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The Effect from Accrual Earnings Management in Private Equity Trade

A studie of the Norwgian Private Equity market's investments and divestments

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Summary

Our paper looks at account manipulation in private companies purchased and sold by private equity funds. We use a proxy for discretionary accrual earnings management to measure the degree of manipulation in accounting data, comparing the estimates with companies from the same industry and year. An estimate for nondiscretionary accrual earnings management is calculated using the modified- jones model, discretionary accrual is then assumed to be all parts of the total accrual earnings management not described by the nondiscretionary estimate. We have two separate datasets, one containing purchased portfolio companies and their comparable companies. The other dataset contains portfolio companies sold by private equity funds and their comparable companies. Information about equity transactions comes from the argentum research database and account information from each individual company comes from the SNF database (Norges Handelshøyskole and Samfunns- og næringslivsforskning AS 2017). From our proxy estimates we see no statistically significant persistence overall years or industries, this indicates there is no separable strategies for earnings management in companies owned by private equity funds compared to the market usage.

Content

1. Introduction

Financial reporting is a powerful tool, it gives owners data to control the trajectory of the company. While also summarizing firms' financials into comparable reports that investors can use to estimate company value. Some freedom is afforded to the accounting party for how to portray their firms' information. This method is called accrual accounting and is meant to help firms represent their financial state. However, an issue arises when discretion is used to misrepresent financial information. Misusing choices in financial reporting is very prevalent, because it is hard to detect and has few ramifications[1]. Since most of these decisions fall within accounting laws there is little risk in utilizing the discretion afforded to a company to misrepresent financial reports. There is also little that can be done by external or internal parties to deter or supervise account manipulation. Reported accounting data does not give a complete picture of every financial decision.

Most research has so far looked at public firms, often for a lack of data on private firms. Yet private firms face many of the same issues as public firms. One group of private firms are especially vulnerable, namely private equity owned firms. Private Equity based firms are frequently sold and interim performance is used by fund managers to raise new funds. In this paper we look at two distinct occurrences a company could go through in its lifecycle. We use the modified Jones Model to estimate the extent of account manipulation in individual firms. By using a sample of comparable companies that are not owned by a private equity fund, we can see if fund involvement leads to more or less manipulation.

The first time period we are looking at is before, during and after a private equity firm purchases a company. We investigate what happens to a company when they have new owners, in particular when those owners are a private equity fund. This question can inform us on company behavior before sales and how fund managers handle account manipulation. The second time period is before, during and after a private equity firm sells a company.

[1] The most well known case of earnings management were done by Enron through the late 1900s. Where they got special dispensation by the US government to do evaluate assets based on market prices. The Enron case showcases illegal uses of account manipulation that went unchecked for too long, due to the lack of information reported in their accounts.

Similar to the other question, it involves transferring ownership stakes for a company. In this case we can investigate how fund managers will handle company accounts before selling the firm. Also, we can see how owners will react when they receive control of a company previously handled by a fund manager. There is an interesting dichotomy between the two periods, in one case private sellers are able to mislead the fund to overvalue the company. While in the other case, it is the fund that holds the power to manipulate the firms perceived value. When and how the different parties use this advantage will be interesting to examine.

The accrual accounting method is a strategy where a company can owe money for purchased products, but still report the acquisition of the goods. The choice for which accounting method should be implemented comes down to a company's management. This discretion allows management the option to either represent an accurate state of the company or to mislead the owners and other interested parties by manipulating the accrual reporting (Teoh, Wong and Rao 1998, pp. 175-176). We use the term earnings management when talking about the manipulation of accounting data mentioned above. The term earnings management has many definitions (Mora 2010), but we will base our paper on the description termed by Healy and Wahlen (1999, p. 368):

> *"Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."*

Earnings management is any manipulation of company accounts done by the firm's management. Creating misleading accounting data to represent a false image of the company (Healy and Wahlen 1999, p. 6). The simplest definition only involves manipulation of accounting data where manager can choose how to represent the company's financial state through an accrual accounting method. In a broader definition we can also include real investment decisions and real financial decisions made to alter reported earnings. The term does not include any external leverage the company or any affiliates of the company has on legislation or on the internal reporting processes.

Paul M. Healy and James M. Wahlen (1999) divide the motivations for earnings management into 3 main areas; capital market motivations, contracting motivations and regulatory motivations. Capital market motives refers to the use of earnings management to change external evaluations of the company, which influences sales prices for potential buyers. Contracting motives is the use of earnings management to meet a requirement or incentive set in a contract, these can both be external or internal contracts. Regulatory Motivations refer to the use of earnings management to circumvents industry-specific regulations and anti-trust regulations, avoiding the requirements made to secure a healthy and competitive industry or the requirements that secures the interest of all parties tied to a company.

Due to the varied reasoning for earnings management it can be very hard to identify instances it is being used. The company's accounts do not provide enough transparency and information to understand the exact intent behind accounting decisions (Kasznik 1999, pp. 59-60). Earnings managements utility makes it very accessible for companies to use some degree of earnings management. This stems from the difference between accounting standards and the criteria needed for indisputable accounting (Schipper 1989, pp. 92-93). This behavior will over time mean manager have severely over- or undervalued the company. Since this is so prevalent, markets will include the assumption that managers are manipulating the accounts to reach earnings goals and to better pricing (Stein 1989, pp. 655-656).

However, an overvalued company can quickly correct their accounts by reporting extreme losses. This counteracts all the accounted earnings, Scott (2009, p. 405) refers to this as a *big bath*. These cases also occur in other instances where managers want to meet the expectations of the owners to secure a new period as manager or match external evaluations of the company. (DeAngelo 1986, p. 4) (Healy and Wahlen 1999, p. 10). Summed up, a manager's intentions are reflected in the earnings management styles they choose. Private equity funds with influence over their portfolio companies will for example have a distinct strategy compared to individual owners, because they have different intentions with the company.

A private equity fund is classified as a temporary pooling of resources from a series of investors, with the purpose to invest in long term prospects. The length of an investment

varies, but investors have a predetermined timeline for how long a fund can operate. The timeline before the fund has to be disbanded is defined in the fund agreement, there are possibilities for time extensions in this agreement. To set a date when investments have to be liquidated or equity shares has to be handed over to investors sets a limit to the impact a fund can have on a portfolio company. In cases where the timeframe is shorter, it would benefit the fund managers to use forms of earnings management to portray their involvement in portfolio companies in a better light. Inflating the estimated value for the company to potential buyers, possibly getting a better return for the investment (Healy and Wahlen 1999)

The two most common categories for private equity funds are venture capital and buyout (Cendrowski 2008, pp.4-6). They carry distinct characteristics, as venture capital focuses primarily on newly established and growing companies that need resources to expand. While buyout mostly focuses on larger and established companies (Cendrowski 2008, p.21). where the fund managers can come in and make managerial or structural changes to increase profitability. Liquidating the results from an investment can be a difficult task, if stressed the exit price might fall underestimate of equity value. The most common ways for a fund to exit is either through an initial public offering or through a trade sale to another fund focusing on more mature prospects (Cendrowski 2012, p. 69). Private equity funds have a specific goal when they enter into a company, reflected in the earnings management decisions they make.

With the trends we see in earnings management and with performance incentives for private equity funds, it seems counter intuitive that research indicates involvement with a private equity fund will reduce the amount of earnings management in a portfolio company. This is especially true in cases where the private equity fund has an existing reputation for being reputable (Lee and Masulis 2011). A fund relies on external investors for capital, these external investors are interested in increased monitoring. To better gauge their own returns and to deter the use of earnings management (Feng 2015, pp. 618-619).

Potential investors rely on private equity funds to reduce the information asymmetry between a private company and purchaser. This trust builds on the reputation of the private equity fund, which is one of the possible reasons why the PE fund involvement will reduce earnings management. Decisions made in a portfolio company under the influence of a fund managers will reflect onto the fund, changing the portfolio companies accounting structure to be more transparent would for example open up for a greater level of trust from the

market. This is theorized to be one of the determining factors for the reduced earnings management (Katz 2009, pp. 624-627).

This is especially true when trading within the private industries where transparency is relatively low, Trade sales between one private party to another private party would therefore rely more on trust. When earnings management is used it can impact the quality of information further, any available accounting data can be manipulated by management for any of the reasons mentioned above. Since buyers cannot trust the evaluations they use to estimate a company's value, they will need greater incentives to compensate for the added risk (Beuselinck, Deloof and Manigart 2009, p. 612) (Healy and Wahlen 1999, p. 8). We want to focus on the Norwegian market with its own characteristics, that incentivizes its own approaches to earnings management. Especially due to the rapid growth we have seen in the private equity market, with Norwegian and foreign private equity funds investing a total of NOK 21,249 million in to Norwegian firms in 2017 (NVCA, s.v. Private Equity Funds in Norway – Activity report 2017). This makes the involvement private equity funds have in the Norwegian economy interesting to analyze further. Their governance over several companies and with their time limited ownership, gives a potential for earnings management. For this reason, our research question is formatted as following:

> *Are there any visible effect from Private Equity funds control over a portfolio companies' management in the use of discretionary accruals Earnings Management.*

Our measure for earnings management will be measured by a proxy for nondiscretionary accrual earnings management (NDA). Accrual earnings management refers to any manipulation in the accounts of a company's books, representing a distorted version of the economic reports (Healy and Wahlen 1999, p. 6). The total sum of accrual earnings management is made out of two parts, Discretionary accrual (DA) and NDA earnings management. The nondiscretionary forms of accrual earnings management are any revenue that has not been actualized but has been accounted for in the books. Discretionary reporting refers to accounting data that managers had oversight and input on. A calculated proxy of

this value would represent the difference of what was expected in company books and what was found.

We divide the research question into one dataset for companies bought by private equity funds and one dataset for companies sold by private equity funds. These datasets will contain a sequential 5-year period for each portfolio company with the third year being the purchase/sales year. We do not have purchase and sales information for all companies, because of this the number of observations will vary between datasets. The entry period is made out of 217 original treatment observations[2] over all industries. Due to a restriction in number of observations required to calculate propensity scores, we are only interested in industries with several observations spread across several years. This allows us to narrow down comparable companies to those in the same industry and in the same year. There are only four industries large enough to fit this criterion, which leaves us with 189 treatment observations.

We need a benchmark to test whether a measure for earnings management is similar to the estimates we have calculate for our portfolio company. The benchmark is made from companies found to be comparable with one of the treatment observations, compared on industry, accounting year and asset size. Then narrowed down further through propensity score matching. For the PSM we need a dependent variable, but the dependent variable we use is a proxy for NDA. To find the closest estimate for NDA we first narrow down companies based on accounting year, industry and asset size. This removes any extreme or unrelated observations, which leaves us with 21,987 control observations. For our exit period we have 160 treatment observations over all industries, with 136 of these observations from the four large industries. For our entry period this leaves us with 136 treatment observations and using the same criteria to narrow down control group [3]we, ending up with 10,147 control observations.

Through our analysis we have found little to indicate that companies in periods where they are being traded between a private equity fund and other private parties use a greater extent

[2] Treatment observations have a common denominator that affects them.

[3] A control group is any collection of data not using a specified effect found in the studied group.

of earnings management. The involvement of a private equity fund therefore shows no decrease or increase the use of earnings management in these two periods. From the results we conclude that there is little to no significant effect from a PE ownership on the DA in the two periods of interest. This only accounts for DA in the Norwegian private equity market, with more resources a more encompassing dataset involving other markets could be interesting to study further. Using the same periods, it would also be interesting to research the effect of real earnings management on portfolio companies.

2. Private Equity

Private Equity (PE) refers to company ownership through privately traded stocks, this allows the seller to choose who can purchase the firm. Unlike public equity, where every investor has the same rights to purchase stocks. PE firms mainly purchase and sell the privately traded types of equity. Resources for the firms' investments are collected through external investors and managed by fund managers. These firms offer long-term investment opportunities, where equity stakes are placed under management of the firm as an unquoted company with the possibility of high growth. This management model has *active ownership* approach, where they work closely with the portfolio companies' management to grow the company and increase its value (BVCA.co.uk «Private Equity Explained» 2019). The two most common strategies PE firms use when investing is called buyout and venture capital, but there are also other strategies: mezzanine financing, private investments in public equity (PIPEs) and Fund of Fund investments (FOF) (Cendrowski 2008, p. 4).

Private Equity firms (PE firms) form and manage Private Equity Funds (PE Funds). These funds are used as a "shared wallet" or as Cendrowski (2008) puts it; a *shared vehicle.* Where private investors can allocate their capital together for shared investments. Consolidating resources gives the individual investors greater influence as a coherent group and makes them a larger market participant. These PE firms function as managers and are called General partners (GP), while the external investors are called Limited Partners (LP). The LPs have little influence on the daily management, outside any predefined rules written in the fund's agreement. These LPs are often professional investors from public funds, private pension funds, banks, insurance companies or they are "high-net-worth" individuals that all contribute with a pre-specified amount of capital (Cendrowski 2008, p.5). Investment amount is set by the GPs through a financing round and depending on the funds popularity and size there can be multiple financing rounds[4].

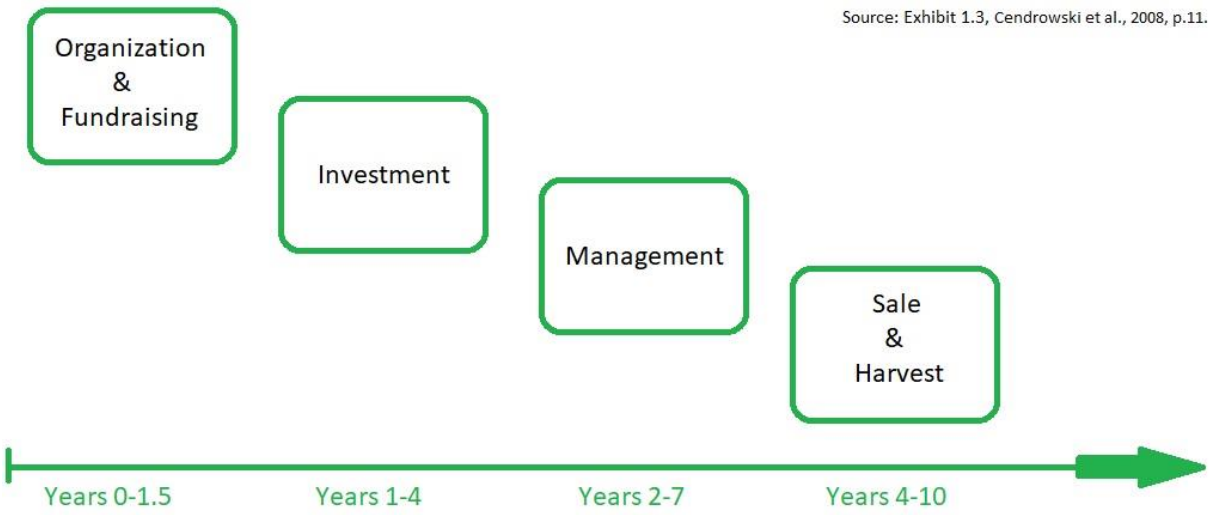
[4] A typical example of the GP/LP relationship is Argentum and the funds they invest in. Argentum is a Norwegian company and a large player in the Nordic PE markets, they are seen as a Limited Partner and operate as a Fund of other Funds.

PE funds are time-limited with a contractually binding lifetime, usually about 8-12 years (Cendrowski 2008, pp. 5-6), but in some circumstances this may vary, and the time limit could be lower. During this period, it is the GPs responsibility to act as caretakers and managers of the Fund's investments. They have the responsibility for investments, management and governance of portfolio companies. When the time limit is up, they are also responsible for the divestments. This is the period where different companies in the PE fund's portfolio are exited/sold (Cendrowski 2008, p. 6). The sales process is most commonly initiated in the fourth year of the fund's lifecycle, where there are several exit strategies. The most common exit strategies for PE funds are outside sale to a strategic/financial buyer, IPO or merger[5] (Cendrowski 2008, p. 6).

2.1 Fund Structure

Typically, the PE firms fund managers have the titles *General Partners* and are the main partners of the PE firm. They often have executive titles such as CFO, CEO, COO and CLO (Cendrowski 2008, p. 9). Under them are Associates and *Junior partners*, however there have been an increased use of outsourcing to solve their tasks. These tasks involve investment due-diligence, operational assessments, exit process, fundraising and more (Cendrowski 2008, p. 9).

[5] Investing in different PE funds that are managed by other GPs like Northzone, Norvestor, FSN capital, Altor Equity Partners and HitecVision Private Equity (Argentum.no «portfolio» 2019).



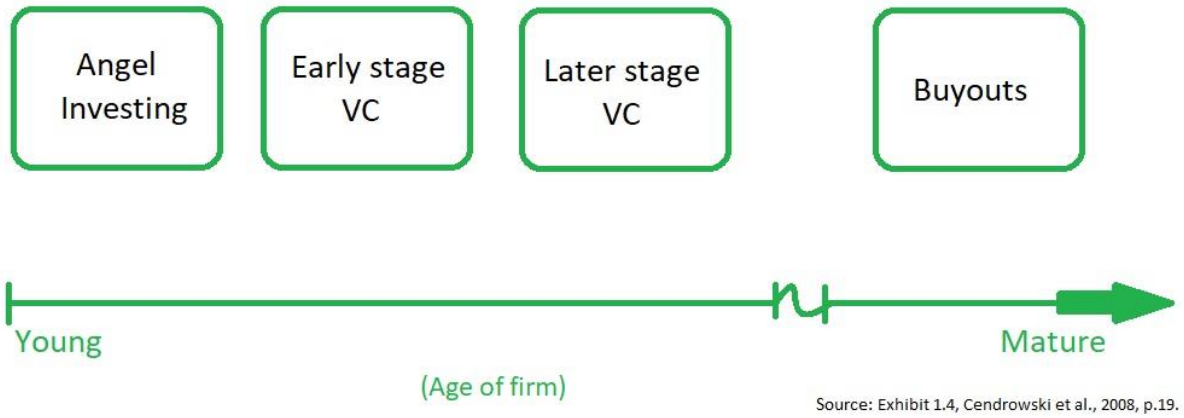
Source: Exhibit 1.3, Cendrowski et al., 2008, p.11.

2.2 Fundrising

PE firms use “closed Fund-raising”, a process that need non or few permits (Cendrowski 2008, p. 10). Which leads them to be more dependent on the firm’s reputation and relationships to create interest, so investors will remain interested in investing resources into future funds. This creates an incentive for the PE firm to deliver strong results, since any low returns could jeopardize interest in future fund raising (Cendrowski 2008, p. 11). Fund reputation is always being tested, since LPs use the PE firm’s periodic returns to gage the potential of future funds. With a fund-raising cycle around 3-4 years for a new fund, it is crucial that their reputation remains good (Cendrowski 2008, pp. 12-13) to retain interest from potential investors.

2.3 Difference in Funds

The different types of PE firms are related to the type of portfolio companies they invest inn. It's not the market or industry that defines them, but where in the portfolio company's lifecycle[6] the investment occurs (Cendrowski 2008, p. 19).



Source: Exhibit 1.4, Cendrowski et al., 2008, p.19.

Within Venture Capital (VC) the investment process happens over different stages. First a *primary investment* at a point where the company is still very young, then more capital can be allocated when the portfolio company has matured and meets a specified *milestone* (Cendrowski 2008, p. 21). This type of financing is called *staged capital*, which helps the VC company minimize its downside losses in advance. This also incentivizes the entrepreneur to grow the company further, making both parties similarly interested in the company's future. Then the entrepreneur can decide to keep more of his/her shares when going through the next financing round (Cendrowski 2008, p. 21). Most companies acquired by venture capital firms struggle to grow and reach their milestones, this can be devastating for the entrepreneur since he/she still have equity stakes in the company.

[6] It is normal to divide a company into four stages, the first stage is the starting face of a company. This is a time where the company needs to find its purpose/niche, revenue is low and failure rates are high. The second stage is the growth face, where companies are starting to produce revenue and have established themselves in the market. The third stage is the maturity face, where the company is well established in the market and the revenue growth is slowing down. The final stage is the decline face, where revenue is down and other actors are taking over the companies market shares.

Buyout and Leveraged Buyout (BO and LBO) uses some equity and a large portion of debt when financing their investments into new portfolio companies (Cendrowski 2008, pp. 21-22). Buyout firms focuses their investments on more mature companies, in both publicly and privately held companies (Cendrowski 2008, p. 21). They find firms that have strong and stable cash flows and a low debt-to-equity ratio relative to other comparable companies. Because they usually use the cash flow to finance a large portion of the investment and through taking on debt and placing it into the acquired company (Cendrowski 2008, p. 21).

2.4 Fund Process

The GP sets a funding target when setting up a new fund, this is the amount of capital the GP wants to raise to create the fund. The LPs each commit a portion towards this capital goal but waits to invest the resources. Until a GP calls for their total or partial share of capital as they start to invest into different portfolio companies. This could happen several times within the investment period, which usually lasts for the first four years of the fund's lifecycle. These calls for capital are sometimes scheduled in advanced, making it easier for LPs to plan their investments and capital flows (Cendrowski 2008, p. 6).

The sales period, also called the exit period or the divestment period. Is the time when GPs realize their returns on the fund's equity stakes. This may result in some great returns from a few companies and some losses in others (Cendrowski 2008, p. 6). Harvesting refers to the PE fund selling off their investments to the public through an IPO or to a new corporate buyer. This Is how the PE firms realizes their returns on investments, which thereafter is distributed to their investors (Cendrowski 2012, p. 69). Some portfolio companies may need more financing to get their needed or desired returns. While others can be liquidated faster and still get the desired returns on their investment (Cendrowski 2008, p. 6). These decisions are closely analyzed knowing that the fund has a pre-defined lifetime schedule, as specified in a legal contract between the GPs and LPs in the Limited Partnership Agreement (LPA)

(Cendrowski 2008, p. 7). In this agreement we have the incentives for the GPs that help to align their interests with the LPs interests. The contract also has safety measures for the LPs, through defined rules and restrictions for the GPs in their managing of the fund. It can also contain the possibility for an extension of the fund's lifetime. We also have agreements on structures for the LPs role and commitment: How funds returns are re-distributed, the GPs portion of the profits after divestments and the management fee while operating the fund (Cendrowski 2008, p. 7).

Parts if these agreements vary between the different forms of PE firms. Venture Capital (VC) often invest in many small companies and therefore have a different administrative strategy when managing their fund. With greater total investment costs for doing a larger quantity of deals through a fund's lifetime. Therefore, they need more capital to ensure that all deals on their scouted prospects can go through. Since there is a greater focus on acquiring companies, it is normal for the management fee to be 2,5 % of the fund's total capital. While Buyout funds GPs have greater variation in their management fee, depending on fund size and strategy. They have a better possibility for more "economy of scale" when doing fewer deals, with larger companies' compared to VC acquisitions (Cendrowski 2008, p. 7). The *carried interest* is the GPs portion of the capital gains on the fund's investments, as a compensation from managing LPs capital is normally set to 20 % of the profits. While they also receive an annual management fee at about 2 % of committed capital, for covering cost of investing and managing the fund (Cendrowski 2008, p. 63). The *carrie* incentivizes GP to maximize LPs returns, to maximize profits from portfolio company sales (Cendrowski 2008, p. 8).

There are several reasons to use IPOs as the exit strategy, for one the company receives a *public-company status*[7]. Which, in general generates a more positive reputation from being seen as more stable, transparent and assumed to have had a strong growth (Cendrowski 2012, pp. 69-70). Another positive angle is that a publicly traded company may have an

[7] public-company status refers to the extra transparency and increased interest that comes with companies going public. In these cases companies will receive a greater degree of trust from their investors.

easier and faster way to raise large amounts of capital. Since they already have public information it is less risky to loan them money (Cendrowski 2012, p. 70). It also makes the equity ownership more liquid, so stakeholders like entrepreneurs and PE funds can easily sell their shares if needed. In some circumstances stocks are given back to the LPs instead of cash, this is usually done for at least two reasons: First to maximize *the internal rate of return*[8] *(IRR)* (Cendrowski 2012, p. 70) and secondly the IPO may have a *lock-up period*[9] which may stop stakeholders from selling their shares within 60 to 360 days after the IPO, meant to stabilize the market price after an IPO (Cendrowski 2012, p. 70). The cost of exiting through an IPO is large compared to an ordinary trade sale, it may cost up to 10% of the capital raised through an IPO. Other costs are more indirect and are associated with laws and regulations (Cendrowski 2012, p. 71). A PE fund will often choose to take their portfolio company public if they think it will deliver a significant higher return, relative to a trade sale (Cendrowski 2012, p. 109). They compare the decision of an IPO up to the portfolio company's attractiveness, cost of transparency, extra cost, advantages with a more liquid equity stock and the security law regulations (Cendrowski 2012, p. 109).

The other exit strategy would be to instead exit through a Merger and/or Acquisition, also called trade sale. By choosing this exit type, the investors (LP and GP) do not have to wait out the *lock-up period* to calculate and redistribute the returns on their investments (Cendrowski 2012, p. 112). The different forms of merger are; forward mergers, where the "buyer" pays the target with an equity stake in its firm. Reverse merger, where the "buyer" joins and merge into the bought firm (Cendrowski 2012, p. 111). Horizontal takeovers, where firms in the same industry join forces formally, through a Merger or Acquisition. Vertical takeover, where a firm is bought from someone in their supply chain to become one firm controlling a larger part of the supply chain (Cendrowski 2012, p. 112). Strategic takeover, done defensively for growth and/ or financial reasons (Cendrowski 2012, p. 112).

[8] IRR is the minimum rate of return needed for a project or time specific firm restructuring to generate growth in the company.

[9] The lock-up period is the time where equity is not allowed be traded.

When initiating a sale process for their portfolio company, they start by finding potential buyers and then anonymously send out *teasers* (Cendrowski 2012, p. 116). Here the portfolio companies' historical financial statements are presented, together with a short description of the industry and their business plan. Then in the next round, those who have showed interest are given a more thorough view of the company's financials (Cendrowski 2012, p. 116). The paperwork in front of a sale is extensive, with projections of the future, argumentation and validation for why this financial "story" is possible or likely (Cendrowski 2012, p. 118). When the bids are submitted and all of those who were interested has given their offers to the PE firm selling the portfolio company, the more classified information is sent out. There will be set up meetings with management teams, then the interested buyers will start their deeper and more extensive *due diligence* of the portfolio company (Cendrowski 2012, p. 118). It is in this last process that many strategic buyers often fall out of the "auction", especially if there are many interested parties left and if there are many financial buyers left. After this the bidding rounds will take much of the potential profits and the sale will then be finalized (Cendrowski 2012, pp. 118-119).

2.5 Norwegian Private Equity

These statistics are develop for the Norwegian Venture Capital and Private Equity Association (NVCA, s.v. Private Equity Funds in Norway – Activity report 2017). They define Norwegian Private Equity as belonging to Norway when: *"the advisory team responsible for the investment and divestment is located in Norway",* which means that if the HQ is in Norway, then they are defined as a Norwegian PE firm. (NVCA, s.v. Private Equity Funds in Norway – Activity report 2017).

In total Norwegian PE firms has invested NOK 1,745 million into Venture Capital and NOK 6,587 million into Buyouts in 2017. The Norwegian PE firms have invested NOK 5,690 million in Norwegian companies. While foreign PE firms have invested NOK 15,560 million into Norwegian companies. Which sums up to a total of NOK 21,249 million invested into

Norwegian PE firms in 2017 (NVCA, s.v. Private Equity Funds in Norway – Activity report 2017). There was in total of 39 Sales and divestments by foreign and Norwegian PE firms from Norwegian companies in 2017, 18 if these where trade sales. 15 sales were handled by VC firms, which is ten fewer than the year before. 19 where handled by buyout firms, which is seven more than the year before. This shows that the Norwegian private equity market is active and manages a large sum of capital.

3. Earnings Management

Accounting data is meant to represent a company's financials, acting as a control for internal involved parties to understand the position of the company. It also gives information to external parties interested due to contractual, legislative or investment interests in the company. In an ideal world, all accounting data would perfectly explain the company's position. With no need to make decisions on how they will report different types of transactions. However, the criteria that needs to be met for indisputable accounting[10] is difficult to fulfill (Schipper 1989, pp. 92-93). This allows management to implement their own reporting strategies, which opens up for the opportunity to manipulate the accounting data to create a misleading image of the company.

The use of these strategies is termed earnings management and involves using accrual accounting to manipulate earnings reports. Companies shift cost and/or revenue between different accounting years, showing results not representative of the company's position. Earnings management also involves real investment or divestment in the company's assets to help with the currently lacking results. This form is called real earnings management, these two strategies represent a total strategy management can use to manipulate financial reporting (Roychowdhury 2006, p. 336). For our paper we focus on the usage of accrual earnings management in companies.

Scott (2015) names several strategies commonly used in earning management. For periods where losses are guaranteed, especially if there are pre-existing reasons for taking a loss in a period. The management could account for as much loss as possible in this period, the thought being that all amounts of loss will be viewed equally by the owners. This would mean future periods have fewer costs to account for. Depending on the extent these losses are shifted around, Scott (2009 p. 405) refers to this concept as "Income minimization" or

[10] Indisputable accounting refers to financial reporting where there are no choices given to the company on how to represent their accounts.

"Taking a bath" in more extreme cases. For our case management would use income minimization a few years before the sales period. So fewer losses were accounted for in the years right before the sale. On the opposite end of the spectrum there is "Income maximization" (Scott 2009 p. 405), where revenue is overexaggerated by filling sales that have not yet completed. In our case, management would use this form of account manipulation in the sales period to represent a higher revenue stream. The most common of these patterns is "income smoothening", which seeks to make period to period accounting more stable. This will often entail changing revenue streams or restructuring amortization strategies (Scott 2015). We need to keep these trends in mind while analyzing our data. There may be bias introduced by single companies that are going through one of these earnings management trends.

Healy and Wahlen (1999) refer to three different motivations for using accrual earnings management, capital market motivation, contracting motivation and regulatory motivation. Capital market motivation refers to a company's wish for higher or lower evaluation. In these cases management wants to misrepresent the financial reports to change the perceived value of the company. Short-term, this strategy can increase or decrease the sales price of a company. Due to the cyclical nature of earnings management the revenue and/or cost manipulation will even out and increase/lower valuations over a longer period. This is possible due to the lack of external control on company accounts. As long as it remains legal accounting it will be very difficult to find proof of earnings management. It is the lack of transparency and information that makes it difficult to understand the exact intent behind accounting decisions (Kasznik 1999, pp. 59-60).

The second form of motivation for using earnings management focuses on incentives and requirements that needs to be met within contracts, these are contractual motivation. There are different incentives and contractual obligations tied to most companies, each increasing the motivation for a company to use deceitful practices. A common catalyst for earnings management is tied to the managements employment contracts, usually there is some form of bonus tied to a measure of periodic results for the company. This leads to many managers using earnings management to smoothen out results, so they reach the designated number to max their bonuses (Kaplan 1985). For a similar effect, if a manager knows they will have a loss in a period they could choose to report all available losses for better results in future

periods. (Healy 1985 pp. 86-88). Among the different motivations to use earnings management, bonus incentives are one of the most widespread reasons. This is why external estimates can include the *smoothening* or *income minimization* strategies used by managers to reach their bonus incentives more frequently (Stein 1989, p. 655). Another form of contractual motivation is requirement tied to debt contracts or refinancing.

The final form of motivation for earnings management is regulatory earnings management. Which refers to the use of earnings management that circumvents industry-specific regulations and anti-trust regulations. Having a small subset of companies controlling the majority of market shares in an industry can create anti-competitive behavior. To combat the issue, large corporations are limited by how much of the market shares they can consolidate through mergers and acquisitions. Regulations meant to limit consolidation and instead incentivize competition within an industry is called ani-trust regulation. To combat these limitations, corporations can use earnings management to decrease their earnings. With the consolidation question mentioned above, an answer for a corporation could be to use a *big bath* to decrease earnings and not break any anti-trust regulation. The other part of the regulatory motivations for earnings management is connected to industry specific regulations. Here a company could be limited by resource capacities or similar preventative measures to safeguard resources[11].

This form of accrual-based earnings management can range from legal manipulation, being in a grey area to being illegal account reporting. Since total transparency is not a legal requirement in these cases like they are in publicly traded stocks. The legality of manipulating accounting reports is difficult to pin down. Nevertheless, misrepresentation of a company's accounts to a potential sellers/buyer can occur and can lead to over- or underpricing. The new owner must also deal with the rebounding effect to any accrual-based earnings management that lead to the acquired company being over or undervalued in the first place.

[11] Norwegian deforestation regulations are one example of regulations meant to limit the use of resources.

We separate accrual-based earnings management into discretionary accrual (DA) and NDA. Management does not have control over NDA, as they are either mandated by law or necessary for the daily drift. On the other hand, DA allows managers to affect the outcome period to period. However, DA is hard to measure directly since there are no correct way to do accrual accounting. In the case of a Private Equity (PE) firm, the reputation a PE firm will affect to what extent they are willing to manipulate the accounting data. Katz (2009, pp. 624-627) believe this comes down to funds needing to maintain a good repour with their customers so that future funds will have the same level of interest among investors.

4. Method

The Earnings Management models Dechow, Sloan and Sweeney (1995, p. 207) explore in their research paper has similarities in how they approach finding discretionary accrual (DA). All models use the same measure for total accruals (TA) to estimate earnings management. The value is meant to represent all changes that was caused by accrual account manipulation. The gap between reported earnings and operational cashflows represent the total amount of earnings lost or gained thorough accounting policies or other forms of account manipulation (Healy 1985, p. 94). However, there is empirical evidence indicating that normally we would see negative estimates for TA in a given period. This is partly due to nondiscretionary accruals (NDA) normally being negative by nature (Deangelo 1986, p.409). We will get better depiction of the measure by looking at period to period changes. One side-effect of formatting the TA formula as a period measure, is that the NDA measure is close to zero. NDA generally do not change period to period. In these cases, accounting data cannot be affected by management and will therefore be less susceptible to external and internal variation. are not reported on the discretion of management and there are instead other deciding factors.

We calculate TA earnings management by using the formula developed by Paul M. Healy (Healy 1985, p. 94). Displayed bellow is the reformatted version used by Dechow, Sloan and Sweeney (1995, p. 207) for their research into earnings management. In the model we refer to total accrual earnings management as TA, while *Assets_last_year* refer to reported total assets from the previous accounting year. The formula uses 6 separate factors, 5 of the factors representing the difference in reported earnings operations and operational cashflows scaled to the company's assets. In the model below we use variable names to refer to the different values used in the estimate, where: *CA* refers to current assets, *CL* refers to current liabilities, payable tax refers to payable tax, STD refers to short term debt and *DEP* refers to depreciation and amortization in assets. The sixth factor scales the formula by the company's asset size, to create a more comparable measurement for different sized companies. Descriptions of all variables used in the process of estimating DA can be found in appendix V. "Δ" Signifies that the value is calculated from the difference of two values. In the case of

these time periods we use current accounting year minus the previous accounting year. This will also be true for every formula used in the paper.

1. $\Delta CA = CA_t - CA_{t\_1}$
2. $\Delta CL = CL_t - CA_{t\_1}$
3. $\Delta Cash = Cash_t - Cash_{t\_1}$
4. $\Delta STD = STD_t - STD_{t\_1}$
5. $DEP = DEP_t$

$$\frac{TA}{Assets\_last\_year} = \frac{(\Delta CA - \Delta CL - \Delta Cash + \Delta STD - DEP)}{Assets\_last\_year}$$

The next step in calculating AEM is to find the model that best explain the NDA. Which represents accrual earnings management that is not made under the management's discretion. As the understanding for AEM grows, new models are developed to better estimate NDA. The first model to estimate NDA was the Healy Model, it uses data from every period to calculate an average over time. This approach can more effectively use larger datasets, while also accounting for earnings management over multiple time periods. Different groups of companies are created from the different motivations and incentives managers have to use distinct degrees of earnings management. The average from each dataset is used to create comparable values that analysts can compare to the accuracy of the estimates. As we can see from the depicted Healy Model bellow, we divide TA over all periods from one dataset with the number of periods used (Healy 1985) (Dechow, Sloan and Sweeney 1995, p. 197). The DeAngelo Model makes the assumption that periodic differences in TA will only calculate changes in DA. A change in TA over two subsequent periods will therefore be an estimate for DA. This assumption is still used in modern AEM research to a degree. (DeAngelo 1986) (Dechow, Sloan and Sweeney 1995, p. 198).

The Jones Model moves away from the assumption that NDA will be constant over time. Instead the model estimates change in a firm's economic circumstances, to find what accrual decisions where not made on the discretion of the management. Instead of using the multiple

time periods we saw in the previous models, the Jones Model will focus on individual years (Jones 1991) (Dechow, Sloan and Sweeney 1995, pp. 198-199). This makes it a great tool for event studies[12] or other research that focuses on particular time periods. The industry model will similarly to the DeAngelo Model remove NDA. In this case the mean is not over directional earnings management, the model will instead use a mean over industries. The model assumes that NDA is similar over an industry (Dechow and Sloan 1991, pp. 199-200). This research was part of our reasoning when we decided to split companies into groups based on their industries.

The Healy Model

$$NDA\tau = \frac{\sum_t T A_t}{t}$$

The DeAngelo Model

$$DA_t = \Delta TA_t$$

The Jones Model

$$NDA_t = a_1\left(\frac{1}{A_{t-1}}\right) + a_2\left(\frac{\Delta REV}{A_{t-1}}\right) + a_3\left(\frac{\Delta PPE}{A_{t-1}}\right)$$

The Industry Model

$$NDA_t = \gamma_1 + \gamma_2 * median_I(TA_t)$$

[12] Event studies asses the impact of an event on a target firm.

4.1 Modified Jones-Model

As mentioned earlier we cannot produce an exact measure for DA. This is why several models have been developed to create estimates, using different assumptions around accrual earnings management. This is why the final product is defined as a proxy for discretionary accrual in the literature. The most commonly used formula is the modified Jones-Model, which uses 3 variables to estimate the model for NDA. Since DA and NDA should give us TA. What cannot be explained by NDA with a dependent variable TA, will be an estimate for DA. In other words, we try to estimate the TA using a model meant to find NDA. Any residual that could not be explained through the model is therefore account manipulation done with DA accounting. The first factor in the modified Jones-Model is a measure of company size, in the formula the second measure the changes in net *revenue* (REV) except for changes in *receivables* (REC). The final factor is gross *property, plant and equipment* (PPE) for the company. These three factors use three values in addition to the previous year reported assets; *REC* referring to money owed company, *REV* referring to operational revenue[13] and *PPE referring to long term/fixed assets.*

[13] Operating revenue is all revenue from the company's primary business.

$$\Delta REC = REC_t - REC_{t-1}$$

$$\Delta REV = REV_t - REV_{t-1}$$

$$\Delta PPE = PPE_t - PPE_{t-1}$$

1. $\alpha_1 = \frac{1}{Assets\_last\_year}$
2. $\alpha_2 = \frac{(\Delta REV - \Delta REC)}{Assets\_last\_year}$
3. $\alpha_3 = \frac{\Delta PPE}{Assets\_last\_year}$

$$NDA_t = a_1\left(\frac{1}{A_{t-1}}\right) + a_2\left(\frac{\Delta REV - \Delta REC}{A_{t-1}}\right) + a_3\left(\frac{\Delta PPE}{A_{t-1}}\right)$$

If we try to estimate the previously calculated TA based on the regression for NDA, the error between the predicted value and the TA estimate will produce a DA proxy. Both in the NDA formula and the complete formula bellow *Assets_last_year* has been shortened to A_{t-1}. While ε refers to the previously mentioned error rate, that estimates the DA.

$$\frac{TA_t}{A_{t-1}} = a_1\left(\frac{1}{A_{t-1}}\right) + a_2\left(\frac{\Delta REV - \Delta REC}{A_{t-1}}\right) + a_3\left(\frac{\Delta PPE}{A_{t-1}}\right) + \varepsilon_t$$

5. Hypothesis

We are investigating the following research question: *Are there any visible effect from Private Equity funds control over a portfolio companies' management in the use of discretionary accruals Earnings Management.*

To better answer the question, we form two hypotheses, separated by two different periods in a firm's life cycle. We use a statistical model to find discretionary accrual Earnings Management (DA) and choose to separate the data to remove bias. With the intention that this will make our research more robust. The first period involves private equity (PE) funds purchasing shares in a company and the second period is the sale of company shares from a fund. Previous research has found that PE firms incentivizes a better quality of financial reporting after the fund's entry (Beuselinck, Deloof and Manigart 2009, p. 612). This study was from the Belgium PE market, while we are more interested in investigating Norwegian based companies. To test this for our Norwegian Portfolio firms we will formulate our first hypothesis to focus on the entry period, when the fund is investing into portfolio companies.

H1: PE Portfolio Companies' discretionary AEM decreases in the entry period, relative to comparable companies.

The second hypothesis focuses on the divestment period, this is the time where PE investors sell their portfolio companies. There is research indicating that managers overstate earnings before selling, to get the investors optimistic about the company's future (Welch, Teoh and Wong 1995, p 64). While other papers on ownership by PE firms show that they have a disciplinary effect on their portfolio companies, increasing the quality in financial reporting similar to what was mentioned for hypothesis 1. Results oriented thinking would motivate them to inflate earnings and get higher values when divesting. However, as we mentioned above there is research that indicates they would rather give an accurate depiction of the

company's financials. One reason for this is the PE markets reliance on repeated business. Their reputation is a safety measure for future investments and divestments if one fund does poorly (Cendrowski 2008). The second question we will investigate, will therefore involve the effect PE has on managers use of DA in an exit period.

H2: PE Portfolio Companies' discretionary AEM decreases in the exit period, relative to comparable companies.

6. Data

We received excel sheets from the Argentum Centre for Private Equity (PE) at NHH. It contained information on investments and divestments of PE backed portfolio companies, located in the Nordics/northern Europe. This was the basis for our dataset, we then reworked it to include the correct accounting data. The accounting data was retrieved from the SNF and was initially divided into years, we picked out accounting years relevant to the entry and exit years (Norges Handelshøyskole and Samfunns- og næringslivsforskning AS 2017). Since we are only interested in the entry and Exit period in the Norwegian PE backed portfolio companies, we removed those companies missing a Norwegian organizational number.

6.1 Data Process

We constructed two datasets, one made out of all relevant companies exiting a PE portfolio and one made out of all companies entering a PE portfolio. The two datasets use the combination of organization number and entry/exit year to identify individual observations. We made sure each sale/purchase was unique and removed duplicate observations where more than one PE fund had entered/exited the company. The Argentum dataset would contain all funds entering/exiting a company during the purchase/sale. We were only interested in how the changes in ownership affected accrual earnings management and did not need to know who or how many changes in ownership happened simultaneously. That is why we only kept one company (chosen at random) from each purchase/sales period of a portfolio company. This could be an interesting point to look further into in a future paper. We only kept accounting data we would either use for future matching or for the analysis. Then we did a last check for companies who did not have a specified exit or entry year and removed them. This left us with a dataset of 341 unique portfolio companies with an exit date and 515 unique portfolio companies with an entry date.

The unique observations could through the organization number and the entry/exit year find financial reports from the SNF database (Norges Handelshøyskole and Samfunns- og næringslivsforskning AS 2017). SNF is a collection of yearly financial reports made by all Norwegian companies. The database consisted of several DTA[14] files, with each accounting year separated into its own dataset. When we read the data into our statistical analysis program, we merged all accounting years. Creating a complete dataset with the full financial history of all companies that has delivered their financial reports between 1992 to 2016. We also link all companies up to their industry, using another DTA file containing *bransjeinfo* from all Norwegian companies. *bransjeinfo* translates to "industry info" and defines what industry a company belongs to, by using a numeric system. This approach made it easier to link up information we needed to our chosen portfolio companies and made it easy to edit the data further down the line. The large dataset containing all Norwegian companies, would also be used to pick out our comparable companies, but first we would remove all known portfolio companies using the argentum database.

[14] DTA refers to a specific format for a datafile, data analysis tools like Stata uses the format to store datasets

6.2 Variables

In our Argentum dataset the most important variables were; organizational number and exit/entry year. In the Financial report dataset, we picked out what we needed based on the variables required to use the modified Jones Model and in PSM. The values needed from the SNF database to estimate Discretionary Accrual (DA) were; *CA*, *CL*, *Cash*, *STD*, *DEP*, *Assets*, *PPE*, *REC*, *REV* and have all been explain in appendix V. The values needed from the SNF database to find comparable companies through propensity score matching were; *ROA*, *ROE*, *Sales*, *Leverage*, *Liquid*, *Growth*, *Pre-Tax Results*, *Payable Tax* and have all been explain in appendix V.

After collecting and adding the accounting data to our PE entry and exit datasets, we found several of our portfolio companies had missing values. Generating accounting data from three years before the entry/exit and two years after entry/exit also introduced missing values. If the company did not have accounting information for the three years before entry/exit and two years after the entry/exit, we could not use the company. This left us with 160 unique portfolio companies in our PE exit dataset and 217 unique companies in our PE entry dataset.

7. Econometrics

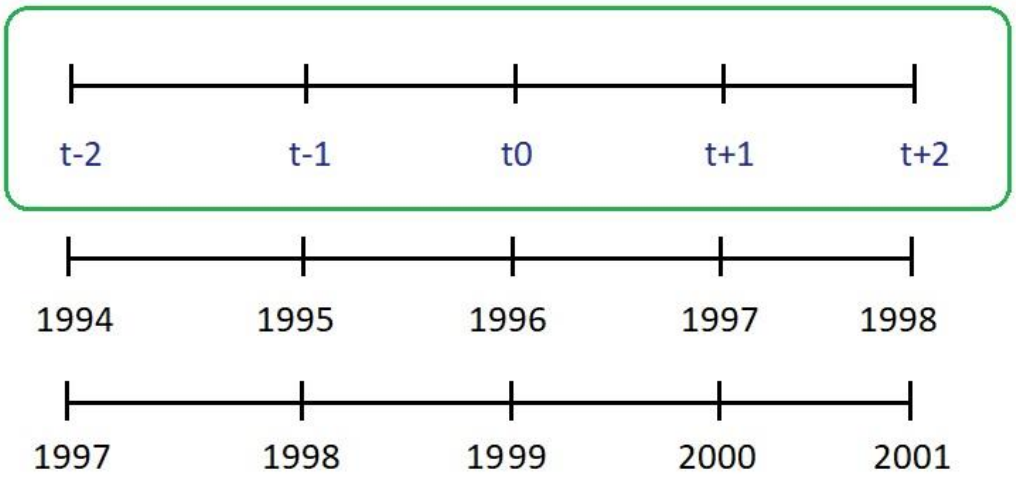
The modified Jones Model is built to estimate nondiscretionary accruals (NDA) through a regression. However, we cannot estimate the coefficients for the model. Since there is no existing proxy for NDA, to use as a dependent variable. We can instead use the calculated value for TA as our dependent variable, the three parameters still explain the NDA within TA. Only now, the residuals from the regression will be made out of discretionary accruals (DA) done for the companies. As long as the three explanatory variables in the model completely explains NDA, we will have no bias introduced in the proxy estimate for DA. But if the estimate is not representative of NDA this will introduce more error into the regression residuals.

With the fixed effects model, we can control for the *heteroskedasticity*[15] issue by allowing firms to use different intersects[16] (Wooldridge 2013, pp.491-496). The alternatives are to either use a Random effect model, pooled OLS or first differenced model. Random effects (RE) and fixed effects (FE) is preferred over pooled OLS in cases where it is important to calculate the individual changes in subjects over time (Wooldridge 2013, pp.448-450). Fixed effect is more used than Random effects, since there are extra assumptions needed for the random effects model. We need the covariance of the intercept and each explanatory variable to equal zero. Meaning the unobserved effect is uncorrelated with all explanatory variables (Wooldridge 2013, p. 496). We used the Hausman test to find which of the two models gave a more correct estimate (Hausman 1978). If the model that uses Fixed effect comes out as statistically different from the Random effect model, we use fixed effect. If they are not statistically different we use the Random effect (Wooldridge 2013, p. 496)

[15] Heteroskedasticity refers to the variation that we find in a regressions error term. The presence of heteroskedasticity can invalidate statistical tests.

[16] Intersects are starting values for models before calculating variable influence.

The next step is to run the regression using the modified Jones Model. Our data consists of 5 accounting years for each unique company; the purchase/sales year, the two years before purchase/sale and the two years after the purchase/sale. This gives a total of 5 periods, which is the subject for our panel data regressions (Frees 2004, p. 192). We end up with a balanced dataset, with the same number of observations per company (Wooldridge 2013, p.469). With this data we can construct a panel data, with organizational number and accounting year as our unique signifiers. The four datasets are run separately, this gives us estimates for DAs in the purchase and sales periods for both portfolio companies and comparable companies. The comparable companies for both purchased and sold portfolio companies gives us the average of DAs in the remaining market with a similar divide in time periods and industries.



The regression itself is a panel data regression, using a fixed effect which we selected through the Hausman test (Appendix H). By having panel data, we can view the unobserved factors that affect our dependent variable (Wooldridge 2013, p.459). with a fixed effect model, we may catch the unobserved effect by controlling for a variation in alpha-i. this is also called the unobserved firm *heterogeneity*[17] (Wooldridge 2013, p.460).

[17] Heterogeneity refers to any unbalanced reporting in the accounting data

7.1 PSM

After narrowing down the two datasets we are left with control observations with similar asset sizes to observations in the treatment groups[18]. Will the current averaged estimate for DAs be a valid representation for a control group. Since we only match on the same year and industry and use a 10% range to find similar asset sizes. this crude matching form introduces the possibility of a selection bias in the remaining observations for each dataset (Rosenbaum and Rubin 1983, pp. 40-43). With a relatively small distribution of companies bought or sold by PE funds, the corresponding observations used for a benchmark used to quantify the test results can be difficult to select. Similarly using a random sample size or simply using the entire dataset can also introduce issues. A random selection will introduce greater variation than can be found in our portfolio companies, similarly using our entire dataset will have introduce to great of a variation in companies and variation will be greater than for our portfolio companies.

With the divide between benchmark and portfolio companies, we can see how much nonacquired companies use earnings management compared to PE owned companies. This is predicated on finding comparable companies for the two groups, since our hypothesis concerns two distinct groups. We have the option to use propensity score matching to find the best fit out of our remaining datasets. We classify all observations where PE funds purchase a company as a treatment, while any company not in a PE portfolio will be the untreated observations. This is also called a control group and is in a different state to the portfolio companies because they do not have the same resources available to them. Only being able to observe one treatment state of any observation at a given period, means we have to speculate what firms would be comparable to the portfolio companies (Rosenbaum and Rubin 1983, pp. 40-43). This missing data problem is especially problematic in cases where we have a small subset of treatment observations, making it even harder to find any

[18] A treatment group refers to any collection of data with a shared effect.

correlation between the dependent variable and the explanatory variables over the two groups.

Propensity score requires a dependent variable, since we want to find companies with similar earnings management strategies. The estimated DA will not be exactly correct, since we calculate them using the larger datasets. While the propensity score matching will only pick out a small subset of companies to match against the portfolio companies. Had we not needed DA as our dependent variable, we would have used propensity score matching as our only matching tool. Seeing that we need to calculate DA beforehand, we have to assume that individual estimates for propensity scores will be based on DAs that give similar values with both approaches mentioned above. The average of subsamples used to calculate DAs will give a similar estimate of the market, so that individual companies will give similar residuals with both methods.

Using PSM should mitigate the selection bias we get from our previous matching. The method matches companies on a comparable prediction for how likely they are of being part of a treatment group (Rosenbaum and Rubin 1983, pp.41-43). There are many strong arguments for using PSM to find the companies for our benchmark, deriving a set of multi-dimensional vectors down to a single value makes it much easier to compare effects between individual groups while maintaining a model complexity better suited to analyze larger datasets (Becker and Ichino 2002 pp. 358-360). Furthermore, underlying comparative variance will also be comparable when using PSM (Snedecor and Cochran 1980).

There are many uses for Propensity score matching; in our case we are looking at differences in covariates in the treatment group and control group. This is referred to as the average treatment effect on the treated (ATET) (Abadie and Imbens 2016). Instead we will have to use a method to find the closest fit, most commonly through Nearest-Neighbor Matching, Radius Matching, Kernel Matching or Stratification Matching (Becker and Ichino 2002, p. 361). We choose the most straight forward method with Nearest-Neighbor Matching. Where we use the number n closest companies to each portfolio company (Caliendo and Kopeinig

2008, p. 9). We have looked at both scenarios where we use 1 nearest neighbor and 5 nearest neighbors.

Another use for PSM is to match the outputs from the treatment group with other companies to find investment targets similar to what we already have invested in. With Propensity score matching there is a tradeoff between what you can analyze. On one hand PSM does not have the same requirements for a stable unit-treatment value assumption. Something other forms of matching needs to satisfy to accurately find comparable companies. This assumption refers to the casual effect over different treatment data when we use companies who compete over resources and/or customers. As the results from the untreated companies will in essence be an effect on treated companies and vice versa. This could be argued to be a violation of the stable unit-treatment value assumption. Which would introduce a selection bias to the dataset that could invalidate other forms of matching. Fulfilling this assumption is not required when applying propensity score matching (Rosenbaum and Rubin 1983, pp. 42-43). On the other side, propensity score matching needs a binomial set of groups that represent our treated and untreated data. This makes subtle classifications harder to fit into a model, certain compromises have to be done to be able to run the model.

Our goal is to find companies that use similar earning management structures, so we want our dependent variable to be the proxy measure for DA earnings management. However, the DAs are meant to be calculated based on comparable companies. This means we would need to calculate DAs on the comparable companies. We have a measure for DA to use as a dependent variable, which would give us the comparable companies. In other words, we do not have a dependent variable for our PSM method. To solve this, we first use companies on accounting year, industry and asset size, we then use panel data regressions to find an approximation of what the DAs would be. We use this approximation as our dependent variable for propensity score matching.

8. Analysis

8.1 Descriptive Statistics

8.1.1 Entry Data

Table x.1 shows the statistics from the Entry data used to investigate the first hypothesis: ***H1: PE Portfolio Companies' discretionary AEM decreases in the entry period, relative to comparable companies.***

The table clearly shows that data from the comparable companies dominate the portfolio companies, in size. Where portfolio companies are only 0.85% of the total dataset, the portfolio company dataset consist of 189 firms, and the dataset with comparable companies consist of 21,987 firms. But the portfolio companies have a larger *Assets* mean and median than the comparable companies, where the difference in mean is significant at the 1% level. The variables where portfolio companies had a larger mean at a significant level of 1%, this is true for *Sales*, *Growth*, *Cash*, *REC* and P*ayable Tax*. The difference in mean for the variables *TA*, *Leverage*, *ROE*, *Liquid* and *Pre-Tax Results* are not significantly different.

Tabell x.1 Single samples and two sample summary statistics of the entry data

	PE Portfolio Company		Comparable Companies		Private Companies. – PE portfolio companies	
	Mean	Median	Mean	Median	Diff in Mean	Diff t-value
TA	-0.252	-0.021	0.384	0.116	0.8731388	1.2387
REC	25228.92	5375	4391.014	727	-12815.95	-8.3202
Cash	7917.899	1520	2518.513	768	-2466.76	-2.7232
ROA	-0.147	0.009	0.146	0.111	0.5213168	14.0811
ROE	-0.033	0.097	0.551	0.331	1.166609	1.2970
Sales	83277.5	11563	21861.28	4304	-33141.66	-7.1300
Leverage	2.536	1.3	3.639	1.928	0.2629667	0.0206
Liquid	2.028	1.31	6.561	1.342	4.825429	0.3452
Growth	8829.603	2156	985.963	168	-9270.598	-5.5597
Pre-Tax Results	2475.921	7	1375.529	377	181.4232	0.1798
Payable Tax	1362.926	0	324.167	41	-796.1729	-5.5566
Assets	79673.05	22824	15486.79	4303	-39339.34	-9.8984
N	*189*	*189*	*21987*	*21987*	*22176*	*22176*

The table contains description of PE backed portfolio companies from an entry period and comparable companies, which is "regular" private companies in same industries, same period and with assets within plus/minus 5% of our PE portfolio companies. The time period ranges from 1992-2016. This is the total set that the PSM create propensity scores from and where it chooses the nearest neighbors. It shows the means and median for the two groups. It shows the difference between the groups means and t-value statistics for the difference in means between them, with mean (non-PE) – mean (PE).

8.1.2 Exit Data

Table x.2 shows the statistics from the Entry data used to investigate the first hypothesis: ***H2:*** **PE Portfolio Companies' discretionary AEM decreases in the exit period, relative to comparable companies.**

The table clearly shows that the data from the comparable companies dominate the small PE portfolio data, in size. The PE portfolio Companies represent 1.323% of the total exit dataset. The PE Portfolio Company data subset consist of 136 firms, and the data subset with

Comparable Companies consist of 10,283 firms. The *Assets* mean and median are larger for the PE portfolio companies than for the comparable companies, where the *Assets* mean is significant different at the 1% level. *Sales*, *ROA*, *Growth*, *Cash*, *REC* and *Payable Tax* are all significant different at the 1% level. While *Pre-Tax Results* are significant different at the 5% level, both mean and median are larger for the PE portfolio companies. There is no statistical significance for variables *TA*, *Leverage*, *ROE* and *Liquidity*.

Tabell x.2 Single samples and two sample summary statistics of the exit data

	PE Portfolio Company		Comparable Companies		Private Companies. – PE portfolio companies	
	Mean	Median	Mean	Median	Diff in Mean	Diff t-value
TA	-0.041772	-0.045376	0.3367082	0.1128274	0.3784804	1.3145
REC	56171.64	18015	8849.794	1215	-47321.85	-15.3918
Cash	22893.57	3500.5	4538.356	943	-18355.21	-9.3474
ROA	-0.179	0.047	.144	0.103	0.3235267	11.7411
ROE	.003	.111	.464	.304	0.4608094	0.5060
Sales	208000	33991	39608.38	5188	-168407.2	-9.8797
Leverage	2.022	1.42	3.563	1.808	1.540564	0.2796
Liquid	2.038	1.475	6.571	1.36	4.532805	0.7679
Growth	23319.54	3294	1902.454	217	-21417.09	-8.7395
Pre-Tax Results	6461.434	963	2670.633	512	-3790.8	-2.4021
Payable Tax	1627.382	0	516.285	36	-1111.097	-4.9185
Assets	213000	56839.5	32721.23	6877	-179893	-18.9415
N	*136*	*136*	*10147*	*10147*	*10283*	*10283*

The table contains description of PE backed portfolio companies from an exit period and companies, which is "regular" private companies in same industries, same period and with assets within plus/minus 5% of our PE portfolio companies. The time period ranges from 1992-2016. This is the total set that the PSM create propensity scores from and where it chooses the nearest neighbors. It shows the means and median for the two groups. It shows the difference between the groups means and t-value statistics for the difference in means between them, with mean (non-PE) – mean (PE).

8.2 Entry Data Analysis

The entry dataset analysis is used to investigate the first hypothesis: ***H1: PE Portfolio Companies' discretionary AEM decreases in the entry period, relative to comparable companies.***

To find an answer to our hypothesis we first calculate the discretionary accruals (DA) using the modified Jones Model, our dataset consists of 22,176 companies over a five-year period around the portfolio companies' entry into a PE fund. The implementation of the modified Jones Model was done through a panel data fixed effect regression, to account for different intercepts for each firm in the dataset (Wooldridge 2013, p 496). Then we used a set of different characteristics (appendix V) to calculate a propensity scores with the nearest neighbor method, to find comparable companies (control group) for the PE portfolio Companies (treatment group). The match is based on firm data from the year before (t=-1) the PE firm invested into the portfolio company. When applying the teffects estimation method we base it on the propensity scores with the DA from the year before the PE firm invest, the investment year and the two years after the purchase as the dependent variable. We can see the ATET based on a comparison with the control group. This means that we assume that any changes or differences between the two groups can be attributed to the PE ownership and/or the effect from their purchase (Abadie and Imbens 2016, 783).

Table E.1.1 is based on all portfolio companies that we have an investment date for and industry specifiers like; Manufacturing (Industry 4), Telecom/IT/Tech (Industry 5), Wholesale/Retail (Industry 8) & Other Services (Industry 10). Table E.1.1 shows the PE ownership/entry effect on the portfolio company through a comparison with the comparable companies. This is based on firm characteristics one year (t=-1) before the portfolio company was bought by a PE firm, the proxy for DAs act as dependent variables. We use DA proxies for the year before purchase (t=-1), the purchase year (t=0) and the next two years (t=+1 & t=+2). This allows us to see the changes in DA over time and lets us see what DA was before and after the purchase.

Positive estimates in our analysis would indicate a greater use of DA in the portfolio companies, indicating that the portfolio companies use more earnings management than what is normal. For our initial analysis we see that all four periods indicate a positive effect on DA when entering a newly bought firm. The only period that shows statistical significance is the entry year, at a 5% level. This means that for the one year before entry and the two years after entry we cannot say that there are any significant different in DAs between the companies not owned by a PE firm and PE-owned companies.

Table E.1.1. ATET teffects, Residuals (DA), by time period, for all industries together (4,5,8 and 10):

	One year before entry t=-1	Entry year t=0	One year after entry t=+1	Two years after entry t=+2
ATET				
r1vs0.buyout	0.0950	0.182*	0.0422	0.0465
	(0.178)	(0.0795)	(0.187)	(0.178)
N	*189 x 2*	*189 x 2*	*189 x 2*	*189 x 2*

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
The table consists of the PE portfolio companies and its Comparable companies, within the four largest industries in our dataset (industry 4, 5, 8 & 10). The year (t-1) is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching. These years are from the investment period, where t=-1 is the year before the entry. The period, t=0 is the year that the PE firm entry into the portfolio company. While t=+1 is the year after they have invested, and t=+2 is two years after they have invested in the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). Nearest neighbor is only one company per PE portfolio company, based on the closest Propensity score match estimated at t-1. Lastly does it display the total amount of firms used to calculate the treatment effect, and this consists of both groups.

Table E.1.2. Is based on the same data as above, but we only performed the propensity score matching and ATET teffects on companies from the same industry. The same proxies for DA are still used as the dependent variable, when estimating the treatment effect in the different industries and at the different time periods. The reason for dividing it up into different industries is to see if there is any significant difference when accounting for the different effects industries can have on DA. Since none of the estimates came out as significant when testing for treatment effects, we cannot assume any trends in the data.

Table E.1.2. ATET teffects, divided on industries. Residuals (DA) one year before entry, for the entry year, one and two years after entry. The PE ownerships effect on Portfolio companies:

	Industry 4	Industry 5	Industry 8	Industry 10	
t=-1	0.0911	-0.107	-0.229	-1.911	ATET
	(0.0784)	(1.809)	(0.289)	(2.570)	r1vs0.buyout
t=0	0.0421	-0.0723	0.0697	0.828	ATET
	(0.0520)	(0.474)	(0.105)	(0.777)	r1vs0.buyout
t=+1	-0.0500	-0.240	0.0356	1.426	ATET
	(0.0797)	(0.491)	(0.0494)	(0.799)	r1vs0.buyout
t=+2	0.0167	-0.397	-0.0582	1.203	ATET
	(0.0846)	(0.503)	(0.0603)	(0.969)	r1vs0.buyout
N	*36 x 2*	*56 x 2*	*27 x 2*	*69 x 2*	

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
The table consists of the PE portfolio companies and its Comparable companies, with the industries: "*Manufacturing" (Industry 4), "Telecom/IT/Tech" (Industry 5), "Wholesale / Retail" (Industry 8) & "Other Services" (Industry 10*). The year (t-1) is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching (PSM). These years are from the investment period, where t-1 is the year before the investment, t=0 is the year that the PE firm entry into the portfolio company. t=+1 is the year after they have invested, and t=+2 is two years after they have invested in the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). The last line (N) shows the total number of both portfolio companies and comparable companies that has been used to calculate the PSM and ATET teffects within the different industries. Nearest neighbor is only one company per PE portfolio company, based on the closest Propensity score match estimated at period t-1.

Table E.1.3. is based on the same dataset as the two tables above, but instead of dividing the dataset into industries it has been divided into the different years available in our dataset. Some of the years have too few treatment observations to estimate the propensity score matching (PSM) and therefore the year has to be excluded from the analysis. The treatment effect from a portfolio company being owned by a PE fund varies between the different years. Most of them are not statistically significant, but there are a few that are significant at either a 5% or a 1% level. The values that are significant, show up in the period before the investment and the two years after the investment.

The second column in table 1.3. contains the effect of the PE ownership on DA for the period t-1. The column shows that most of the years are not statistically significant, but in 2002 there is a 5% level of statistically significance for an increase in the DAs. At the same

time the years 2007 and 2013 show a statistically significant difference at a 1% level and at a 5% level. Both show a negative usage of DA at t-1, which indicates that the comparable company uses earnings management to a greater extent than the portfolio company. In the third column, the investment year for the PE firm. There are no years that come out with a statistically significant effect from PE ownership when dividing all PE firm entries into specific entry years (t=0).

The fourth column shows one year after entry (t=+1), meaning the matching year will be 2 years earlier. We see a few years where there is a statistically significant difference in the effect of PE investment/ownership. With matching data from 1999 and DA estimates from 2001, we see that the investment has a negative effect on the DAs with a statistical significance at the 1% level. With matching data from 2004 and DA estimates from 2006 we also see a statistically significant difference, but here the PE investment has increased the use of DAs compared to comparable companies. The last significant result in period t+1 is using accounting data from 2008 to find matching companies and a DA estimate from 2010. It shows a decreasing effect on DAs from PE ownership with a statistical significance at a 1% level. While the rest of the years in this period (t+1) shows no statistical difference from the PE ownership effect on the DAs.

The last period of interest (t+2) is 3 years after the matching year and is shown in column five. It displays one statistically different value between the PE investment and the comparable company. The accounting data used for this matching comes from 2011 and with DA estimates from 2014. It shows that there is statistically significant effect from the PE firm's investment at a 5% level. It is an increasing effect, meaning there are indications that the portfolio company used earnings management to a greater extent than the comparable company. However, over all columns and all rows we see no discernable trends from the coefficients.

Table E.1.3. ATET teffects, All PE portfolio companies in industry 4,5,8 and 10, per year. Matching year (t-1) vs DA in entry year, one year after and two years after entry.

Matching Year (t = -1)	Residual One Year Before Entry (t = -1)	Residual Entry Year (t = 0)	Residual One Year After Entry (t = +1)	Residual Two Years After Entry (t = +2)	*N*
t=-1	ATET r1vs0.buyout	ATET r1vs0.buyout	ATET r1vs0.buyout	ATET r1vs0.buyout	
Year 5 **1998**	0.278 (0.323)	0.0742 (0.242)	-0.0680 (0.125)	-0.248 (0.143)	*3 x 2*
Year 6 **1999**	-1.065 (0.919)	2.291 (2.272)	**-0.454***** (0.0933)	1.012 (1.117)	*3 x 2*
Year 7 **2000**	0.166 (0.182)	-0.121 (0.282)	0.106 (0.207)	0.218 (0.248)	*4 x 2*
Year 9 **2002**	**0.757*** (0.298)	0.233 (0.230)	-0.120 (0.558)	0.302 (0.299)	*9 x 2*
Year 10 **2003**	0.216 (0.790)	-0.435 (0.319)	-0.0896 (0.726)	-0.163 (0.762)	*10 x 2*
Year 11 **2004**	-0.675 (0.651)	0.00661 (0.302)	**0.560*** (0.218)	0.0712 (1.122)	*10 x 2*
Year 12 **2005**	-0.0748 (0.101)	-0.325 (0.216)	0.290 (0.462)	-0.517 (0.287)	*9 x 2*
Year 13 **2006**	-0.846 (0.630)	-0.573 (0.668)	-0.661 (0.612)	2.255 (2.317)	*23 x 2*
Year 14 **2007**	**-0.698**** (0.214)	0.244 (0.521)	0.323 (0.642)	-0.310 (0.224)	*9 x 2*
Year 15 **2008**	0.623 (0.324)	0.0617 (0.236)	**-0.292**** 0.100)	0.224 (0.259)	*23 x 2*
Year 16 **2009**	1.023 (1.019)	0.269 (0.203)	0.0863 (0.223)	-0.143 (0.348)	*23 x 2*
Year 17 **2010**	0.108 (0.157)	0.0299 (0.130)	0.194 (0.267)	-0.108 (0.544)	*18 x 2*
Year 18 **2011**	-2.327 (2.278)	0.784 (0.604)	1.536 (0.856)	**1.651*** (0.781)	*16 x 2*
Year 19 **2012**	-0.264 (0.235)	-0.0450 (0.119)	0.159 (0.186)	0.0272 (0.133)	*8 x 2*
Year 20 **2013**	**-0.157*** (0.0674)	0.0653 (0.0905)	-0.295 (0.325)	0.301 0.232)	*10 x 2*

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The table consists of the year (t-1) which is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching. These years are from the investment period, where t=0 is the year that the PE firm invest into the portfolio company. While t=+1 is the year after they have entered, and t=+2 is two years after they have invested into the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). Column six display the total amount of firms used to calculate the treatment effect, and this consists of both groups. Nearest neighbor is only one company per PE portfolio company, based on the closest Propensity score match estimated at t-1. The last column shows the amount of Portfolio Companies used in the PSM teffects estimation.

8.2.1 Comparing Nearest Neigbors

From the tables E.1.1, E.1.2 and E.1.3 we see very little significant difference between the treatment group and the control group. The analysis indicates that the treatment effect has little to do with the DA estimates. For the first table we did not narrow down the datasets, the result only showed one statistically significant period. At the purchase year we saw a positive coefficient that was positive at a 5% level, which indicates that portfolio companies performed more discretional the comparable companies. When we divide it up into different industries, none of the industries show any statistical significance. When dividing up observations into years rather than industries, we can again see some scattered values that are statistically significant. Here we do not see any trends in the estimates where they are coming out as statistically significant. To see if the selected group of comparable companies changes the outcome from the analysis, we perform the same test with different numbers of nearest neighbors (3 or 5). As shown in appendix X (PSM with several NN), if we analyze the entire dataset again the results are mostly the same as when we used one nearest neighbor.

Table E.1.4. ATET teffects, Residuals (DA), by time period, for all industries together (4,5,8 and 10), with 1 Nearest Neighbors (NN) and 5 NN:

	One year before entry t=-1	Entry year t=0	One year after entry t=+1	Two years after entry t=+2
ATET				
With 1 NN	0.0950	0.182*	0.0422	0.0465
	(0.178)	(0.0795)	(0.187)	(0.178)
N	*189 x 2*	*189 x 2*	*189 x 2*	*189 x 2*
ATET				
With 5 NN	0.123	0.147**	0.0710	0.111
	(0.151)	(0.0522)	(0.126)	(0.148)
N	*189 x 6*	*189 x 6*	*189 x 6*	*189 x 6*

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
The table consists of the PE portfolio companies and its Comparable companies, within the four largest industries in our dataset (industry 4, 5, 8 & 10). The year (t-1) is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching. These years are from the investment period, where t=-1 is the year before the entry. The period, t=0 is the year that the PE firm entry into the portfolio company. While t=+1 is the year after they have invested, and t=+2 is two years after they have invested in the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). Nearest neighbor is both one and five companies per PE portfolio company, based on the nearest Propensity score match estimated at t-1. Lastly does it display the total amount of firms used to find the propensity scores, this consists of both groups (PE Portfolio companies and non-portfolio companies).

We do further tests to see the difference in other sizes of nearest-neighbor, next we divide the companies into specific industries again. With only one nearest neighbor we see no statistically significant effect from a PE funds ownership, when using five nearest neighbors there are some statistically significant values emerging. Two of the results in the analysis comes out with statistical significance, both at the 1% level. The first value is one year before the PE firm's entry, in industry 8 at t-1. The other one is in industry 4 at t+2. From the estimates we can see that both values are showing a negative effect on the treated group. Since the values are in separate industries, we cannot draw a conclusion based on changes before and after involvement with a PE fund within an industry. What we do see are lower rates of earnings management than the comparable companies in the two cases before and after the PE funds entry (shown in table x.1.3. to x.1.6.).

The comparison between one nearest neighbor and five nearest neighbors in the dataset separated by year, shows again that most of the years and periods have no significant effect on DAs for the portfolio companies. Four of the years in the period t-1 comes out with a statistical significance when using five nearest neighbors (NN). Two years where the effect increase the DA and two other years that show a decreasing effect on the DA, there is an effect with statistically significance level at 1% level and one at the 5% level (appendix X, table x.1.7 to table x.1.9.). Three of the four years that come out with a statistically significant effect when using 5 NN, also have a statistical significant effect when using one nearest neighbor. In the years 2002, 2007 and 2013 (table E.1.3.), for 5 nearest neighbors 2012 also shows up as statistically significant.

The third column contains the teffects PSM results for the entry year and it showed no statistically significant effect in any of the years. The same is true when applying five nearest neighbors in the teffects PSM estimation as seen in appendix X (table x.1.10 to table x.1.12). One year after the PE firm's investment into the portfolio company few values show up as statistically significant. Calculated with both one nearest neighbor (table E.1.3. column 4) and five nearest neighbors (Appendix X, table x.1.13. to table x.1.15). The years in period t+1 comes out with two values that are statistically significant, one at the 1% level and one at 5% level. Both are positive estimates, which means that in the matching years 2002 and

2011 in table x.1.13 and x.1.15 the effect of PE ownership is an increase in the earnings management for the portfolio companies. These two years do not come out statistically significant when only applying one nearest neighbor. However, in column four three were statistically significant with one nearest neighbor. The last period t+2, has only one statistically significant value at a 5% level when estimating with one nearest neighbor. When applying five nearest neighbors there is only one year that comes out as statistically significant. This is the same year for both calculations (1 & 5 NN). The year 2014 with matching data from 2011, both show an effect of increasing DA for this period and specific year, at the 5% level.

8.3 Exit Data Analysis

The exit dataset analysis is used to investigate the second hypothesis: ***H2:*** **PE Portfolio Companies' discretionary AEM decreases in the exit period, relative to comparable companies.**

We use the same method to analyze the exit data, with PE owned companies and other comparable companies that are not owned by PE firms. With exit data from the PE portfolio companies as a basis to first find comparable companies, for then to calculate the relevant factors needed for our analysis. However, we have gone through this in more depth in the data gathering, econometrics and descriptive statistics sections of our paper. The final exit data that is used for calculating the DAs through the modified Jones Model, consists in total of 10,280 unique companies. The calculated DAs from the modified Jones Model was estimated through a fixed effects panel data regression. This dataset was further used to calculate propensity scores through the PSM method for all companies, using the nearest neighbor method. The period that is used to find comparable companies is one year before the PE firm exits (t = -1). This is used to see if there are any treatment effects on companies before, during and after the exit year. Any significant difference in the exit period can be assumed to be attributed to the PE ownership and/or the liquidation (exit) they have done before or in this period.

Table E.2.1. shows the outcome from the average treatment effect on the treated (ATET) with the PSM. These calculations use the original exit dataset as explained above. It consists of all PE backed and comparable companies, from all years and all industries in our dataset (industry 4, 5, 8 & 10), consisting of 10280 firms. The PE ownership and/or exit effect on the portfolio company through a comparison against the comparable companies, is based on the firm characteristics one year before (t=-1) the PE firm divests from the portfolio company. The calculations have been estimated one year before the exit (t=-1). For the exit year (t=0), one year after exit and for the two years after exit (t=+1 & t=+2). The only time period that show statistical significance at a 1% level is two years after exit. The effect from the period before the exit, during the exit and the years after the exit comes out as negative, the only one that comes out as significant is the t=+2 period. This indicates that the earnings management after sale is lower in the sold company compared to the comparative company.

Table E.2.1. ATET teffects, Residuals (DA) for both groups, by time period, for all industries together (4,5,8 and 10):

	One year before exit t=-1	Exit year t=0	One year after exit t=+1	Two years after exit t=+2
ATET				
r1vs0.buyout	-0.491	-0.444	-0.442	-0.477***
	(0.436)	(0.465)	(0.452)	(0.106)
N	*135 x 2*	*135 x 2*	*135 x 2*	*135 x 2*

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
The table consists of the PE portfolio companies and its Comparable companies, within the four largest industries in our dataset (industry 4, 5, 8 & 10). The year (t-1) is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching. These years are from the exit period, where t=-1 is the year before the exit, t=0 is the year that the PE firm exits from the portfolio company. While t=+1 is the year after they have sold out, and t=+2 is two years after they have exited out of the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). Nearest neighbor is only one company per PE portfolio company, based on the nearest Propensity score match estimated with characteristics from t-1. Lastly does N display the total amount of firms used to calculate the propensity scores and find the nearest neighbor.

Table E.2.2. Is derived from the same original dataset as above (table E.2.1.). The main difference being that it is divided into industries when estimating the propensity scores and ATET teffects. Still using the proxy for DA from each firm at the different time periods in the exit period (t=-1, t=0, t=+1 & t=+2) as the dependent variable. We divide the dataset into

the different industries with the motive that this could separate the industry specific earnings management that are being done. From the table we can see indications that former PE portfolio companies undertake less DA than their comparable companies in the years after the PE firm has exited. This is statistically significant at the 5% and 1% level at two different time periods, for the industry called Other industries (industry 10). This industry consists of mainly different types of service companies, consultancies and a variety of companies that do not fit into the other more traditional industries.

The statistically significant result from industry 10 in the exit year, shows that those who have been owned by a PE company in this industry, performed less DA than their comparable companies at the same period of time. This is also true for the year after the exit in industry 10, with a statistical significance at the 1% level. In the industry 4, 5 and 8 in the exit year (t=0) and the year after (t=+1) there is no clear or any statistically difference between the effect of being owned by a PE firm in the past. Therefore, the most we can summarize is that there is not any statistically significant difference between the two groups in these two periods for the industries “Manufacturing” (Industry 4), “Telecom/IT/Tech” (Industry 5) and “Wholesale / Retail” (Industry 8). For the time period two years after exit, do previous portfolio companies from both industry 5 and industry 8 come out as using less DA than their comparable companies, with statistically significant at the 5% level. In the same period (t=+2) we cannot conclude that industry 4 and 10 use any more or less DA than their comparable companies, since the estimated effect are not statically significance at either the 5% or 1 % level for this period. Finally, in industry 8 we also see negative estimates that are statistically significant in the year before the sale. Indicating that in industry 8 there was already less earnings management in the portfolio company before the sale.

Table E.2.2. PE portfolio companies by the industries 4, 5, 8 & 10 together, and with all years (1992-2016). Matching year (t-1).

	Industry 4	Industry 5	Industry 8	Industry 10	
t = -1	0.0265	-0.319	-0.120*	-0.397	ATET
	(0.0397)	(0.201)	(0.0555)	(0.211)	r1vs0.buyout
t = 0	-0.0618	0.101	0.0767	-0.277*	ATET
	(0.0553)	(0.709)	(0.0475)	(0.135)	r1vs0.buyout
t = +1	0.0559	-0.184	-0.000343	-0.241**	ATET
	(0.0886)	(0.214)	(0.0397)	(0.0845)	r1vs0.buyout
t = +2	0.0403	-0.555*	-0.0974*	0.621	ATET
	(0.0358)	(0.228)	(0.0468)	(0.616)	r1vs0.buyout
N	*25 x 2*	*47 x 2*	*20 x 2*	*44 x 2*	

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
The table consists of the PE portfolio companies and its Comparable companies, with the industries: "*Manufacturing" (Industry 4), "Telecom/IT/Tech" (Industry 5), "Wholesale / Retail" (Industry 8) & "Other Services" (Industry 10*). The year (t-1) is the year before exit, and it is when the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching (PSM). These years are from the divestment period, where t=0 is the year that the PE firm exits the portfolio company. While t=+1 is the year after they have exited, and t=+2 is two years after they have exited from the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). The last line (N) shows the total number of firms in both groups, based on the portfolio companies and comparable companies. Which has been used to calculate the PSM and ATET teffects within the different industries. Nearest neighbor is only one company per PE portfolio company, based on the closest Propensity score match estimated at t-1.

Table E.2.3. uses the same dataset as the two tables above, but where the dataset is divided up into the different years, instead of industries. The time period goes from 1992 to 2016, but where several of years are missing. This has mainly two reasons, one being that some years have been lost when cleaning and creating variables. While the years that are completely missing from the table below arises from there being too few treatment observations in our dataset to calculate the PSM. Therefore, we cannot measure the PE investment effect on the portfolio company's DA for these missing years. The treatment effect of having a PE ownership or investment from a PE firm on the portfolio company's DA varies between the different years. Where most of the years do not have any statistically significant difference in the DAs for those who previously have been a PE portfolio company. Our dependent variable is estimated per company using accounting data from several periods (t=-1, t=0, t=+1 & t=+2), this helps us compare DAs from before and after the sale. The first period t=-1, which is the year before the PE firm divests from the portfolio company. Is seen in table E.2.3. second column and show that in most of the years there is no significant difference effect on the DAs from the PE firms exit. There are two years that

come out as statistically significant at the 1% level, both show a decreasing effect in the period, one year before the exit. This is for the years 2011 and 2012 at t=-1. Indicating that during the final year the company was managed by the PE fund they used less earnings management than their comparable companies.

The year that the PE firm divest from the portfolio company at t=0, have one estimate that is statistically significant at the 1% level and none at the 5% level. This is the exits done in 2008, based on the comparable companies found from 2007 firm characteristics, which was one year before the exit (t = -1). The estimate is negative, and that is interpret as the effect of the PE exit /ownership lead to less DA for this specified period and year. In the third period t = +1 (column four), most of the years are not statically significant. However, two of the years in this period shows positive estimates with a statistical significance at the 1% level. This is for the years 2009 and 2011, with accounting data from 2007 and 2009 used to find matching companies. Indicating that when the PE fund sold their portfolio companies and new owners had influence over the company. Their choice was normally to increase earnings management.

The fourth and last period is two years after the sale (t = +2), which also lacks statistically significance for most of the years. However, there are two different years that the positive estimate is statistically significant at the 1% level. This is for the year 2004 and the matches are done with data from the firm's characteristics in 2001 (t = -1). And for the year 2011, done on matching of firm characteristics on its 2008 data (t = -1). This effect tells us that since the PE firm has exited may this have led to more DA two years after exit, in the years 2004 and 2011. From portfolio companies exited in the years 2002 and 2009.

Table E.2.3. All PE portfolio companies in industry 4,5,8 and 10, per year. Matching year (t-1) vs DA one year before exit, in the exit year, one year after and two years after exit.

Matching Year (t = -1)	Residual One Year Before Exit (t = -1)	Residual Exit Year (t = 0)	Residual One Year After Exit (t = +1)	Residual Two Years After Exit (t = +2)	*N*
t-1	ATET r1vs0.buyout (St. Error)	ATET r1vs0.buyout (St. Error)	ATET r1vs0.buyout (St. Error)	ATET r1vs0.buyout (St. Error)	
Year 2 1998	-0.0844 (0.360)	0.102 (0.175)	-0.298 (0.452)	-0.815 (0.468)	*5 x 2*
Year 5 2001	-0.0309 (0.239)	0.0536 (0.109)	-0.119 (0.137)	**0.151***** (0.0113)	*3 x 2*
Year 6 2002	-0.00952 (0.358)	-0.197 (0.187)	0.297 (0.175)	0.00797 (0.189)	*8 x 2*
Year 8 2004	-0.00898 (0.0792)	-0.182 (0.121)	-0.0502 (0.142)	-0.0867 (0.193)	*16 x 2*
Year 9 2005	-0.0555 (0.206)	-0.282 (0.335)	-0.134 (0.258)	-0.0273 (0.364)	*7 x 2*
Year 10 2006	0.165 (0.202)	-0.657 (0.683)	0.282 (0.205)	0.123 (0.144)	*17 x 2*
Year 11 2007	0.0309 (0.0644)	**-0.222**** (0.0740)	**0.257***** (0.0198)	-0.0537 (0.0706)	*7 x 2*
Year 12 2008	-0.362 (0.356)	0.104 (0.203)	-0.0580 (0.141)	**0.204**** (0.0634)	*7 x 2*
Year 13 2009	-0.167 (0.137)	0.131 (0.274)	**0.568***** (0.0622)	-0.432 (0.398)	*5 x 2*
Year 14 2010	-0.607 (0.499)	1.465 (1.841)	-0.245 (0.479)	-0.195 (0.482)	*15 x 2*
Year 15 2011	**-0.219**** (0.0827)	-0.168 (0.218)	0.300 (0.252)	0.0281 (0.152)	*10 x 2*
Year 16 2012	**-0.189**** (0.0582)	-0.0253 (0.116)	0.101 (0.0726)	-0.208 (0.276)	*14 x 2*
Year 17 2013	0.0403 (0.0518)	0.0599 (0.0815)	-0.0964 (0.0768)	-0.0960 (0.111)	*15 x 2*

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The table consists of the year (t-1) which is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching. These years are from one year before the divestment period t=-1, and where t=0 is the year that the PE firm exits from the portfolio company. While t=+1 is the year after they have sold out, and t=+2 is two years after they have exited out of the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). Column six display the total amount of firms used to calculate the treatment effect, and this consists of both groups. Nearest neighbor is only one company per PE portfolio company, based on the closest Propensity score match estimated at t-1. The last column shows the amount of Portfolio Companies used in the PSM teffects estimation.

8.3.1 Comparing Nearest Neigbors

The DA in the Exit period done by PE owned companies and comparable companies, are shown in our data to not have statistically significant different in most cases. These estimates are calculated using one nearest neighbor. In table E.2.4 we see a comparison between PSM outputs with both one and five nearest neighbors (NN). When only having one nearest neighbor in period t=+2 the coefficient indicates a greater use of earnings management from the PE firms, with a statistical significance at 1 % level. This is gone when using the five nearest neighbors, the effect from the PE firms exit in periods of interest show no statistically significant difference.

Table E.2.4. Exit data, ATET teffects, Residuals (DA), by time period, for all industries together (4,5,8 and 10), with 1 Nearest Neighbors (NN) and 5 NN:

	One year before exit t=-1	Exit year t=0	One year after exit t=+1	Two years after exit t=+2
ATET				
With 1 NN	-0.491	-0.444	-0.442	-0.477***
	(0.436)	(0.465)	(0.452)	(0.106)
N	*135 x 2*	*135 x 2*	*135 x 2*	*135 x 2*
ATET				
With 5 NN	-0.102	0.0328	0.0328	-0.601
	(0.182)	(0.237)	(0.203)	(0.607)
N	*135 x 6*	*135 x 6*	*135 x 6*	*135 x 6*

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
The table consists of the PE portfolio companies and its Comparable companies, within the four largest industries in our dataset (industry 4, 5, 8 & 10). The year (t-1) is the year the matches between PE portfolio company and the comparable companies is done, through the Propensity Score Matching. These years are from the exit period, where t=-1 is the year before the exit. The period, t=0 is the year that the PE firm exits from the portfolio company. While t=+1 is the year after they have divested, and t=+2 is two years after they have divested from the portfolio company. It shows the Average Treatment Effect on Treated (ATET) with the proxy for discretionally accruals (residuals from the Modified Jones Model), on the treatment group (PE portfolio Companies). Nearest neighbor is both one and five companies per PE portfolio company, based on the nearest Propensity score matching estimated at t-1. Lastly does it display the total amount of firms used to find the propensity scores, this consists of both groups (PE Portfolio companies and non-portfolio companies).

When the exit dataset is divided into industries, it is only a minority of the periods that show statistically significant effect from the PE ownership/exit. As seen in table E.2.2. when using one nearest neighbor per portfolio company in the teffects PSM estimations. Most of those who are statistically significant disappears when applying five nearest neighbors. The year before the exit (t=-1) is the only period that still has a statistical different effect at the 5% level, but only for Industry 8. Which is the Wholesale and/or Retail industry. When using the five nearest neighbors on the industry divided data, industry 4 in period t=+2 also comes out with a decreasing effect on DA from the previously owned portfolio companies. This is statistically significant at the 1% level (see Appendix Y, table y.1.3.).

From the dataset that is divided into years in table E.2.3 with the use of one nearest neighbor, we see that in most of the years no statistically significant effect is found from the exit/ownership. Using five nearest neighbors when calculating the ATET we see that there is actually fewer years that comes out with a statistically significant in the period of interest. In the first period, t = -1 (one year before exit) there is only one year where we see statistical significance. This is significant at the 1% level and is for year 2012 and it shows a negative estimate (Appendix Y, table y.1.9.). In the exit year (t = 0) table y.1.11. in appendix Y, show a decreasing effect on the DA with a statistically significance level at the 1% level, for the sales/exits done in 2008. This is calculated with the five nearest neighbors per portfolio company with firms' characteristics from 2007. The exits performed in 2014 show an increasing effect on the DA, which means that in 2014 comparable companies performed more earnings management than the portfolio companies. This is statistically significant at the 1% level with the use of the five nearest neighbors when calculating the teffects PSM estimations. The results can be seen in Appendix Y, table 1.12. under the matching year 2013 (t=-1).

In the table E.2.3. column four at t=+1, there were two years with an increasing treatment effect from the exit. This was statistically significant at the 1% level when using one nearest neighbor. When applying five nearest neighbors all the significant value disappears and we are left with see no statistical significance for the year after the sale. The last period t=+2, two years after the PE firms exit from the Portfolio Companies. We see that the calculated effect on DA when using only one nearest neighbor mostly did not show any significant

difference the treatment group and the control group. The two results that were statistically significant are showing an increasing effect on DA from the PE firms exit. For the same period (t=+2) with five nearest neighbors as seen in Appendix Y, table y.1.16 to table y.1.18, have no results that show any statistically significant effect two years after exit.

9. Issues

We cannot be sure that the benchmark data does not contain any PE owned companies. We start off with every company with accounting reports for the time period between 1992 and 2016, then removing all companies we find in the dataset containing PE owned companies. If there are PE owned companies besides the ones, we have accounted for from our data we could risk using them in our benchmark data. This would introduce a bias, as one of our main objectives is to test effects on earnings management on companies owned by PE funds compared to those not owned by PE funds.

Applying a model developed on American accounting standards to a Norwegian accounting system can introduce mistakes. Firstly, there is the issue to interpret equivalent accounting data in Norwegian reports to different foreign accounting data. In these cases, we will need to interpret jones intentions through his literature. As well as using descriptions of foreign accounting data. Secondly, we need to understand the differences in calculating individual accounting data. Many of the accounting data that are reliant on discretionary accruals (DA) have different standards for calculating accounting data like depreciations and amortization. Recalculating accounting data to better fit Norwegian accounting standards can be problematic, especially with the limited data we have available to us.

Norwegian accounting laws only require reporting once a year. This leaves us with less accurate data in the transition period from privately owned to PE owned and PE owned to new owner. Not knowing what time of year the trade was made, we cannot know how recent potential earnings management occurred. Either a small or large part of the year could have been under the old owners and with a different earnings management strategy. The effect on new owners would have been dependent on when the purchase happened. This makes changes in event years a less accurate measure for earnings management.

Using data where observations have different event years introduces a need for comparable companies from the same year. The problem arises when we want to separate data into years and/or industries for the PSM. In these instances, the treatment group will not have any or have too few treatment observations for the PSM to run. With a minimum of 3 treatment observations being needed to preform teffects psmatch.

Using propensity score matching to find comparable data relies on a dependent variable which represents the effects on DA. Our goal with PSM is to find differences in DA, but to do this we need to find the residuals for the regression we have not run yet. We assume that the average used to calculate the propensity score will have a similar distribution to the population, which would have given a similar average when calculating the residuals. Seeing that the parameters for an individual residual is still the same. If the estimated coefficients remain similar in the two cases, we would get an approximation for DA.

10. Conclution

We do not see many estimates with a statistically significant different effect on Portfolio companies' discretional accrual earnings management. In the entry dataset, the first analysis indicated that there had been done more earnings management on portfolio companies in the investment year. The analysis on different industries did not show any persistent statistical difference with earnings management in the investment period. The same is when we divided the dataset into different years. All these analyses indicate that there is little to no significant treatment effect related to a private equity funds acquisition of a private company in regard to earnings management. There are also few results with statistical significance in the tables related to the exit period of a portfolio company, with seemingly no clear correlation between those estimates who come out as statistically significant. Therefore, we conclude that there are little to no indications of a treatment effect from the PE ownership in the two periods of interest.

Further research into earnings management would affect future evaluation methods used for investment in the private equity marked. Our master thesis elaborates on the understanding of how the Norwegian private equity market use earnings management in financial reporting. By looking at the purchase and sales period in a portfolio companies life cycle we focus on how the potential change in owners and how the potential profits incentivize earnings management. In markets where information asymmetry is a major fault for mispricing, understanding the little information that is available becomes key to better evaluate the company.

In our paper we only analyzed the implications of accrual earnings management on purchases and sales for portfolio companies. With real earnings management being the less researched topic among the two types of earnings management. Further research into real earnings management involving entry and exit periods could be interesting. Other parts of a company's life cycle could also be a compelling research area.

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Appendix

Appendix H

Hausman test PE entry data, panel data, 5 years per firm.

```
. *the hausman test
. hausman fe re
```

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
alpha_one	992.2939	765.5796	226.7143	27.7111
alpha_two	-.2011428	-.2293506	.0282077	.012392
alpha_three	-.1802607	-.1425531	-.0377076	.0078747

```
                b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       67.29
                Prob>chi2 =      0.0000
```

This Stata output from the Hausman test has a null hypothesis that: Random effect is the correct one to use. But this must be rejected, when it is significant different. Which it is, and therefore must we conclude that fixed effect model is the better model.

Hausman test on comparable firms' dataset, 5 years per firm

```
. *the hausman test
. hausman FE RE
```

	Coefficients (b) FE	(B) RE	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
alpha_one	-39.44381	-27.11201	-12.33179	1.247374
alpha_two	.3148568	.3136373	.0012195	.0002798
alpha_three	.0125178	.0106171	.0019007	.0004728

```
                b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       97.74
                Prob>chi2 =      0.0000
```

This Stata output from the Hausman test has a null hypothesis that: Random effect is the correct one to use. But this must be rejected, when it is significant different. Which it is, and therefore must we conclude that fixed effect model is the better model.

Appendix V

Variables used in this Master Thesis

All variables used in the Modified Jones Model estimation:

Variable	Description
CA	CA is an abbreviation of Current Assets and it refers to all assets that are highly liquid and is expected to be traded within a year. It is a part of the formula estimating Total Accrual.
CL	CL is an abbreviation of Current Liabilities and it refers to all liabilities that will expire within 1 year. It is part of the formula estimating Total Accrual.
Cash	Cash refers to all monetary resources that are available at time of listing. It is part of the formula estimating Total Accrual.
STD	STD is an abbreviation of Short Term Debt and it refers to all short term liabilities that fall within the definition of debt, which is borrowed money. It is part of the formula estimating Total Accrual.
DEP	DEP is an abbreviation of Depreciation and it refers to both Depreciation and Amortization for the current accounting year. It is part of the formula estimating Total Accrual.
TA	TA is an abbreviation of Total Accrual and it refers to the total amount of accrual accounting decisions utilized in a financial report. The formula to estimate Total Accrual uses CA, CL, Cash, STD, DEP and the previous accounting years assets.

REC	REC is an abbreviation of Receivables and refers to customer purchases not yet paid for. It is part of the formula estimating Nondiscretionary Accrual.
REV	REV is an abbreviation of Revenue and refers to all income company receives from its operations. It is part of the formula estimating Nondiscretionary Accrual.
PPE	PPE is an abbreviation of property, plant and equipment and it refers to all assets the company is expected to own for more than 1 year. It is part of the formula estimating Nondiscretionary Accrual.
NDA	NDA is an abbreviation of Nondiscretionary Accrual and refers to accrual accounting decisions not made on the managers discretion in the financial report. The formula to estimate Total Accrual uses REC, REV, PPE and the previous accounting years assets.
Pre-Tax Results	Pre-Tax Results refers to the result before the cost of taxes has been subtracted. It is part of the formula estimating Return On Assets and is used as an explanatory variable in PSM.
ROA	ROA is an abbreviation of Return On Assets and is a measure for how profitable a company is relative to its assets. Estimated with the formula $\frac{Pre\ Tax\ Results_t}{Assets_t}$, it divides net income on average total assets. It is used as an explanatory variable in PSM.

ROE	ROE is an abbreviation of Return On Equity and is a measure for how profitable a company is relative to its equity. Estimated as net income divided by equity. It is used as an explanatory variable in PSM.
Sales	Sales refer to income from sales in total revenue It is used as an explanatory variable in PSM.
Leverage	Leverage refers to the degree of dept in a company and is measured by dividing debt on equity. It is used as an explanatory variable in PSM.
Liquid	Liquid is a measure of the assets liquidity and it is estimated by dividing CA by CL. It is used as an explanatory variable in PSM.
Growth	Growth is a measure of the change in assets over one accounting year and is estimated as total assets in accounting year minus total assets in previous accounting year. It is used as an explanatory variable in PSM.
buyout	A dummy variable, identifying what company was bought or sold by a private equity portfolio company. It is used as the treatment variable in PSM.
Payable Tax	Payable Tax refers to the amount companies are legally obliged to pay each accounting year. It is used in descriptive statistics.
Assets	Assets refer to all resources owned by the company, it is used in descriptive statistics. Assets lagged 1 year are used in the TA and NDA formulas under the name *Assets_last_year* and A_{t-1}, it is also used in the Growth measure.

APPENDIX X

ENTRY DATA

Table x.1.1. Residuals (AEM) for portfolio companies and comparable companies, **nn = 5**, all industries and years together, only divided by period around the entry:

	One year before entry t=-1	Entry year t=0	One year after entry t=+1	Two years after entry t=+2
ATET r1vs0.buyout	0.123	0.147**	0.0710	0.111
	(0.151)	(0.0522)	(0.126)	(0.148)
N	*189 x 6*	*189 x 6*	*189 x 6*	*189 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in the dataset that the nearest neighbors are calculated from. All period of interest is represented. The residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. The residual is used as proxy to measure of accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.2. Residuals (AEM) for portfolio companies and comparable companies, **nn = 3**, all industries and years together, only divided by period around the entry:

	One year before entry t=-1	Entry year t=0	One year after entry t=+1	Two years after entry t=+2
ATET r1vs0.buyout	0.0621	0.127**	0.0810	0.0502
	(0.148)	(0.0424)	(0.127)	(0.151)
N	*189 x 4*	*189 x 4*	*189 x 4*	*189 x 4*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in the dataset that the nearest neighbors are calculated from. All period of interest is represented. The residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. The residual is used as proxy to measure of accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.3. Residuals (AEM) for portfolio companies and comparable companies, one year before entry: nn =5

	Industry 4 t=-1	Industry 5 t=-1	Industry 8 t=-1	Industry 10 t=-1
ATET				
r1vs0.buyout	0.0588	-0.136	-0.0935*	-0.0977
	(0.0482)	(0.216)	(0.0369)	(0.154)
N	*36 x 6*	*56 x 6*	*27 x 6*	*69 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.4. Residuals (AEM) for portfolio companies and comparable companies, from the entry year: nn =5

	Industry 4 t = 0	Industry 5 t = 0	Industry 8 t = 0	Industry 10 t = 0
ATET				
r1vs0.buyout	0.0393	0.188	0.0395	-0.224
	(0.0281)	(0.670)	(0.0317)	(0.141)
N	*36 x 6*	*56 x 6*	*27 x 6*	*69 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.5. Residuals (AEM) for portfolio companies and comparable companies, one year after entry: nn =5

	Industry 4 t = +1	Industry 5 t = +1	Industry 8 t = +1	Industry 10 t = +1
ATET r1vs0.buyout	0.0776 (0.0892)	-0.0686 (0.198)	-0.00159 (0.0392)	0.101 (0.0623)
N	*36 x 6*	*56 x 6*	*27 x 6*	*69 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.6. Residuals (AEM) for portfolio companies and comparable companies, two years after entry: nn =5

	Industry 4 t = +2	Industry 5 t = +2	Industry 8 t = +2	Industry 10 t = +2
ATET r1vs0.buyout	-0.118*** (0.0173)	-0.314 (0.200)	-0.0615 (0.0557)	0.246 (0.215)
N	*36 x 6*	*56 x 6*	*27 x 6*	*69 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.7. Entry data by year, for all industries together, t = -1, nn =5

	2002 Year 9 t = -1	2003 Year 10 t = -1	2004 Year 11 t = -1	2005 Year 12 t = -1
ATET				
r1vs0.buyout	0.770**	-2.577	-0.387	-0.0659
	(0.295)	(1.727)	(1.096)	(0.0707)
N	*9 x 6*	*10 x 6*	*10 x 6*	*9 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.8. Entry data by year for all industries together, t = -1, nn =5

	2006 Year 13 t = -1	2007 Year 14 t = -1	2008 Year 15 t = -1	2009 Year 16 t = -1
ATET				
r1vs0.buyout	-0.439	-0.840**	0.362	0.961
	(0.448)	(0.280)	(0.336)	(0.999)
N	*23 x 6*	*9 x 6*	*23 x 6*	*23 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.9. Entry data by year for all industries together, t = -1, nn =5

	2010 Year 17 t = -1	2011 Year 18 t = -1	2012 Year 19 t = -1	2013 Year 20 t = -1
ATET				
r1vs0.buyout	0.489	0.237	-0.500***	-0.221*
	(0.507)	(0.747)	(0.149)	(0.0941)
N	*18 x 6*	*16 x 6*	*8 x 6*	*10 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.10. Entry data by year, for all industries together, t = 0, nn =5

	2002 Year 9 t = 0	2003 Year 10 t = 0	2004 Year 11 t = 0	2005 Year 12 t = 0
ATET				
r1vs0.buyout	-1.031	-2.212	-0.0250	-0.265
	(1.409)	(1.817)	(1.013)	(0.218)
N	*9 x 6*	*10 x 6*	*10 x 6*	*9 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.11. Entry data by year, for all industries together, t = 0, nn =5

	2006 Year 13 t = 0	2007 Year 14 t = 0	2008 Year 15 t = 0	2009 Year 16 t = 0
ATET				
r1vs0.buyout	-0.0673	0.284	0.290	0.238
	(0.317)	(0.533)	(0.262)	(0.162)
N	*23 x 6*	*9 x 6*	*23 x 6*	*23 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.12. Entry data by year, for all industries together, t = 0, nn =5

	2010 Year 17 t = 0	2011 Year 18 t = 0	2012 Year 19 t = 0	2013 Year 20 t = 0
ATET				
r1vs0.buyout	0.0965	1.063	-0.172	0.0148
	(0.0638)	(0.660)	(0.112)	(0.0615)
N	*18 x 6*	*16 x 6*	*8 x 6*	*10 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.13. Entry data by year, for all industries together, t = +1, nn =5

	2002 Year 9 t = +1	2003 Year 10 t = +1	2004 Year 11 t = +1	2005 Year 12 t = +1
ATET				
r1vs0.buyout	0.386**	-1.902	0.519	0.210
	(0.149)	(1.923)	(1.032)	(0.392)
N	*9 x 6*	*10 x 6*	*10 x 6*	*9 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.14. Entry data by year, for all industries together, t = +1, nn =5

	2006 Year 13 t = +1	2007 Year 14 t = +1	2008 Year 15 t = +1	2009 Year 16 t = +1
ATET				
r1vs0.buyout	-0.131	0.336	-0.0966	0.0126
	(0.294)	(0.619)	(0.153)	(0.174)
N	*23 x 6*	*9 x 6*	*23 x 6*	*23 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.15. Entry data by year, for all industries together, t = +1, nn =5

	2010 Year 17 t = +1	2011 Year 18 t = +1	2012 Year 19 t = +1	2013 Year 20 t = +1
ATET				
r1vs0.buyout	-0.0479	1.798*	0.508	-0.182
	(0.292)	(0.871)	(0.376)	(0.210)
N	*18 x 6*	*16 x 6*	*8 x 6*	*10 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.16. Entry data by year, for all industries together, t = +2, nn =5

	2002 Year 9 t = +2	2003 Year 10 t = +2	2004 Year 11 t = +2	2005 Year 12 t = +2
ATET				
r1vs0.buyout	0.239	-1.707	0.107	-0.563
	(0.176)	(1.844)	(4.027)	(0.294)
N	*9 x 6*	*10 x 6*	*10 x 6*	*9 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.17. Entry data by year, for all industries together, t = +2, nn =5

	2006 Year 13 t = +2	2007 Year 14 t = +2	2008 Year 15 t = +2	2009 Year 16 t = +2
ATET				
r1vs0.buyout	0.592	-0.00712	0.472	-0.298
	(1.013)	(0.0774)	(0.275)	(0.377)
N	*23 x 6*	*9 x 6*	*23 x 6*	*23 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table x.1.18. Entry data by year, for all industries together, t = +2, nn =5

	2010 Year 17 t = +2	2011 Year 18 t = +2	2012 Year 19 t = +2	2013 Year 20 t = +2
ATET				
r1vs0.buyout	-0.248	1.901*	0.245	0.339
	(0.589)	(0.810)	(0.231)	(0.255)
N	*18 x 6*	*16 x 6*	*8 x 6*	*10 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

APPENDIX Y

EXIT DATA

Table y.1.1. Residuals (AEM) for portfolio companies and comparable companies, **nn = 5**, all industries and years together, only divided by period around the exit:

	One year before exit t=-1	Exit year t=0	One year after exit t=+1	Two years after exit t=+2
ATET r1vs0.buyout	-0.102	0.0328	0.0328	-0.601
	(0.182)	(0.237)	(0.203)	(0.607)
N	*135 x 6*	*135 x 6*	*135 x 6*	*135 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in the dataset that the nearest neighbors (five nearest neighbors) are calculated from. All periods of interest are represented. The residuals (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. The residuals are used as proxy to measure of accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treatment Effect on Treated (ATET), which is the PE effect on the portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.2. Residuals (AEM) for portfolio companies and comparable companies, **nn = 3**, all industries and years together, only divided by period around the exit:

	One year before exit t=-1	Exit year t=0	One year after exit t=+1	Two years after exit t=+2
ATET r1vs0.buyout	-0.285*	-0.177	-0.183	-0.133
	(0.123)	(0.186)	(0.149)	(0.161)
N	*135 x 4*	*135 x 4*	*135 x 4*	*135 x 4*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in the dataset that the nearest neighbors (three nearest neighbors) are calculated from. All periods of interest are represented. The residuals (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. The residuals are used as proxy to measure of accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treatment Effect on Treated (ATET), which is the PE effect on the portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.3. Residuals (AEM) for portfolio companies and comparable companies, one year before exit: nn =5

	Industry 4 t = -1	Industry 5 t = -1	Industry 8 t = -1	Industry 10 t = -1
ATET r1vs0.buyout	0.0588 (0.0482)	-0.136 (0.216)	-0.0935* (0.0369)	-0.0977 (0.154)
N	*25 x 6*	*47 x 6*	*20 x 6*	*44 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.4. Residuals (AEM) for portfolio companies and comparable companies, the exit year: nn =5

	Industry 4 t = 0	Industry 5 t = 0	Industry 8 t = 0	Industry 10 t = 0
ATET r1vs0.buyout	0.0393 (0.0281)	0.188 (0.670)	0.0395 (0.0317)	-0.224 (0.141)
N	*25 x 6*	*47 x 6*	*20 x 6*	*44 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.5. Residuals (AEM) for portfolio companies and comparable companies, one year after exit: nn =5

	Industry 4 t = +1	Industry 5 t = +1	Industry 8 t = +1	Industry 10 t = +1
ATET r1vs0.buyout	0.0776 (0.0892)	-0.0686 (0.198)	-0.00159 (0.0392)	0.101 (0.0623)
N	*25 x 6*	*47 x 6*	*20 x 6*	*44 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.6. Residuals (AEM) for portfolio companies and comparable companies, two years after exit: nn =5

	Industry 4 t = +2	Industry 5 t = +2	Industry 8 t = +2	Industry 10 t = +2
ATET r1vs0.buyout	-0.118*** (0.0173)	-0.314 (0.200)	-0.0615 (0.0557)	0.246 (0.215)
N	*25 x 6*	*47 x 6*	*20 x 6*	*44 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Industry 4) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.7. Exit data by year, for all industries together, t = -1, nn =5

	1998 Year 2 t = -1	2002 Year 6 t = -1	2004 Year 8 t = -1	2005 Year 9 t = -1
ATET				
r1vs0.buyout	-0.359	-1.479	0.0743	1.154
	(0.449)	(1.340)	(0.0723)	(0.872)
N	*5 x 6*	*8 x 6*	*16 x 6*	*7 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.8. Exit data by year, for all industries together, t = -1, nn =5

	2006 Year 10 t = -1	2007 Year 11 t = -1	2008 Year 12 t = -1	2009 Year 13 t = -1
ATET				
r1vs0.buyout	0.224	0.0646	-0.304	-0.231
	(0.189)	(0.0425)	(0.342)	(0.166)
N	*17 x 6*	*7 x 6*	*7 x 6*	*5 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.9. Exit data by year, for all industries together, t = -1, nn =5

	2010 Year 14 t = -1	2011 Year 15 t = -1	2012 Year 16 t = -1	2013 Year 17 t = -1
ATET				
r1vs0.buyout	-0.533	-0.0883	-0.319**	-0.0370
	(0.369)	(0.0985)	(0.109)	(0.0850)
N	*15 x 6*	*10 x 6*	*14 x 6*	*15 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=-1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.10. Exit data by year, for all industries together, t = 0, nn =5

	1998 Year 2 t = 0	2002 Year 6 t = 0	2004 Year 8 t = 0	2005 Year 9 t = 0
ATET r1vs0.buyout	-1.407 (1.175)	0.248 (0.210)	-0.0871 (0.0539)	-0.461 (0.457)
N	*5 x 6*	*8 x 6*	*16 x 6*	*7 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.11. Exit data by year, for all industries together, t = 0, nn =5

	2006 Year 10 t = 0	2007 Year 11 t = 0	2008 Year 12 t = 0	2009 Year 13 t = 0
ATET r1vs0.buyout	-0.763 (0.695)	-0.225** (0.0816)	0.178 (0.192)	0.0322 (0.294)
N	*17 x 6*	*7 x 6*	*7 x 6*	*5 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.12. Exit data by year, for all industries together, t = 0, nn =5

	2010 Year 14 t = 0	2011 Year 15 t = 0	2012 Year 16 t = 0	2013 Year 17 t = 0
ATET r1vs0.buyout	1.458 (1.809)	-0.134 (0.215)	-0.125 (0.135)	0.135*** (0.0372)
N	*15 x 6*	*10 x 6*	*14 x 6*	*15 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=0 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.13. Exit data by year, for all industries together, t = +1, nn =5

	1998 Year 2 t = +1	2002 Year 6 t = +1	2004 Year 8 t = +1	2005 Year 9 t = +1
ATET				
r1vs0.buyout	-0.889	0.505	0.0596	-0.702
	(0.607)	(0.301)	(0.0590)	(0.553)
N	*5 x 6*	*8 x 6*	*16 x 6*	*7 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.14. Exit data by year, for all industries together, t = +1, nn =5

	2006 Year 10 t = +1	2007 Year 11 t = +1	2008 Year 12 t = +1	2009 Year 13 t = +1
ATET				
r1vs0.buyout	0.325	0.212	-0.0314	0.576
	(0.210)	(0.148)	(0.125)	(0.398)
N	*17 x 6*	*7 x 6*	*7 x 6*	*5 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.15. Exit data by year, for all industries together, t = +1, nn =5

	2010 Year 14 t = +1	2011 Year 15 t = +1	2012 Year 16 t = +1	2013 Year 17 t = +1
ATET r1vs0.buyout	-0.251 (0.477)	0.320 (0.219)	0.0230 (0.104)	-0.0718 (0.0606)
N	*15 x 6*	*10 x 6*	*14 x 6*	*15 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+1 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.16. Exit data by year, for all industries together, t = +2, nn =5

	1998 Year 2 t = +2	2002 Year 6 t = +2	2004 Year 8 t = +2	2005 Year 9 t = +2
ATET r1vs0.buyout	3.207 (3.100)	0.461 (0.462)	0.131 (0.109)	-0.676 (0.482)
N	*5 x 6*	*8 x 6*	*16 x 6*	*7 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.17. Exit data by year, for all industries together, t = +2, nn =5

	2006 Year 10 t = +2	2007 Year 11 t = +2	2008 Year 12 t = +2	2009 Year 13 t = +2
ATET				
r1vs0.buyout	0.0107	-0.0479	0.104	-0.658
	(0.215)	(0.0603)	(0.105)	(0.405)
N	*17 x 6*	*7 x 6*	*7 x 6*	*5 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.

Table y.1.18. Exit data by year, for all industries together, t = +2, nn =5

	2010 Year 14 t = +2	2011 Year 15 t = +2	2012 Year 16 t = +2	2013 Year 17 t = +2
ATET				
r1vs0.buyout	-0.374	-0.0817	-0.246	-0.190
	(0.473)	(0.163)	(0.335)	(0.103)
N	*15 x 6*	*10 x 6*	*14 x 6*	*15 x 6*

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All matches done at t-1 for firm characteristics. N represents the total number of firms in that segment (ex. Entries in year 2004) that the nearest neighbors are calculated from. t=+2 is the period of interest, it is also the period that the residual (from the modified jones model) is calculated for each firm in the dataset, with the fixed effect panel data regression. This residual is used as proxy to measure accrual earnings management. Where it is used to calculate the Average Treatment Effect on Treated (ATET), which is the PE portfolio companies. The numbers that is not in parentheses is the coefficients that is the result from the teffects PSM calculation, which tells us if the effect is positive, negative or is none statistical different from their comparable companies.