Takeover. Breakdown of Operational Takeovers for individual years.

		Year of Operational Takeover			Total Average	Significance
		2008	2009	2010		
Employees per Resident (N=72)	Before	1,03	1,02	0,83	0,97	
	After	0,86	0,69	0,81	0,78	
	Operational Takeover Effect	-0,17	-0,32	-0,02	-0,20	0,003
Updated Participation (N=73)	Pre	82,15	90,16	80,06	85,00	
	Post	78,68	79,24	89,64	81,51	
	Operational Takeover Effect	-3,46	-10,91	9,58	-3,49	0,545
Basic Education (N=76)	Before	65,54	65,55	87,07	70,93	
	After	70,27	73,19	83,04	74,62	
	Operational Takeover Effect	4,73	7,63	-4,03	3,69	0,292
Full-time Employment (N=66)	Before	45,31	45,82	47,30	46,01	
	After	46,31	43,25	44,70	44,74	
	Operational Takeover Effect	1,01	-2,57	-2,59	-1,27	0,737
Employee Turnover (N=73)	Before	5,89	6,26	11,15	7,21	
	After	14,03	6,43	13,05	10,38	
	Operational Takeover Effect	8,15	0,16	1,90	3,17	0,239
Individual Accommodation (N=76)	Before	96,35	99,53	94,74	97,33	
	After	100,00	93,46	94,51	95,79	
	Operational Takeover Effect	3,65	-6,08	-0,23	-1,54	0,589
Individual Kitchen (N=76)	Before	68,69	95,88	78,89	82,73	
	After	95,45	76,26	75,74	82,15	
	Operational Takeover Effect	26,76	-19,62	-3,15	-0,57	0,924