Venture Capital, Private Equity and Earnings Quality

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Abstract

This paper examines the quality of financial statements reported by private equity (PE) backed companies in the years around the initial PE investment. We study both pre- and post-investment earnings characteristics of a unique hand-collected sample of 556 Belgian unlisted companies, receiving PE financing between 1985 & 1999, and a matched non-PE backed sample. We find strong evidence of upward earnings management in the PE backed sample prior to the investment year, consistent with the hypothesis that entrepreneurs which apply for PE manage earnings upward to catch PE investors' interest. Further, PE backed companies show a significantly higher extent of earnings conservatism compared to matched companies from the investment year on, indicating a governance impact of PE investors on the financial reporting discipline. Finally, we find a marginally higher degree of earnings conservatism for companies receiving PE from non-government related investors compared to companies backed by government-related PE investors. We interpret this stricter financial reporting discipline as being the reflection of a more slack governance by government-related PE investors compared to non-government-related investors. Our results have implications for PE investors as well as for all other stakeholders of PE backed firms.

I. Introduction

A substantial theoretical and empirical literature has explored how private equity (PE) investors screen, select, finance and monitor their portfolio companies (e.g. Gompers, 1995; Hellman & Puri, 2000 & 2002; Kaplan & Strömberg, 2001 & 2002; Lerner, 1995). Most of these studies focus on the dynamics of the relationship and the contractual arrangements between PE investors and entrepreneurs. One aspect which received only minor attention so far is the use of financial accounting information both in the pre-investment screening and the post-investment monitoring period.

There exists questionnaire evidence indicating that PE investors rank, next to entrepreneurial characteristics and market opportunities, both financial performance and general accounting information as leading elements in screening and selecting potential ventures (Fried & Hisrich, 1994; MacMillan et al., 1987; Wright & Robbie, 1998). Falconer et al. (1995) report that PE investors are heavy users of financial statement information and more specifically, that this information is a key component to evaluate the firm ex post. Kaplan & Strömberg (2002) also stress the importance of financial and accounting measures in the design of financial contracts between entrepreneurs and PE investors. Furthermore, Manigart et al. (2000) show that when PE investors have a more financial or banking background, they emphasize accounting and financial statement information even more as well in the screening stage as in the monitoring ex post.

Given the key importance of financial accounting information in as well the screening as the governance of PE portfolio firms, this raises the questions (*i*) whether entrepreneurs actively manage reported earnings upward to attract PE investors and (*ii*) whether PE investors' governance affects the ex post financial reporting behavior of their companies under portfolio. In this paper, we address these issues by studying pre- and post-investment financial reporting characteristics of PE investors' portfolio companies.

Empirical and anecdotal evidence indicates that accounting information is sometimes used to mislead potential investors or to influence contract terms. For example, traditional earnings management studies typically examine earnings behavior around specific corporate events like initial public offerings (IPOs), seasoned equity offerings (SEOs), (convertible) debt issues and debt covenant violations (for an extended literature overview, we refer to Healy and Wahlen, 1999). Around these events, corporate incentives to manage earnings are likely to be high. In all above-mentioned situations, a company is better off with reporting higher earnings figures before the event. IPOs and SEOs will have more chance of succeeding, debt issues can be done at more favorable rates and debt covenant violations can be avoided if companies are able to meet or beat a priori financial benchmarks. The empirical

literature provides evidence of intensified earnings management levels prior to the analyzed event (e.g. DeFond & Jiambalvo, 1994; Perry & Williams, 1994; Teoh et al., 1998a & b) .

In the case of PE financing, one can question whether entrepreneurs act in a similar way and manage earnings upward when applying for PE. Given that PE investors pay attention to the financial accounts of their portfolio companies, entrepreneurs might try to present a better picture of their company to increase their chances of getting money. Our empirical results are consistent with this prediction and show that earnings management indeed is positively related to receiving PE financing.

Additionally, there is ample evidence that investments by professional PE investors result in a substantial change in the corporate governance system in place to reduce information asymmetry and moral hazard problems (e.g. Gompers, 1995; Kaplan & Strömberg, 2003; Lerner, 1995; Sahlman, 1990; Sapienza et al., 1996). PE investors become intensively involved in the management of their portfolio firms after the investment, providing substantial support in their day-to-day activities and monitoring them rigorously (e.g. Gompers, 1995; Kaplan & Strömberg, 2002). Hellman & Puri (2002) document that the change in governance coming from the PE investors' involvement eventually affects the professionalism by which portfolio companies operate. Here, we study one component of the impact of tighter corporate governance rules, namely how the financial reporting discipline of PE portfolio companies is affected. Consistent with findings of Falconer et al. (1995), we expect losses in the post-investment period to be disclosed promptly, since these authors report that PE investors' main concern with respect to financial reporting is a timely recognition of bad news. Following Basu's (1997) definition, timely loss recognition reflects a higher degree of earnings conservatism and can be seen as a direct result of the higher legitimate demand for timely information (Ball & Shivakumar, 2002). Our findings are in line with this proposition and highlight the substantial impact of PE investors on the financial reporting discipline of their portfolio companies.

Finally, we study the impact of investor type on the post-investment financial reporting discipline. Leleux & Surlemont (2003) have provided evidence that government-related PE investors are worse monitors of their portfolio companies compared to non-government PE investors. We argue that the tighter governance by non-government PE investors will result in a more conservative financial reporting discipline for their portfolio companies compared to companies backed by government-related PE institutions. Results are marginally significant suggesting that PE investors' governance impact is not only manifest in their financial reporting conservatism as a whole but that it is also partly determined by investor type.

Our analyses are based on a unique hand-collected dataset of 556 Belgian PE backed companies between 1985 and 1999, and a matched sample of non-PE backed companies. In

Belgium, both listed and unlisted companies have to report yearly financial statements. Hence, we exploit a unique opportunity to study financial accounting data of unlisted companies applying for and receiving PE financing in a longitudinal framework. By doing so, we are able to study both entrepreneurial pre-investment earnings management behavior and post-investment governance impact of PE investors on the financial reporting discipline simultaneously.

We use multiple approaches to empirically analyze both earnings management and earnings conservatism around the PE investment. First, earnings distributions as in Burgstahler and Dichev (1997) and Degeorge et al. (1999) are examined to get a view of the entrepreneurs' attempts to record positive earnings, respectively earnings growth prior to the PE financing date. We find that one year prior to PE financing, small earnings growth is pursued. This finding is in contrast to previous years where small earnings declines are not avoided. Second, cross-sectional regression analyses as in Teoh et al. (1998a & b) allow to determine the magnitude of discretionary current accruals (a quantifiable measure for earnings management) and to explore the difference over time between companies with and without PE. Results are in line with expectations: we find substantial earnings management prior to PE financing date and a more restrained earnings management behavior post-investment. The matched sample results do not show systematic earnings management patterns in any of the observed years. Third, we apply time-series measures on different sub-samples as in Basu (1997) and Ball & Shivakumar (2002) to study post-investment earnings conservatism patterns. Results are in line with the prediction that PE backed companies report losses more timely than non-PE backed companies after the investment date, suggesting a higher degree of earnings conservatism for PE backed companies. With respect to investor type, we find indications that earnings conservatism tendencies are lower for companies backed by government-related PE institutions compared to non-government PE backed companies, although to a weaker extent.

This study contributes to the growing literature on earnings characteristics of PE backed companies (Jain & Kini, 1995; Teoh et al, 1998a & b; Hochberg, 2002). These studies, however, are limited to the period surrounding the IPO largely because of data unavailability before going public. However, it has been shown that PE presence is most imperative at earlier stages of a company's lifetime or when companies are not publicly listed (Hellman & Puri, 2002). Bearing this in mind, we specifically choose to study data of unlisted companies receiving PE. By doing so, we are not only able to unravel earnings management attempts of entrepreneurs in the pre-PE financing period but also to study PE investors' monitoring impact on one aspect of the corporate governance of their portfolio companies, namely their financial reporting discipline. This study also builds on recent advances in the corporate

governance literature on the role of PE investors as monitors in the professionalization process of a firm (Gompers, 1995; Hellman & Puri, 2002). We show that the increased governance stemming from PE investors endogenously determines financial reporting quality.

In this study, we specifically prefer to use the term PE rather than venture capital. This designation is driven by the specific characteristics of our sample firms. According to the European Venture Capital Association (EVCA) definition, 'venture capital' is defined as a "*subset of private equity and refers to equity investments made for the launch, early development, or expansion of a business*." PE is broader in meaning and is also used to define external equity capital that is raised to strengthen a company's balance sheet, to make acquisitions or to finance a management buy-out or buy-in (EVCA Glossary). Since a considerable number of observations refer to later stage deals and hence do not satisfy the exact definition of venture capital, we use the term PE to label all our equity financed deals.

The remainder of this paper goes as follows. In section 2, hypotheses are developed. In section 3, we describe our sample and the specific Belgian institutional context and provide descriptive statistics. Empirical tests and results are presented in section 4. Section 5 concludes and discusses the study.

II. Hypotheses

Applying for and receiving outside equity financing is an important corporate event that has impact beyond receiving additional financial resources. It affects the professionalization of an individual firm (e.g. Hellman & Puri, 2002). Before the deal, firms applying for PE financing have to advertise themselves to catch the interest of potential investors. Once PE investors decide to invest in the company, its governance system typically is reshaped to reduce information-asymmetry and moral hazard problems (Gompers, 1995; Lerner, 1995; Kaplan & Strömberg, 2002). In the following section, we argue how both pre-investment screening and post-investment intensified governance may affect a company's financial reporting process, alternatively with respect to earnings management and earnings conservatism.

II. 1 PE investments and earnings management

a. Pre-investment

One major concern of firms which seek to raise PE financing is to showcase themselves to potential investors. Typically, the search for capital is facilitated when firms are able to show

excellent market opportunities, competitive advantages or when a qualified and dedicated entrepreneurial team is managing the company (e.g. Wright & Robbie, 1998).

However, next to these elements, financial figures are also key elements in the screening process of investment opportunities. MacMillan et al. (1987) and Wright & Robbie (1998) show that PE investors rank financial performance and general accounting information next to entrepreneurial characteristics and market opportunities as leading elements in screening and selecting possible investees. Fried & Hisrich (1994) report that over 80% of their sample of US-based PE investors conduct an in-depth study of company financials before taking on an investment deal. This figure is even higher for later stage deals. Furthermore, Manigart et al. (2000) find that investors with a financial or banking background emphasize accounting and financial statement information even more.

One might expect that companies looking for PE use all means available to present their company in the best possible way. Given that financial statements are an important determinant on which PE investors ground their investment decision, entrepreneurs might manage earnings levels upward opportunistically prior to the deal. Moreover, we know that a typical PE screening process is executed in multiple stages. In a first stage, PE investors screen investment opportunities rather roughly, focusing only on some important benchmarks such as market opportunities, business potential and financial profitability (Fried & Hisrich, 1994; Hall & Hofer, 1993). This first-round screening usually is executed by junior team members and generally takes only a limited amount of time (Fried & Hisrich, 1994; Hall & Hofer, 1993). Only a small number of business proposals pass through the first screening stage and detailed due diligence is performed on a limited number of potential deals in a second evaluation round. Hence, it is important for PE seeking companies to survive the first screening round and to be considered for a more intensive due diligence, which eventually opens up the door to receiving PE funding. As a result, entrepreneurs who are well aware of the way PE financiers screen their investment opportunities might focus specifically on providing an excellent first impression by exploiting financial reporting flexibility maximally. Although past financial performance is only one element in the PE decision making process, we argue that PE seeking companies will use all means available to present theirselves as favorably as possible to the outside world.

Based on these arguments, our first hypothesis states that entrepreneurs actively try to influence PE financiers' financing decisions positively by managing earnings figures upward:

H1: ***"PE seeking companies manage earnings upward prior to the investment year"***

However, it has empirically been shown that PE investors are professional parties who cannot be fooled easily. Wright & Robbie (1998) find that PE investors have fairly complicated screening and evaluation techniques to underpin their investment decision. Moreover, since their selection is based on consecutive screening rounds and a thorough due diligence process is executed to uncover both opportunities and potential threats of the investment, one might wonder whether this earnings management behavior is not redundant. PE investors often negotiate complex control rights at the time of their investment and incorporate extensive governance and monitoring mechanisms (Kaplan & Strömberg, 2002), suggesting that potential earnings management attempts may be uncovered easily.

Even if earnings management attempts would not be unraveled prior to the deal, the close monitoring after the investment suggests they can be detected in a later stage anyway. As a result, it is unclear whether entrepreneurs would still try to manage their earnings upward to catch the interest of PE investors even knowing that, once discovered, it might harm the long-term mutual trust relationship between both parties. Given these conflicting views, it is relevant to study whether entrepreneurs actively manage reported earnings upward prior to the deal since this indeed may help them to attract the attention of PE investors but it is very likely to be uncovered in further, more thorough due diligence screening.

b. Post-investment

Once the PE deal is done, the entrepreneur is no longer the exclusive owner of the firm. The specific investor/investee relationship results in a typical principal-agent problem, as described in Jensen & Meckling (1976). An entrepreneur's private benefits are not always perfectly aligned with outside investors' returns (Gompers, 1995; Kaplan & Strömberg, 2002). Entrepreneurs could invest in projects with high personal benefits but low monetary returns for investors, with the only goal to maximize personal wealth (Gompers, 1995).

As a result, PE investors typically include monitoring devices in the investment contract. E.g. arrangements between entrepreneurs and PE investors are typically negotiated in financial contracts, describing control rights between both parties (Kaplan & Strömberg, 2002). PE investors monitor their investment firms by periodic evaluations of the project's status, incorporating options to abandon subsequent financing and putting VC representatives in the board of directors (Lerner, 1995; Wright & Robbie, 1998). Other examples are periodical check-ups of the day-to-day activities and prerequisite periodical financial reports (e.g. Gompers, 1995). Furthermore, PE investors play a substantial role in shaping the management team, developing a business plan, providing essential assistance in take-over

matters or in designing the executive compensation (Kaplan & Strömberg, 2002; Sapienza et al., 1996).

This intensified governance system put into place by the external investors results in tight post-investment relationships between investors and entrepreneurs. We argue that this enhanced monitoring and close involvement of the PE investor with the company itself reduces post-investment financial reporting flexibility and, as such, reduces earnings management possibilities. Consequently, the hypothesized upward earnings management pattern prior to the investment date is expected to fade out after the investment date, resulting in our second hypothesis:

H2: ***"After the investment, PE backed companies manage earnings substantially less compared to before the investment"***

However, the suggested upward earnings management behavior prior to the investment has consequences for the observed earnings management in the following periods and could potentially distort the interpretation of our second hypothesis. Dechow (1994), amongst others, shows that artificially inflated earnings are most commonly realized by aggressively recognizing unrealized accounting accruals.[1] Advocates argue that accrual accounting helps investors better in assessing firm values and true operating performance than operating cash flows do (e.g. Watts & Zimmerman, 1990; Dechow, 1994). However, when applied opportunistically, accrual systems also allow managers to manage earnings figures aggressively in certain time periods by shifting income between consecutive periods (Dechow, 1994).

Given that hypothesis 1 predicts upward earnings management prior to the investment deal and that this is most likely to be done by opportunistically overestimating accruals, the natural behavior of accruals automatically results in a backlash after the objective has been met (i.e. after the actual investment date). Consequently, if hypothesis 1 finds confirmation, the natural behavior of accruals itself partly explains declining accruals in the post-investment years. Hence, focusing solely on the earnings management behavior pre- and post-investment date in isolation does not provide a uniform indication of a PE investor's monitoring impact on the company's financial reporting process, and specifically so, since lower earnings management levels ex post might be driven by intense pre-investment earnings management

[1] National GAAP generally allow managers to report accounting earnings in an accrual accounting based system. This accounting system is more flexible than the traditional cash accounting reporting and allows managers to shift revenues and expenses into the period they are actually incurred. Hence, accrual accounting systems have the advantage of better matching revenues and expenses, hereby allowing entrepreneurs to generate more value relevant accounting figures than cash accounting would do (Ball & Brown, 1968; Dechow, 1994).

attempts. Hence, we acknowledge the intertemporal dependence of our earnings management measure and explore an additional attribute of earnings quality, namely earnings conservatism. This extra measure allows us to study PE investors' governance impact on their portfolio companies' financial reporting more unambiguously.

II.2 PE investments and earnings conservatism

As documented in the previous section, PE investors put in place a more intense governance and monitoring system and this, in turn, is expected to influence a company's financial reporting discipline. In addition to earnings management, which shows the reliability of a company's financial statements and is generally seen as an important attribute of earnings quality, we explore a second component of earnings quality, namely earnings conservatism.

We define earnings conservatism as in Basu (1997): "*...earnings reflecting 'bad news' more quickly than 'good news'* ". In other words, earnings are of a more conservative nature if accounting losses are reported more quickly than profits (Basu, 1997; Watts, 2002). Ball and Shivakumar (2002) note that timely loss recognition is an important attribute of earnings quality which increases the efficiency of financial statements use, especially with respect to governance issues. Corporate governance is affected since timely loss recognition gives managers less flexibility to undertake negative NPV projects and hereby aligns the interests of both the entrepreneur and the other stakeholders, among which PE investors.

We argue that, in this research context, intensified PE investors' governance may lead to a more strict financial reporting discipline, specifically since Kaplan & Strömberg (2002) have shown that PE investors make control rights contingent upon financial as well as non-financial measures. Consequently, it is likely that PE investors monitor their portfolio company's financial reporting process and apply quality standards to it, in order to receive high quality accounting information. One imperative element for PE investors is receiving a timely indication of difficulties, specifically since the distribution of control rights between entrepreneurs and PE investors is often made contingent upon financial risk. Moreover, Falconer et al. (1995) found in a UK questionnaire study that PE investors are primarily concerned with receiving reliable and timely financial information from their investee firms. This suggests that PE investors affect the financial reporting discipline by requiring their investee firms to report losses timely to identify difficulties instantly, rather than leaving them unidentified or carrying them forward to future periods.

Further, although the observed companies are private in nature and consequently are expected to have a fairly low tendency to report earnings conservatively compared to public

companies (Ball & Shivakumar, 2002), we expect that PE investors' governance positively influences the extent of earnings conservatism. A higher earnings conservatism propensity makes financial statements more useful for contracting, monitoring and valuation matters and is expected to be more prevalent for PE backed compared to independently ran firms. Additional evidence for this reasoning is that PE investors generally want to exit after a number of years realizing a substantial surplus value on their investment (e.g. Gompers, 1995; Kaplan & Strömberg, 2002). Therefore, PE investors typically prepare their portfolio firms for a future sale which is made easier by presenting professional and reliable financial statements. Hence, also this higher demand for high quality financial reporting by external parties after the PE financing suggests a more predisposed conservatism in earnings reporting.

As a consequence, we expect to find more conservative earnings reporting in PE backed firms compared to non-PE backed firms. This higher conservatism then would be a direct result of the higher legitimate demand for financial reporting quality by the PE investors. This leads to our third hypothesis:

H3: ***"PE backed companies report accounting losses more timely (i.e. report more conservative earnings) compared to non-PE backed companies"***

Finally, we argue that different types of PE investors have different governance skills and incentives, which endogenously determine the earnings quality of their portfolio companies. We therefore study whether the degree of earnings conservatism depends on the type of PE investor. More specifically, we study differences in earnings conservatism between non-government and government-related PE investors.[2]

Managers of government-related PE investment companies are often civil servants and as such may not have the experience nor the drive to select or support entrepreneurial companies (Leleux & Surlemont, 2003; Manigart et al., 2002). Also fee-based incentive packages of government-related PE houses typically create lower incentives to monitor their investments tightly compared to profit-oriented incentive packages of non-government PE firms (Leleux & Surlemont, 2003). In general, government-related PE houses are less pressured to earn financial returns, as they do not have to raise new funds from the market and may have other goals than value maximization for their shareholders. Moreover, government-related PE investors encounter less pressure to exit firms with a substantial surplus value in

[2] Non-government related PE investors are (1) firms investing funds from third parties and (2) captive funds, i.e. funds in which the main shareholder of the management company contributes most of the capital from its own internal sources and reinvests realized capital gains into the fund. Government-related PE firms invest government funds either directly or indirectly in portfolio companies (EVCA Glossary).

the shortest possible time and may therefore be typically less dedicated to professionalize their portfolio company without delay.

Taking the specific characteristics of government-related PE investors into account, their investment decisions might be driven more by a social point of view instead of a profit maximization standpoint (Lerner, 1999). These arguments imply, directly and indirectly, that companies backed by independent PE investors may be governed more rigorously and adequately than those receiving PE from government-related agencies. Therefore, we expect differences in governance to be reflected in the financial reporting discipline. Hence, we expect higher earnings conservatism for companies funded by non-government-related PE investors compared to those receiving government-related PE:

H4: ***"Companies backed by non-government-related PE investors report accounting losses more timely (i.e. report more conservative earnings) compared to companies backed by government-related PE investors"***

In the next section, we describe the setting of our sample, namely the Belgian PE context. We further illustrate the selection of the sample and report descriptive statistics.

III. Research Setting and Sample Description

We hand-collected financial and non-financial data of PE backed Belgian companies that received PE financing between 1985 and 1999. PE deals were identified by financial databases, PE investment reports and press releases. There are two reasons why we restricted ourselves to the Belgian context.

First, all Belgian companies (both listed and non-listed) are obligated to file their financial statement annually to the National Bank of Belgium in compliance with the Royal Decree of 8 October 1976. This creates an excellent opportunity to study financial accounting reporting behavior of unlisted companies. Using these data, we build a longitudinal database containing financial accounting data of privately-held, unlisted companies receiving PE for the first time. This provides us with a unique dataset which cannot be retrieved in a typical research context – like the US – where this kind of financial data is unavailable for unlisted companies. Although unlisted companies typically experience a lower demand for high quality financial accounting compared to listed companies (e.g. Ball & Shivakumar, 2002), their financial reporting discipline might be impacted by additional monitoring pressure from the PE investors' increased governance.

Second, the Belgian PE industry differs substantially from Anglo-Saxon and even from other Continental European countries since nearly half of all PE investments come from government-related PE firms (EVCA, various yearbooks). Therefore, by exploiting this dataset we are able to explore differences in the financial reporting behavior between companies that are backed by non-government and government-related PE investors.

III.1 The Belgian PE industry

Before the 1980s, Europe as a whole and the US were two different continents as regards PE. The absence of a supportive entrepreneurial spirit combined with poor exit alternatives offered by the stock market at that time, resulted in a substantial underdevelopment of the European PE industry compared to the US. The European situation was also observed in Belgium, where PE only gained importance after the 1980s. Evidence of this juvenile character of the Belgian PE industry is clearly illustrated when comparing the importance of the industry with respect to the size of the economy. During our observation period 1985-1999, average Belgian PE investments totaled 0.06% of GDP. US figures are substantially higher, reaching values of 3 to 4 times that size during the same period (Manigart et al., 2002). Consistent with worldwide tendencies, the Belgian PE industry grew sharply, especially during the late 1990s' bubble years to a maximum of 0.22% of GDP in 2000. Over the last two years, again following worldwide tendencies, total PE investments nearly halved to 0.12% of GDP in 2002.

The vast majority (58%) of PE during the observation period went to expansion investments. Seed and start-up investments, replacement capital and buy-outs accounted for respectively 26%, 9% and 7%. The most popular investment sector was high-tech related (47%), according to EVCA definitions, *"communications, computer and other electronics related, biotech and medical or health related"*. Industrial-related and consumer-related sectors accounted for respectively 17% and 10% of all investments during that period.

With respect to investor type, the Belgian PE industry is further characterized by a large number of small independent PE companies and a few large PE investment companies (EVCA, various years). It is noteworthy that more than half of total investments made during our observation period come from government-related PE investors. Both the Flemish GIMV (*Gewestelijke InvesteringsMaatschappij voor Vlaanderen*) and the Walloon SRIW (*Société Régionale d'Investissement de Wallonie*) account for a substantial part of these government-related PE investments. Independent and captive investors both account for a mere 25% of total investments.

III.2 Description of the sample

In order to construct a comprehensive sample of PE-backed companies, we used existing databases and secondary sources such as yearly financial accounts, PE investment reports and press releases. To be included in the sample, portfolio companies' financial statements have to be recorded on a regular basis in the database of the National Bank of Belgium. Moreover, we excluded financial and holding companies because of the highly specific nature of these firms. This resulted in a final sample of 556 companies, representing nearly 40% of all PE investments in Belgium between 1985 and 1999.

To provide a basis for comparison, we selected a comparable sample of companies that did not receive PE. Following Megginson & Weiss (1991), Jain & Kini (1995) and Lerner (1999), each PE backed company is matched with a non-PE backed company on three criteria in the year before investment: (*i*) activity – measured by a two-digit sector code – , (*ii*) size – proxied by total assets – , and (*iii*) age. For firms receiving PE in the start-up year, the matching year was set equal to the first year in which the financial statement data became available, typically being the investment year. Descriptive statistics of both samples are given in table 1.

*****INSERT TABLE 1 ABOUT HERE*****

37% of the companies in the sample receive PE financing within 2 years following their founding date ('start-ups'), 18% when they are between 2 and 5 years ('early stage') and 45% after more than 5 years ('later stage'). According to EVCA definitions, about half of the sample companies can therefore be considered as having received pure venture capital financing while the rest received PE of a more broader sense. Government-related investors backed over 70% of the sample companies causing an overrepresentation compared to their market share, which was slightly above 50% (EVCA statistics). Although government-related as well as non-government-related PE investors finance a proportionally equal number of early stage deals (for both about 18%), there is a considerable difference in the proportion of start-up and later stage investments between both investor types. Government-related PE investors finance approximately an equal percentage of start-up and later stage deals (41% versus 43%). Non-government PE investors, by contrast, favor later stage deals above start-up deals by far (53% versus 28%).

Panel B provides descriptive statistics of age and some basic accounting figures for both samples under analysis, i.e. PE backed and non-PE backed over all observation years. PE backed companies are on average 12.33 years old in the investment year, with a median age

of 7 years and the oldest firm in the sample being 74 years. Average (median) total assets are EUR 11,786,642 (2,717,136) and vary between EUR 10,833 and 811,072,065 showing the substantial variation in size of PE backed companies. Median growth in total assets equals 6.39% and the average (median) leverage figure is 69.88% (71.35%). Results of the non-PE backed sample are rather similar. The average (median) non-PE backed company age is 14.38 (8.00) years, with a maximum of 91. Average (median) total assets equal EUR 7,257,799 (1,611,394) and vary between EUR 13,585 and 876,034,348. Median growth for non-PE backed firms is somewhat lower compared to PE backed matches and equals 4.13%. Finally, average (median) leverage is 66.73% (70.31%).

Panel C reports information on the industry classification of sample companies (one and two-digit). PE investors typically invest in a limited number of industries. In accordance with the investment sector profile of the entire Belgian PE industry, computer services (16.91%), wholesale distribution (12.77%) and metal manufacturing (7.73%) are the most important sectors in our sample.

IV. Research Methods & Empirical Results

IV.1 Earnings Management Tests

a. Distribution tests

First, our study builds on distribution-based earnings management research as applied in Burgstahler and Dichev (1997) and Degeorge et al. (1999). In cross-sectional distributions of scaled earnings and earnings changes of US companies, forementioned authors find compelling evidence of discontinuously distributed earnings, showing abnormally high frequencies of small profits and small earnings increases. Small losses and earnings decreases are typically avoided. One main advantage of this research method is that it allows to detect earnings management to achieve certain earnings targets, combining a visualization and a statistical test on the magnitude of the discontinuity (McNichols, 2001). However, we acknowledge that we have to proceed with the necessary caution when interpreting the number of small profits versus small losses, especially since it is not clear what the relationship in the absence of earnings management should be (Dechow et al., 2003).

We study whether PE backed companies report more small earnings, respectively earnings increases, compared to matched non-PE backed companies and whether there is a clearer earnings management pattern in pre-investment years compared to other years. Consistent with Burgstahler & Dichev (1997), we measure the statistical significance of small loss avoidance and small profit pursuance by calculating a standardized smoothness measure.

Under the null hypothesis, the earnings distribution is thought to be relatively smooth where the expected number of observations in any given interval is the average of the number of observations in the two immediately adjacent intervals (Burgstahler & Dichev, 1997).[3] This statistical test measure is defined as follows:

$$\frac{\lfloor N_{\text{actual}} - N_{\text{expected}} \rfloor}{\sigma}, \text{ where} \qquad (1)$$

N_{actual} = actual number of observations in a given interval
N_{expected} = expected number of observations, based on the average of the two adjacent intervals
σ = standard deviation of the difference between n° of observed and n° of expected observations [4]

Table 2 confronts deflated profit after taxes levels of PE backed companies one year before the PE investment with these of 2 or 3 year before the investment. Additionally, non-PE backed profit after taxes levels from 1 to 3 years before participation are calculated to provide a basis for comparison. Consistent with hypothesis 1, we argue that the closer a company gets to its PE deal, the higher the probability will be to detect a more observable upward earnings management pattern. More specifically, for our PE backed sample we expect to find unusually few small losses and earnings declines one year before participation compared to earlier years. Additionally, earnings distributions of our control sample are not subject to similar earnings management incentives in any observation year, suggesting less systematic earnings management over all observation years. Therefore, we pool all matched pre-investment earnings levels from year –3 to –1 and consider these as normal, expected earnings levels. Any substantial difference for the PE backed earnings sample from these 'benchmark' earnings distribution then again could be an indication of earnings management.

Tests statistics with respect to loss avoidance for both our PE backed and non-PE backed sample are presented in table 2. Results show significantly more than expected small profits and abnormally few small losses for all observation years. These quasi-identical earnings distribution patterns for both our PE backed and matched sample suggest that, although there exist clear loss avoidance behavior for the PE backed sample, this is not systematically more intense closer the PE financing event nor compared to control sample earnings.

[3] In constructing empirical histograms, researchers face the problem of choosing an optimal bin width that balances (*i*) the need for a precise density estimate and (*ii*) the need for a fine resolution. Scott (1992) recommends a bin width that is positively related to the variability in the data and negatively to the number of observations. High variation in the data calls for wider bins and the number of observations determines the size of bin widths adversely. To calculate the optimal bin width, we use a measure similar to the one used in Degeorge et al. (1999) and Plummer & Mest (2001). Bin width = $2.IQR.n^{-1/3}$, with IQR = interquartile range, a measure for variability in the data and n = total number of observations.

INSERT TABLE 2 ABOUT HERE

Analyses of earnings changes, however, show more clear evidence of earnings management behavior close to PE investment date. Both table 3 and figure 1 show that while PE backed companies still incur significantly more than expected small earnings declines two and three years before participation, this pattern changes considerably one year prior to participation into significantly more than expected small earnings growth observations. This shift from abnormally many small earnings decreases to an unusually high number of small earnings increases close to approaching the participation date is a first indication that, at that time, managers might use earnings management techniques to achieve small improvements in reported profit.

INSERT TABLE 3 AND FIGURE 1 ABOUT HERE

In summary, earnings distribution results provide only limited evidence of upward earnings management of PE backed companies close to PE investment date, specifically since loss avoidance behavior is similar over all observation years for as well the PE backed as the control sample. Further, the tendency of PE applying companies to report small increases in earnings does indicate that entrepreneurs attempt to record improvements in earnings performance one year prior to the PE investment. However, given the limitations of this research method and the caution by which it has to be interpreted, we consider these distribution tests more as tentative indications of earnings management and evaluate earnings management behavior more in-depth by running accrual regressions hereafter.[5]

b. Accruals modeling

In a second step, we apply the most commonly used earnings management measure and study unexpected discretionary accruals as an indicator of earnings management.[6] Discretionary accruals are a commonly used proxy for measuring the degree of earnings management in a company's financial figures. Companies use accruals as accounting adjustments to distinguish reported earnings from cash flow from operations. Part of these accruals are inherent to the business activities of the company and part come from

[4] The standardized difference is based the following formula (Burgstahler & Dichev, 1997): $\sigma^2 = N.p_i.(1 - p_i) + ¼.N.(p_{i-1} + p_{i+1}).(1 - p_{i-1} - p_{i+1})$, where N = number of observations, p_i = the probability that an observation falls in interval i, p_{i-1} = the probability that an observation falls in interval *(i-1)* and p_{i+1} = the probability that an observation falls in interval *(i+1)*.

[5] For the sake of brevity we do not report earnings distributions post PE investment date. Specifically since these distributions do not show significant discrepancies between both samples.

[6] McNichols (2001) reports that up to 1999, over 45% of all earnings management studies published in leading accounting journals were developed by using a variant of the accruals model.

discretionary decisions of managers (e.g. Jones, 1991; Dechow, 1994). Accrual-based research intends to unveil this discretionary component of accruals and considers it as an indicator for earnings management. Although this kind of research has been criticized because of its underlying assumptions, no superior research method has been introduced yet. As a consequence, we rely on the discretionary accruals modeling together with the distributional tests to provide us with the best estimate available of the earnings management incidence.

We apply a cross-sectional regression model as in Teoh et al. (1998a & b), which is an extension of the most widely used earnings management model, the Jones (1991) model. Although the original Jones model studies short term as well as long term discretionary accruals, we focus on short-term working capital accruals since managers have greater flexibility and control over current versus long term accruals (Teoh et al., 1998a & b). More specifically, current accruals are computed as follows:

$$\begin{aligned}\text{Current accruals} = \Delta\,(&\textit{accounts receivable} + \textit{inventory} + \textit{other current assets})\\ &- \Delta\,(\textit{accounts payable} + \textit{tax payable} + \textit{other current liabilities})\end{aligned} \tag{2}$$

Since accruals by itself are not necessarily evidence of earnings management, these current accruals have to be modeled into (*1*) non-discretionary accruals, which inherently result from the natural changes in business activities and (*2*) discretionary accruals, which are made at the discretion of management. Expected non-discretionary current accruals are estimated by running cross-sectional regressions of current accruals on the change in net added value of all available sector peers for the accruals decomposition.[7] We require that every company under investigation is present in the sample at year –2 and calculate the level of discretionary current accruals from two years before until two years after the PE investment (i.e. 5 consecutive years). Sector peers are selected on a two-digit sector specification. We used a one-digit sector specification if less than 7 individual peer companies were available for the industry-specific regression. Furthermore, data of a sector peer member are only included in the accruals estimation when it (*1*) did not receive PE financing or (*2*) did receive PE financing but only for years outside the 5 year time scope around the PE

[7] This estimation is a variant on the normally used model which uses sales growth as an explanatory factor instead of growth in net added value. The reason for this change is that Belgian SMEs are allowed to report abbreviated financial statements when they comply with the following requirements. A company should (*1*) employ less than 100 employees on average per year registered or (*2*) not meet two or more of the following criteria: (*i*) annual turnover > 6,250,000 euro, (*ii*) balance sheet total > 3,125,000 euro and (*iii*) average number of employees > 50. One major difference between abbreviated and complete financial statements is that sales levels only have to be disclosed in complete financial statements. In abbreviated formats, only a net added value is reported. This value equals (Operating Income [*financial statement item 70/74*] – Raw Materials and Consumables *[item 60*] – Services and Other Goods [*item 61*]). Given that over 60% of our sample firms report an abbreviated statement, we use net added value figures to avoid ample missing data in our estimations.

investment. We follow Teoh et al. (1998a & b), amongst others, and winsorize the top and bottom 1% of discretionary current accruals observations to minimize the impact of outliers.

Since these accruals estimations are executed over a 5-year time frame from two years before until two years after the PE investment, the number of observations both in the PE backed and the non-PE backed sample are limited. Descriptives showed that 205 companies are younger than 2 years, reducing the number of available companies to 361. Further, a substantial number of companies had missing data on parts of the added value measure, making it impossible to calculate this measure. As a result, we have 166 remaining observations for the PE backed sample and 160 for the non-PE backed sample. Further specifications on these accruals estimations can be found in Appendix 1.

*****INSERT TABLE 4 ABOUT HERE*****

Table 4 presents median discretionary current accruals levels for both our PE backed and our matched sample in a time frame of 2 years before until 2 years after the participation. Median discretionary current accruals levels of PE backed companies are significantly positive around the investment year. From one year before until one year after the investment, we find a significantly higher earnings management level in our PE backed sample compared to the non-PE backed sample. Discretionary accruals grow from +2.13% two years before the investment date to a maximum value of +4.05% in the participation year, before dropping off to an insignificant average of +1.15% two years after the investment. The non-PE backed sample has lower median discretionary accruals values overall, being insignificantly different from zero for all observation years. Moreover, *p*-values measuring the difference in median discretionary current accruals between both samples are highly significant in the years around the PE financing.

Consistent with the findings of Teoh et al. (1998a & b), earnings figures seem to be massaged upward prior to the event and discretionary current accruals are commonly used to achieve this goal. This finding is consistent with our first hypothesis. Discretionary current accruals become significantly positive one year before the PE investment, reach a maximum in the event year and remain significantly positive until one year after the event. In contrast to Teoh et al. (1998a & b) we do not find significantly positive discretionary current accruals two years after the PE investment date. This is in line with our second hypothesis. Increased PE investors' governance may affect a company's financial reporting discipline, since discretionary current accruals decrease substantially and become insignificantly different from zero two years after the investment year on.

However, there are a number of factors which might make some firms more likely to manage earnings than others. To disentangle the importance of potential omitted variable bias, we model discretionary current accruals as a function of some additional control variables:

$$DCA_i = \alpha_i + \beta_{PE} PE_i + \beta_{size} \ln(size)_i + \beta_{age} \ln(age)_i + \beta_{IBX} \Delta(IBX)_i + \beta_{LEV} Leverage_i + \Theta' IND_i + \varepsilon_i \quad (3)$$

where *DCA* equals the level of discretionary current accruals for the firm in a specific observation year. *PE* is a dummy variable taking the value of 1 when a firm is PE backed and 0 otherwise to edge out the effect of receiving PE financing. *Ln(size)* is the natural logarithm of total assets while *ln(age)* is the natural logarithm of the firms' age. We do not predict any specific sign for both our size and age variable. On the one hand, larger firms typically may have more complex financial accounting techniques available to manage earnings. On the other hand, larger firms are typically more politically visible than smaller firms, suggesting a lower proportion of earnings management (e.g. Watts & Zimmerman, 1990). Equally, older firms may on the one hand have more expertise to exploit flexibility in accounting mechanisms but, conversely, have a longer track record making it less easy to disguise accounting irregularities. *Δ(IBX)* measures change in income before extraordinary items from the previous fiscal year to this year, scaled by the lagged total assets. This variable is included to control for any misspecification resulting from potential correlation between discretionary accruals and operating performance (Dechow et al., 1995). *Leverage* equals (1 – BV Equity/TA), with 'BV Equity' being the book value of equity and 'TA' is total assets. The higher a firm's leverage, the less own resources a firm uses to finance its business activities and/or the higher the level of outstanding debt. Consistent with the debt covenant hypothesis, we expect a positive relation between the leverage ratio and the extent of earnings management (DeFond & Jiambalvo, 1994). Finally, *IND* controls for industry fixed effects (one-digit sector codes). We run yearly control regressions over all observation years from (*t*–2) to (*t*+2).

We further control for potential endogeneity problems that might result from the selection bias inherent in receiving PE. Even if PE has no effect on discretionary accruals, the PE coefficient might still be significant if PE backed firms are those that were less likely to have high discretionary accruals a priori. As a result, the coefficients in model (3) might be biased, unless we adjust for this endogeneity problem. We therefore extend our model (3) with a selection model based on the Heckman two-step regression (1979), as also applied in Hellman & Puri (2002) and Hochberg (2002). More details on the Heckman selection model are given in Appendix 2.

INSERT TABLE 5 ABOUT HERE

Table 5 reports coefficients and *t*-statistics of the Heckman 2 step regression model, controlling for firm-specific characteristics and selection biases. We find a strong positive relation between being PE-backed and the level of discretionary accruals around the investment year.[8] Although discretionary accruals and PE are unrelated two years before the investment year, the link becomes highly significant from the pre-investment year on. We find further evidence in line with hypothesis 1: entrepreneurs report higher discretionary accruals shortly before the PE investment. Also one year before the PE investment, we find that discretionary current accruals are positively related to age: younger firms report higher accruals. No other significant relations are detected in the pre-investment year.

In the investment as well as in post-investment years, the coefficient on PE remains positive although it is declining both in magnitude and significance. This suggests that the PE investor's governance impact restrains a portfolio firm's ex post earnings management behavior. Although this provides evidence for our second hypothesis, we acknowledge that the reversal of accruals might partly drive our results. Furthermore, the relation between age and the level of discretionary accruals becomes less clear: while younger firms typically report higher discretionary accruals in the investment year, this relation is reversed in year +2. Finally, both one and two years after the PE investment, a higher leverage coincides with lower discretionary accruals. This evidence contradicts the debt covenant hypothesis but might be explained by the higher monitoring taking place both by the PE investor and other creditors (such as banks). This tighter monitoring may actually limit a portfolio firm's financial reporting flexibility leading to a lower level of reported accruals. No further significant relations are detected.

The result of the two-step regression, controlling for selection bias, is remarkable in that it shows that PE investors actually select companies with a higher level of discretionary accruals. This is similar to the findings in Hochberg (2002) and shows that PE investors are more willing to invest in firms which are likely to report earnings with some aggression or even over-confidence (Hochberg, 2002). This finding can be interpreted in two different ways. One explanation is that PE investors are potentially unable to detect aggressive accruers and therefore, aggressive accruers have higher chances of being selected than conservative accruers. Another plausible explanation is that PE investors do observe the level of earnings management a priori but that they simply do not mind the high accruals. Given their professionalism and the thoroughness of the due diligence screening, it is likely that they

[8] Unreported coefficients of the standard OLS regression show that both the coefficient and the significance of the PE variable is lower in all observation years, suggesting that selection bias is driving the uncorrected results and underestimates the impact of receiving PE.

indeed see through this earnings management and take it into account in the valuation of the company.[9]

In summary, all analyses are consistent with our first hypothesis that PE backed firms manage earnings prior to participation date. Firms which receive PE backing have, on average, high discretionary accruals both in the fiscal years before and even in the PE investment year itself. Hypothesis 2, suggesting a lower level of earnings management after PE investment date also finds confirmation. We observe a decline in median discretionary accruals from 2 years after the PE investment although additional tests show that this result may, at least partly, be driven by firm-specific factors. Although these findings might partly be driven by reversing accruals, this evidence also suggests that PE investors' governance limits portfolio company's earnings management behavior ex post.

IV. 2 Earnings Conservativeness Tests

We investigate an additional component of earnings quality by focusing on earnings conservatism to unravel the governance impact of PE investors' on a company's financial reporting behavior. Strictly spoken, earnings are of a more conservative nature if losses are recognized timely instead of being spread over several periods (Basu, 1997). To some extent, a higher degree of earnings conservatism coincides with a higher earnings quality since conservative financial statements are more relevant for creditors, shareholders, managers and other external parties (Ball et al., 2000; Watts, 2002).

To estimate differences in earnings conservatism we apply a variant of the Ball & Shivakumar model (2002), based on the conservatism principle of Basu (1997). Earnings conservatism generally is seen as an important attribute of the overall earnings quality and implies that bad news is recognized more timely than good news (Ball et al., 2000; Ball & Shivakumar, 2002). Hence, earnings are thought to be of a higher quality if bad news events reflected in current earnings level appear as transitory shocks or one-time dips and good news events appear as persistent shocks to the earnings stream (Basu, 1997). As in Ball & Shivakumar (2002), we measure timely loss incorporation in accounting income by focusing on the tendency for income decreases to reverse. Therefore, the first-order serial dependence in earnings changes is allowed to be dependent on the conditional sign of the prior earnings change (Ball & Shivakumar, 2002). This method allows us to separately identify transitory gain and loss components. If prior-period decreases exhibit a higher tendency to reverse than prior-period earnings increases, this provides evidence of a higher willingness to recognize

[9] However, since we do not have data on the exact pricing of the deals we cannot examine this relationship further. Hence, it remains an open question whether and if so, to what extent, PE investors are fooled by this accruals management or take it into account in the valuation of the firm.

losses timely and signals a higher earnings conservatism. Detecting a higher degree of earnings conservatism for PE backed companies then would provide additional evidence of disciplining PE investors' governance impact on the financial reporting process.

We analyze conservatism tendencies in (*1*) current profits before taxes, but after financial income (CP), (*2*) profit before taxes and after extraordinary income (PBT) and (*3*) profit after taxes (PAT). We focus on various earnings levels for two reasons. First, it gives us a more complete picture of the earnings conservatism tendency in reported earnings then focusing on one earnings line in isolation. Second, by differentiating between subsequent earnings levels, we are able to study the use of extraordinary items in an attempt to report conservative bottom line earnings. Transitory gain and loss components are estimated by running the following regression model:

$$\Delta NI_t = \beta_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t, \quad (4)$$

with:
ΔNI_t = income level change at time *t*, scaled by beginning-of-the-year book value of total assets
ΔNI_{t-1} = income level change at time *t-1*, scaled by beginning-of-the-year book value of total assets
$NEG(\Delta NI)_{t-1}$ = dummy variable taking the value of 1 when prior-period earnings changes are negative

By making the estimation model dependent on prior period earnings decreases, we are able to study the reversion tendency of losses and gains separately. Timely recognition of losses implies a statistically negative slope coefficient for (β_2 + β_3). Further, losses are recognized in a more timely way than gains if $\beta_3 < 0$. Finally, untimely recognition of gains implies smooth earnings patterns, where gains are incorporated in income only if the underlying cash flows are realized. Hence, gains tend to show up as being permanent, implying that the slope coefficient on prior period positive earnings changes (β_2) is positive, i.e. non-reversing in nature.

Consistent with other earnings conservatism studies (Ball et al., 2000; Ball & Shivakumar, 2002; Basu, 1997), model properties are defined at earnings changes and not its level to correctly identifying the transitory components in income. However, working with earnings levels requires 3 subsequent earnings levels to estimate model (4). Therefore, we are unable to study differences in earnings conservatism pre- and post-investment date since we generally have only 2 years of earnings data available before the PE financing date. Hence, we focus specifically on differences in earnings conservatism between different subsamples in the post-investment year.[10] By means of introduction, we report fairly detailed descriptives of our observed sample in Table 6.

[10] Although we are limited to analyzing earnings figures in the post-financing period, we are still able to include sufficient observations in our research since earnings levels are available for all sample companies. Hence, unlike the accruals estimation in the previous section, we are not limited to study only those companies which report added value.

INSERT TABLE 6 ABOUT HERE

Table 6, panel A reports descriptives for the entire sample, i.e. all available observations from the investment year on, for PE backed as well as non-PE backed firms. Mean (median) total assets are EUR 11,811,194 (2,815,549). Although we winsorized the top and bottom 1% of outliers, we still have rather high values in the sample resulting in a right-skewed distribution.[11] Sales levels are only available for 2,952 out of the 4,202 observations in the analyzed sample. Average (median) sales on total assets are 102.25% (83.04%). For all observed income levels, approximately 70% of the income levels are positive and 30% have negative values. Median income levels vary between 2.56% (PBT) and 1.39% (PAT) of total assets. Table 6, panel B contains values for PE backed firms only. All descriptives are relatively similar to descriptives of the entire sample in panel A.

a. PE backed versus non-PE backed firms

To test our third hypothesis, we supplement model (4) with a dummy to allow for differences between PE backed and non-PE backed companies. Algebraically, this results in the following model (5):

$$\Delta NI_t = \alpha_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \beta_4 PE + \beta_5 PE * NEG(\Delta NI)_{t-1} + \beta_6 PE * \Delta NI_{t-1} + \beta_7 PE * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t \quad (5)$$

with: ΔNI_t = income level change at time *t*, scaled by beginning-of-the-year total assets
ΔNI_{t-1} = income level change at time t_{-1}, scaled by beginning-of-the-year total assets
$NEG(\Delta NI)_{t-1}$ = dummy for prior-period negative income level change
PE = dummy for receiving PE, taking the value 1 if the company is PE backed

When interpreting the coefficients, we are mainly interested in differences in earnings conservatism between PE backed and non-PE backed firms. Therefore, our discussion will primarily focus on (β_6+β_7) which measures the compound effect for differences in timely loss reporting between both samples. Table 7 gives an overview of the expected sign of individual and compound coefficients' signs.

INSERT TABLE 7 & TABLE 8 ABOUT HERE

Table 8 reports regression results of running model (4) and (5) on all available observations, in the post-financing years (n=4,062). First, panel A shows that the explanatory

[11] We additionally winsorized the top 2 and 2.5% and our results of the transitory earnings models (cfr. infra) remained stable.

power of model (4) is negligible for the CP level but reaches 6.48% for PBT and 6.83% for PAT. Furthermore, the slope coefficient for β_3 is significantly negative indicating that for PE backed and for non-PE backed firms losses are, on average, recognized more timely than gains. Further, the compound effect ($\beta_2 + \beta_3$) is significantly negative for all three earnings levels suggesting timely loss recognition in general. We also find a significantly positive slope coefficient for β_2 for as well PBT as PAT. This indicates that positive earnings are not only smoothed over time but also have a tendency to grow year-on-year.

Table 8, panel B reports regression coefficients and *t*-statistics of model (5) and shows an increase in adjusted R^2 both for PBT (8.46%) and PAT (8.43%). As hypothesized, we find significant differences between both sub-samples. The compound coefficient for ($\beta_6+\beta_7$) is significantly negative for both PBT (–0.541) and for PAT (–0.825), suggesting that PE backed companies report losses more timely compared to non-PE backed companies, consistent with our third hypothesis. Further, slope coefficients for β_2 and β_3 become insignificantly different from zero, suggesting that non-PE backed companies do not have a tendency to report losses timely. Generally, these regression results provide clear evidence in line with our third hypothesis.

b. Government versus non-government PE backed firms

We additionally expand model (4) by adding a dummy to control for differences in earnings conservatism between companies that received PE financing from non-government PE investors versus companies backed by government-related PE investors. Therefore, model (6) goes as follows:

$$\Delta NI_t = \alpha_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \beta_4 GOV + \beta_5 GOV * NEG(\Delta NI)_{t-1} + \beta_6 GOV * \Delta NI_{t-1} + \beta_7 GOV * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t , \quad (6)$$

with:
ΔNI_t = income level change at time *t*, scaled by beginning-of-the-year total assets
ΔNI_{t-1} = income level change at time *t-1*, scaled by beginning-of-the-year total assets
$NEG(\Delta NI)_{t-1}$ = dummy for prior-period negative income level change
GOV = dummy taking the value of 1 when PE investor = government-related backer

*****INSERT TABLE 9 ABOUT HERE*****

Similar to the results of (5), we are primarily interested in differences in timely loss reporting between our two subsamples under analysis, namely government PE backed versus non-government PE backed firms. First, Table 9, panel A reports regression coefficients and *t*-statistics of model (4) on the PE backed sample only (n=2,062). The explanatory power of

the model is negligible for the CP level and has only low power for both PBT and PAT levels. Nevertheless, results are in line with the findings of the regressions above. PE backed companies report losses in a timely fashion since slope coefficients for (β_2+β_3) are significantly negative for all three income levels.

Table 9, Panel B shows differences in timely loss reporting between companies financed by government PE backed versus non-government PE backed companies. Here, coefficient (β_2+β_3) indicates the tendency of firms backed by non-government related PE investors to report losses timely. For both PBT and PAT earnings levels, we find a statistically significant negative coefficient, suggesting that the earlier found relation of timely loss reporting persists for the non-government PE backed subsample. Further, (β_6+β_7) is marginally significantly positive. This indicates that firms which are backed by government-related PE investors recognize losses less timely compared to non-government PE backed firms and provides evidence for our fourth hypothesis. This could be interpreted as evidence that the specific characteristics of the government-related PE investors and its accompanied weaker governance is reflected in a somewhat less conservative financial reporting discipline compared to financial reporting of non-government related PE investors.

We apply several robustness checks on the data by adjusting the winsorizing percentage and by constructing different sub-samples (e.g. non-government PE backed versus non-PE backed, government PE backed versus non-PE backed) and all results remain qualitatively equal. The general observation that CP levels, in contrast to PBT and PAT, do not show tendencies of timely loss reporting denotes the importance of extra-ordinary income as an instrument to achieve timeliness in financial reporting. We leave this finding to further assessment in future studies.

V. Conclusion

In this paper, we examine both entrepreneurial tendencies to manage earnings upward prior to receiving PE and the governance impact of PE investors on the portfolio companies' financial reporting discipline ex post. To our knowledge, this study is the first to examine financial statement information of companies receiving PE financing around their initial financing year. Results are obtained by running both earnings management and earnings conservatism tests.

We hand-collected a dataset of 556 Belgian companies receiving PE financing between 1985 and 1999, next to a matched set of non-PE backed firms. Belgian accounting legislation requires all firms (listed and unlisted) to file their financial statements annually and therefore provides us with an excellent research design to explore financial reporting trends of unlisted

companies, both before as after the PE investment year. The characteristics of this dataset enable us not only to study entrepreneurial earnings management behavior around the investment date but also to observe the PE investor's governance impact on the quality of the financial reporting process ex post.

First, this paper deals with the information content of financial statements in the PE investor's screening process. We evaluate earnings management behavior in a previously unexplored research setting, namely around the PE investment date. Prior evidence on earnings management behavior of PE backed companies was merely situated around the IPO event. This study extends the traditional research context, by analyzing entrepreneurial earnings management attempts to catch PE investors' interest. Results clearly indicate that entrepreneurs manage earnings prior to the PE financing. We interpret this as evidence that entrepreneurs try to catch PE investors' attention by showing their increasing profitability. It remains, however, an open question to what extent PE investors see through this earnings management and take it into account when valuing the firm.

Second, this paper contributes to the growing literature on the governance role played by PE investors in the professionalization process of their portfolio companies. We show that PE investors indeed play a value-added role in influencing portfolio companies' financial reporting discipline. Not only do we find a less noticeable earnings management behavior after the financing year, PE backed firms also report earnings in a more conservative way compared to non-PE backed firms. Although the lower earnings management measure might partly be driven by the reversal behavior of accounting accruals, the higher conservatism clearly points at a more mature and reliable financial reporting discipline. Furthermore, financial reporting governance is also determined by investor type. The lower degree of earnings conservatism in government-related PE backed firms is interpreted as evidence in line with the arguments of Leleux & Surlemont (2003) and Lerner (1999) that government-related PE investors are less professional compared to non-government PE investors in monitoring their portfolio firms.

Our findings are subject to some caveats. First, we measure earnings quality by focusing on two aspects of it, namely earnings management and earnings conservatism. These instruments cover only partly a company's financial reporting quality. However, Ball & Shivakumar (2002) argue that earnings quality is an abstract concept and that measuring one single attribute of it is already indicative of the overall earnings quality. Hence, this multi-method research design allows to understand more of a company's financial reporting quality than by applying only one research method in isolation. Second, we acknowledge that

companies which are able to attract PE financing have highly specific individual characteristics potentially leading to biased results. Specifically, the selection of matched non-PE backed companies raises concerns about endogeneity bias. We try to tackle this potential distortion in our data by applying a two-step regression as per Heckman (1979) leading to even stronger results. However, since it is difficult to control for all potential differences between both samples, we acknowledge that omitted firm-specific characteristics might still drive the accruals estimations partly.

Our results are important for several parties. First, our results are important for PE investors since we show that entrepreneurs manage earnings upward when applying for PE and that reported accounting figures have to be interpreted with the necessary caution. However, it remains an open question to what extent PE investors are fooled by this earnings management or simply see through it, given their professionalism they are operating with. Second, our results are important for all stakeholders that use financial statement information of PE backed companies. Although PE backed and non-PE backed companies are subject to similar legal reporting requirements, earnings of PE backed companies are reported in a substantially more conservative way. This conservatism tendency is even higher for non-government-related PE backed firms, suggesting the more stringent governance of this kind of PE investors to be reflected in their financial reporting discipline. Further research with respect to the governance impact on PE portfolio firms' financial reporting discipline is required to explore the generalization of our results.

Appendix 1: Accruals Estimation

To estimate the expected (i.e. non-discretionary) current accruals of a firm at a specific time, we run the following cross-sectional OLS regressions on the peer group.

$$\frac{CA_{j,t}}{TA_{j,t-1}} = \alpha_0\left(\frac{1}{TA_{j,t-1}}\right) + \alpha_1\left(\frac{\Delta NAV_{j,t} - \Delta TR_{j,t}}{TA_{j,t-1}}\right) + \varepsilon_t \ , \qquad (i)$$

with: $CA_{j,t}$ = current accruals for sector *j* at time *t*
$\Delta NAV_{j,t}$ = change in net added value for sector *j* at time *t*
$\Delta TR_{j,t}$ = trade receivables growth for sector *j* at time *t*
$TA_{j,t-1}$ = beginning of the year total assets for sector *j* at time *t*

This estimation is a variant on the modified Jones model (by Dechow et al., 1995) with sales growth as an explanatory factor instead of growth in net added value. The reason for this modification is that Belgian SMEs are allowed to report abbreviated financial statements when they comply with the following requirements. A company should (*1*) employ less than 100 employees on average per year registered or (*2*) not meet two or more of the following criteria: (*i*) annual turnover > 6,250,000 euro, (*ii*) balance sheet total > 3,125,000 euro and (*iii*) average number of employees > 50. One major difference between abbreviated and complete financial statements is that sales levels are only compulsory in complete financial statements. In abbreviated formats, a net added value is reported. This value equals (Operating Income – Raw Materials and Consumables– Services and Other Goods). Given that over 60% of the sample reports an abbreviated statement, we use net added value figures to avoid ample missing data.

Further, we calculate the level of non-discretionary current accruals for an individual firm *i* for each observation year *t* by using the estimated coefficients, $\hat{a}_0$ and $\hat{a}_1$ of model (*i*) estimated for each 2-digit sector peer group (respectively 1-digit if less than 7 companies were available):

$$NDCA_{i,t} = \hat{a}_0\left(\frac{1}{TA_{i,t-1}}\right) + \hat{a}_1\left(\frac{\Delta NAV_{i,t} - \Delta TR_{i,t}}{TA_{i,t-1}}\right), \qquad (ii)$$

with: $NDCA_{i,t}$ = non-discretionary current accruals for firm *i* at time *t*
$\Delta NAV_{i,t}$ = change in net added value for firm *i* at time *t*
$\Delta TR_{i,t}$ = trade receivables growth for firm *i* at time *t*
$TA_{i,t-1}$ = beginning of the year total assets of firm *i* at time *t*

Finally, the discretionary current accrual component for firm *i* at time *t* is the difference between the firm-year observed current accruals and the expected, non-discretionary accruals:

$$DCA_{i,t} = \frac{CA_{i,t}}{TA_{i,t-1}} - NDCA_{i,t} \qquad (iii)$$

Appendix 2: Two-step Heckman Correction Test

The two step Heckman correction test employs a two-equation model in an attempt to control for potential selection bias in the data. Heckman (1979) showed that regression results might be contaminated by selection bias but that one can simply correct for it by running a two-step equation model.

In our setting, the first equation is a probit regression which models the probability of receiving PE as a function of intrinsic characteristics of the observed companies. We identified 5 characteristics which might distinct PE backed firms significantly from non-PE backed firms:

$$PE\left[{}^{1}_{0}\right] = \beta_0 + \beta_1(\Delta TA) + \beta_2(Gearing) + \beta_3\left(\frac{Accprofit}{TA}\right) + \beta_4\left(\frac{Investments}{TA}\right) + \beta_5\left(\frac{Cash}{TA}\right) + \varepsilon \qquad (iv)$$

'Change in total assets' (=ΔTA) measures the growth characteristics of all sample companies and controls for potential differences in growth characteristics between our PE backed and non-PE backed sample. 'G*earing*' quantifies the solvency situation of a company. We expect the gearing ratio to differ substantially between both groups since PE backed firms have higher financing needs than non-PE backed matched equivalents prior to the PE investment date. 'Accumulated profit' (=*Accprofit*) deflated by total assets measures the internal profitability of a firm. Again, given their high need for financing, we expect PE backed firms to have lower internally generated profits. *Investments*, deflated by total assets measures the investment profile of both samples. We incorporate this measure since anecdotal evidence shows that PE backed companies typically have a higher investment rate compared to non-PE applicants. Finally, *Cash* relative to assets measures cash available. Specifically in the pre-investment period, this figure is expected to differ substantially between both sets.

The estimates of this probit model are used to compose the inverse Mills ratio. This ratio is set equal to the hazard function of being selected for receiving PE. Algebraically: $\lambda(Z) = \phi(Z)/\Theta(Z)$, with $\phi(Z)$ = the standard normal probability distribution function and $\Theta(Z)$ = the standard normal cumulative distribution function. If selection bias is driving the results, the error terms of the probit regression and the original test model are typically correlated.

The second equation is based on the original OLS model, taking into account the effect of the inverse Mills ratio: i.e. the effect of being selected. By estimating both equations simultaneously, we can retrieve the unbiased estimate of the coefficient on the PE variable and isolate the effect of selection.

References

Ball, R. & Brown, P. 1968, "An empirical evaluation of accounting income numbers", *Journal of Accounting Research*, vol. 6, no. 2, pp. 159-178.

Ball, R., Kothari, S. P., & Robin, A. 2001, "The effect of international institutional factors on properties of accounting earnings", *Journal of Accounting and Economics*, vol. 29, pp. 1-51.

Ball, R. & Shivakumar, L. "Earnings quality in UK private firms", *Working Paper*, London Business School, 2002, 53 pp.

Basu, S. 1997, The conservatism principle and the asymmetric timeliness of earnings, *Journal of Accounting and Economics*, no. 24, pp. 3-37.

Blanchard, O.J. 1967, "Comment", *Journal of Business and Economic Statistics*, vol.5, pp. 449-451.

Burgstahler, D. & Dichev, I. 1997, "Earnings management to avoid earnings decreases and losses", *Journal of Accounting and Economics*, vol. 24, no. 1, pp. 99-126.

Dechow, P. M. 1994, "Accounting earnings and cash flows as measures of firm performance. The role of accounting accruals", *Journal of Accounting and Economics*, vol. 18, pp. 3-42.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. 1995, "Detecting earnings management", *The Accounting Review*, vol. 70, no. 2, pp. 193-225.

Dechow, P.M., Richardson, S.A., & Tuna, I. 2003, "Why are earnings kinky? An examination of the earnings management explanation", *Review of Accounting Studies*, 8, 355-384, Uncorrected proof.

DeFond, M. L. & Jiambalvo, J. 1994, "Debt covenant violation and manipulation of accruals", *Journal of Accounting and Economics*, vol. 17, pp. 145-176.

Degeorge, F., Patel, J., & Zeckhauser, R. 1999, "Earnings management to exceed thresholds", *Journal of Business*, vol. 72, no. 1, pp. 1-33.

EVCA statistics, 1987-2002, Source: *European Venture Capital Association*, Zaventem - Belgium

Falconer, M., Reid, G.C., & Terry, N.G., "Post investment demand for accounting information by venture capitalists", *Accounting & Business Research*, vol. 25, no. 99, pp. 186-196.

Fried, V. H. & Hisrich, R. D. 1994, "Toward a model of venture capital investment decision making", *Financial Management*, vol. 23, no. 3, pp. 28-37.

Gompers, P. A. 1995, "Optimal investment, monitoring, and the staging of venture capital", *Journal of Finance*, vol. 50, no. 5, pp. 1461-1489.

Hall, J. & Hofer, C. W., 1993, "Venture capitalists' decision criteria in new venture evaluation", *Journal of Business Venturing*, Vol. 8, Issue 1, p. 25-42.

Hamilton, J.D. 1994, "Time series analysis", *Princeton University Press*, Princeton.

Healy, P. M. & Wahlen, J. M. 1999, "A review of the earnings management literature and its implications for standard setting", *Accounting Horizons*, vol. 13, no. 4, pp. 365-383.

Heckman, J. 1979. "Sample selection bias as a specification error", *Econometrica* 47, 153-161.

Hellman, T. & Puri, M., 2000, "The interaction between product market and financing strategy: the role of venture capital", *Review of Financial Studies*, 13, p. 959-984.

Hellman, T., and Puri., M. 2002, "Venture capital and the professionalization of start-up firms: empirical evidence", *The Journal of Finance*, vol. 57, pp. 169-197.

Hochberg Y., 2002, "Venture capital and corporate governance in the newly public firm", *Working Paper*, Stanford University, 55 pp.

Jain, B. A. & Kini, O. 1995, "Venture capitalist participation and the post-issue operating performance of IPO firms", *Managerial and Decision Economics*, vol. 16, pp. 593-606.

Jensen, M. C. & Meckling, W. H. 1976, "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, vol. 3, no. 4, pp. 305-360.

Jones, J. J. 1991, "Earnings management during import relief investigations", *Journal of accounting research*, vol. 29, no. 2, pp. 193-228.

Kaplan, S. N. & Strömberg, P. Venture capitalists as principals: contracting, screening, and monitoring. 2001., *NBER working Paper*.

Kaplan, S. N. & Strömberg, P. 2002, "Financial contracting meets the real world: an empirical analysis of venture capital contracts", *Review of Economic Studies*, pp. 1-35.

Leleux, B. & Surlemont B., 2003, "Public versus private venture capital: seeding or crowding out ? A pan-European analysis", *Journal of Business Venturing*, 18, pp. 81-104.

Lerner, J. 1995, "Venture capitalists and the oversight of private firms", *Journal of finance*, vol. 50, no. 1, pp. 301-318.

Lerner, J. 1999, "The government as venture capitalist: the long-run impact of the SBIR program", *Journal of Business*, vol. 72, no. 3, pp. 285-319.

MacMillan, I. C., Zemann, L., & Subbanarasimha, B. N. 1987, "Criteria distinguishing successful from unsuccessful ventures in the venture screening process", *Journal of Business Venturing*, vol. 2, pp. 123-137.

Manigart, S., De Waele, K., Wright, M., Robbie, K., Desbrières, P., Sapienza, H. J., & Beekman, A. 2000, "Venture capitalists, investment appraisal and accounting information: a comparative study of the USA, UK, France; Belgium and Holland", *European Financial Management*, vol. 6, no. 3, pp. 389-403.

Manigart, S., Baeyens, K. & Van Hyfte, W. 2002, "The survival of venture capital backed companies", *Venture Capital,* vol. 4, no. 2, pp. 103-124.

McNichols, M. 2001, "Research design issues in earnings management studies", *Journal of Accounting and Public Policy*, vol. 19, pp. 313-345.

Megginson, W. L. & Weiss, K.A. 1991, "Venture capital certification in initial public offerings", *Journal of Finance*, Vol. XLVI, no. 3, pp. 879-903.

Perry, S. E. & Williams, T. H. 1994, "Earnings management preceding management buyout offers", *Journal of Accounting and Economics*, vol. 18, pp. 157-179.

Plummer, E. & Mest, D. P. 2001, "Evidence on the management of earnings components", *Journal of Accounting, Auditing & Finance* no. Fall 2001, pp. 301-330.

Sahlman, W. A. 1990, "The structure and governance of venture-capital organizations", *Journal of Financial Economics*, vol. 27, no. 2, pp. 473-521.

Sapienza, H. J., Manigart, S., & Vermeir, W. 1996, "Venture capitalist governance and value added in four countries", *Journal of Business Venturing*, vol. 11, no. 6, pp. 439-469.

Scott, D.W., 1992, "Multivariate density estimation: theory, practice and visualization", New York: Wiley & Sons.

Teoh, S. H., Welch I., & Wong, T. J. 1998a, "Earnings management and the long-run market performance of initial public offerings", *Journal of Finance*, vol. 53, no. 6, pp. 1935-1974.

Teoh, S. H., Welch, I., & Wong, T. J. 1998b, "Earnings management and the underperformance of seasoned equity offerings", *Journal of Financial Economics*, vol. 50, pp. 63-99.

Watts, R. L. & Zimmerman, J. L. 1990, "Positive accounting theory: a ten year perspective", *The Accounting Review*, vol. 65, no. No. 1, pp. 131-156.

Watts, R. L. , 2002, "Conservatism in accounting", *Simon School of Business Working Paper No. FR 02-21*, 36 pp.

White, H., 1980, "A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity", *Econometrica* 48, pp. 817-838.

Wright, M. & Robbie, K. 1998, "Venture capital and private equity: a review and synthesis", *Journal of Business Finance and Accounting*, vol. 25, no. 5-6, pp. 521-571.

Tables and Graphs

Table 1: Sample Characteristics of PE Backed and non-PE backed Companies

Panel A: PE Investor Origin and Stage of Financing *				
Investor type	*Start-up stage*	*Early stage*	*Later stage*	*Total*
Non-government related	43	29	81	153 (28%)
Government related	162	71	170	403 (72%)
Total	205 (37%)	100 (18%)	251 (45%)	556 (100%)

* *Note: We split the sample in non-government related private equity (PE) backed firms and government-related PE backed firms since the Belgian PE industry is typically known as being government-driven. Non-government PE investors are (1) private firms investing funds from third parties as well as (2) captive funds, i.e. funds in which the main shareholder of the management company contributes most of the capital from its own internal sources and reinvests realized capital gains into the fund. Government-related PE firms invest government funds either directly or indirectly in PE applicants (source: EVCA Glossary). Further, companies are defined as start-ups when they are younger than two years at the time of participation. Early stage companies are between 3 and 5 years old and later stage companies are older than 5 years.*

Panel B: Descriptives of Age, Total Assets , Growth in Assets and Leverage *					
PE backed sample	N	Mean	Median	Min.	Max.
Age	4435	12.33	7	0	74
Total Assets	4435	11,786,642	2,717,136	10,833	811,072,065
Asset Growth	4435	19.26%	6.39%	-80.33%	465.17%
Leverage	4435	69.88%	72.35%	3.53%	308.59%
Non-PE backed sample	n	Mean	Median	Min.	Max.
Age	4784	14.38	9	0	91
Total Assets	4784	7,257,799	1,611,394	13,585	876,034,348
Asset Growth	4784	12.52%	4.13%	-69.98%	379.89%
Leverage	4784	66.73%	70.31%	1.93%	193.36%

* *Note: Descriptives come from the PE backed and non-PE backed sample separately and contain values of all specific observation years. We filtered the top and bottom 1% outliers to avoid distorting impact of outliers. 'Age' corresponds to the average age in the PE investment year. Next to total assets, also asset growth is calculated to denote the growth characteristics of both samples. Asset growth is measured as (Total Assets$_t$ – Total Assets$_{t-1}$)/(Total Assets$_{t-1}$). Leverage shows the solvency situation of a company and is computed as follows: (1- BV Equity/Total Assets), with BV of Equity being the Book Value of Equity.*

Panel C: Sector Distribution *				
Sector code	**Industry**	**Frequency**	**%**	**Cum. %**
01	**Agriculture and hunting**	**2**	**0.36**	**0.36**
02	**Forestry**	**1**	**0.18**	**0.54**
03	**Fishing**	**3**	**0.54**	**1.08**
14	Mineral Oil refining	1	0.18	1.26
10-19	**Energy and water**	**1**	**0.18**	**1.26**
21	Extraction and preparation of metal sources	1	0.18	1.44
22	Production and preliminary processing of metals	5	0.90	2.34
23	Extraction of minerals (other than metallic and energetic)	2	0.36	2.70
24	Manufacture of non-metallic minerals	12	2.16	4.86
25	Chemical industry	13	2.34	7.20
20-29	**Chemical industry**	**33**	**5.94**	**7.20**
31	Manufacture of metal articles	43	7.73	14.93

32	Mechanical engineering	17	3.06	17.99
33	Electrical engineering	4	0.72	18.71
34	Manufacturing of motor vehicles/parts	34	6.12	24.82
35	Manufacturing of other means of transport	5	0.90	25.72
36	Instrument engineering	2	0.36	26.08
37	Manufacturing of fine metals	4	0.72	26.80
30-39	**Metal manufacture: mechanical, electrical and instrument engineering**	**109**	**19.60**	**26.80**
41	Food, drink and tobacco industries	19	3.42	30.22
43	Textile industry	4	0.72	30.94
44	Leather industry	1	0.18	31.12
45	Footwear and clothing industry	9	1.62	32.73
46	Timber and wooden furniture industries	23	4.14	36.87
47	Manufacturing of paper and paper products	21	3.78	40.65
48	Processing of rubber and plastics	8	1.44	42.09
49	Other manufacturing industries	2	0.36	42.45
40-49	**Other manufacturing industries**	**87**	**15.65**	**42.45**
50	Building constructs	30	5.40	47.84
50-59	**Building and civil engineering industry**	**30**	**5.40**	**47.84**
61	Wholesale distribution	71	12.77	60.61
62	Scrap and waste materials handling	4	0.72	61.33
63	Wholesale agents	11	1.98	63.31
64	Retail distribution	13	2.34	65.65
66	Hotels and catering	6	1.08	66.73
67	Repair of consumer goods and vehicles	3	0.54	67.27
60-69	**Distributive trades, hotels, caters and repairs**	**108**	**19.43**	**67.27**
72	Land transport	8	1.44	68.71
75	Air transport	3	0.54	69.24
76	Supporting transport services	4	0.72	69.96
77	Travel agents	3	0.54	70.50
79	Communication services	4	0.72	71.22
70-79	**Transport and communication**	**22**	**3.96**	**71.22**
81	Credit transactions institutes	15	2.70	73.92
83	Computer services	94	16.91	90.83
84	Renting and leasing activities	6	1.08	91.91
80-89	**Business services**	**115**	**20.69**	**91.91**
92	Sanitary services	3	0.54	92.45
93	Educational services	1	0.18	92.63
94	Research and Development	4	0.72	93.35
97	Recreational services	27	4.86	98.20
98	Personal services	4	0.72	98.92
99	Domestical services	6	1.08	100
90-99	**Other services**	**45**	**8.10**	**100**
TOTAL	**All sectors**	**556**	**100**	**100**

Table 2: Descriptives and *t*-statistics of Deflated Earnings Levels[*]

	Interval	Real observations	Expected observations	Variance	Stdev.	*t*-statistics
PE Backed,	[-0.01, 0.00]	23.00	38.00	36.88	6.07	-2.47***
2 and 3 years before participation	[0.00, 0.01]	59.00	32.50	63.46	7.97	3.33***
PE Backed,	[-0.01, 0.00]	11.00	25.50	20.88	4.57	-3.17***
1 year before participation	[0.00, 0.01]	40.00	17.50	41.66	6.45	3.49***
Non-PE Backed,	[-0.01, 0.00]	38.00	55.00	59.19	7.69	-2.21***
3 to 1 year before participation	[0.00, 0.01]	95.00	50.00	103.72	10.18	4.42***

[*] *Deflated earnings levels consist of profit after taxes (PAT) and are measured by deflating current year's PAT by lagged total assets. Interval widths are determined by the following formula: $(2IQR).n^{-1/3}$, with IQR = interquartile range and n = total number of observations. This formula optimizes the interval width, given (i) the variability of the data and (ii) the total number of observations (Scott, 1992). The expected number of observations is the average number of the two adjacent intervals. Variances (σ^2) are equal to $N . p_i . (1 - p_i) + ¼ . N . (p_{i-1} + p_{i+1}).(1 - p_{i-1} - p_{i+1})$ and t-statistics are measured as: (n° of actual observation – n° of observed observations)/σ . Note: * = statistically significant at 10% level, ** = statistically significant at 5% level, *** = statistically significant at 1% level*

Table 3: Descriptives and *t*-statistics of Deflated Earnings Changes [*]

Sample	Interval	Real observations	Expected observations	Variance	Stdev.	*t*-statistics
PE Backed,	[-0.01, 0.00]	41.00	28.00	47.39	6.88	1.89**
2 and 3 years before participation	[0.00, 0.01]	31.00	27.00	39.61	6.29	0.64
PE Backed,	[-0.01, 0.00]	21.00	23.00	28.41	5.33	-0.38
1 year before participation	[0.00, 0.01]	32.00	20.00	65.99	6.00	2.00***
Non-PE Backed,	[-0.01, 0.00]	57.00	59.50	75.34	8.68	-0.29
3 to 1 year before participation	[0.00, 0.01]	66.00	49.00	49.14	8.90	1.91**

[*] *Deflated changes in profit after taxes (ΔPAT) are measured by deflating the change in PAT figures ($PAT_t - PAT_{t-1}$) by lagged total assets. Interval widths are determined by the following formula: $(2IQR).n^{-1/3}$, with IQR = interquartile range and n = total number of observations. This formula optimizes the interval width, given (i) the variability of the data and (ii) the total number of observations (Scott, 1992). The expected number of observations is the average number of the two adjacent intervals. Variances (σ^2) are equal to $N . p_i . (1 - p_i) + ¼ . N . (p_{i-1} + p_{i+1}).(1 - p_{i-1} - p_{i+1})$ and t-statistics are measured as: (n° of actual observation – n° of observed observations)/σ . Note: * = statistically significant at 10% level, ** = statistically significant at 5% level, *** = statistically significant at 1% level*

Table 4: Time-Series Distribution of Discretionary Accruals (Expressed as % of lagged Total Assets) [*]

	Year - 2	Year - 1	Year 0	Year 1	Year 2
Median DCA – **PE backed**	2.13%	2.96%	4.05%	2.50%	1.15%
N° of observations	166	151	138	137	127
P within	(0.016)	(0.000)	(0.000)	(0.013)	(0.541)
Median DCA – **Non-PE backed**	1.25%	1.01%	0.13%	0.04%	-0.52%
N° of observations	160	156	146	143	133
P within	(0.101)	(0.106)	(0.152)	(0.629)	(0.819)
P (between)	(0.186)	(0.028)	(0.035)	(0.031)	(0.493)

[*] This table contains median discretionary current accruals for both the PE backed and the non-PE backed sample. *The initial sample consisted of 556 private equity backed firms and 556 control firms, matched on (i) size, (ii) age and (iii) sector code in the year before the PE investment. We only included companies with available data in a time frame of 2 years before until 2 years after the participation date to evaluate the time-series discretionary accruals trend over this period. As a result, only companies of more than 2 years old could be incorporated in this calculation. Further, a substantial number of companies had missing data on parts of the NAV (net added value) measure. Eventually, this resulted in 166 observations for the PE backed sample and 160 for the non-PE backed sample in (t-2). Remaining differences in number of observations between both samples are a result of lacking data in a specific year. Current accruals consist of the change in non-cash current assets and the change in current liabilities. Non-discretionary current accruals (NDCAs) are current accruals by a within two-digit (respectively one-digit) NACE industry cross-sectional modified Jones model (cfr. Teoh et al., 1998a & b: see appendix 1 for more details). DCAs are scaled by lagged total assets and measure the direction and the average amount of earnings management at each specific observation year. P values (within) are calculated by running a simple t-test and measure whether median DCA levels are significantly different from zero for each observation year separately. P-values (between) come from a two-tailed Wilcoxon signed rank test and measure differences between sample means.*

Table 5: Level of Earnings Management in all Observed Years (Heckman 2 Step Regression Model) [*]

	Year –2		Year –1		Year 0		Year +1		Year +2	
Variable	Coeff.	*t-stat.*	Coeff.	*t-stat.*	Coeff.	*t-stat.*	Coeff.	*t-stat.*	Coeff.	*t-stat.*
Intercept	0.079	*0.46*	0.043	*0.19*	0.069	*0.36*	0.065	*0.40*	-0.026	*-0.16*
PE backing dummy	0.176	*1.09*	0.914	*4.79****	0.723	*6.19****	0.363	*4.72****	0.182	*1.87**
Ln(size)	-0.007	*-0.70*	-0.021	*-1.46*	-0.021	*-1.86*	-0.016	*-1.55*	-0.006	*-0.64*
Ln(age)	-0.029	*-1.62*	-0.043	*-1.74**	-0.054	*-2.66****	-0.009	*-0.61*	0.035	*2.21****
Change in earnings	0.006	*0.62*	-0.003	*-0.28*	0.005	*0.47*	0.002	*0.25*	-0.005	*-0.61*
Leverage	-0.059	*-1.52*	-0.083	*-1.26*	-0.012	*-0.20*	-0.058	*-4.57****	-0.086	*-2.63****
Sector dummies included	-	-	-	-	-	-	-	-	-	-
# of observations		326		307		284		280		260
Adjusted R^2		4.2%		10.0%		18.7%		13.6%		6.6%
Selection Equation: probit model		χ^2		χ^2		χ^2		χ^2		χ^2
Intercept	0.051	*0.24*	0.004	*0.00*	-0.126	*1.14*	0.241	*3.78**	0.102	*0.83*
Change in total assets	0.476	*4.37****	0.312	*3.16**	0.663	*9.16****	0.773	*7.57****	0.822	*5.75***
Gearing	-0.001	*0.23*	0.007	*0.51*	0.001	*0.00*	-0.011	*1.68*	0.013	*1.35*
Accumulated Profit/TA	-0.160	*1.32*	-0.176	*0.81*	-0.561	*1.72*	-0.005	*0.01*	-0.252	*1.90*
Investments/ TA	0.349	*0.36*	0.690	*1.13*	0.662	*0.86*	-0.217	*0.09*	-1.330	*2.80**
Cash available/TA	-2.039	*3.72***	-1.957	*3.51**	-1.432	*1.90*	-5.216	*12.76****	-1.827	*5.07****

[*] *This table presents the results of 5 yearly regression analyses of the level of earnings management, proxied by discretionary current accruals, on a number of firm-specific control variables:*

$$DCA_i = \alpha_i + \beta_{PE} PE_i + \beta_{size} \ln(size)_i + \beta_{age} \ln(age)_i + \beta_{IBX} \Delta(IBX)_i + \beta_{LEV} Leverage_i + \Theta' IND_i + \varepsilon_i$$

PE backing is an interaction variable taking the value of 1 if the firm received PE financing and 0 otherwise. This variable allows to test for the differences in earnings management between PE backed and non-PE backed firms. Ln(size) and Ln(age) are the natural logarithms of total assets and age expressed in number of in years, respectively. Change in earnings is the year-on-year change in income before extraordinary items, deflated by lagged income before extraordinary items (ΔIBX). Leverage equals (1 – BV Equity/TA), with BV Equity being the book value of equity and TA = total assets. This variable measures the extent of leverage, i.e. a solvency measure, of a firm. The higher a firm's leverage, the less own resources a firm uses to finance its business activities and/or the higher the level of outstanding debt is. We included sector dummies at a one-digit NACE level. The coefficient are not reported for the sake of brevity. We mention that NACE sector 3 & 4 report accruals more aggressively compared to other sectors over most of the years. The coefficients in the standard OLS regression model are not reported for the sake of brevity. All test-statistics are White (1980) corrected for heteroscedasticity. The Heckman 2 Step Regression model controls for endogeneity in our sample, possibly resulting from a selection bias. More details are provided in Appendix 2. There are 5 independent variables in our first selection equation to test the hazard of receiving PE financing. Change in total assets measures the firm's growth and equals $[(TA_t)-(TA_{t-1}]/(TA_{t-1})$. Gearing is the level of a firm's outstanding debt on the level of equity and controls for the firm's solvency situation. Accumulated profit shows a firm's past profitability and measures the internal financing capacity of companies under investigation. Investments measure a company's investment intensity while cash available controls for the liquidity position of a company. Accumulated profit, Investments and Cash Available are all deflated by total assets to avoid heteroscedasticity problems.

Note: *** *= significance at the 1% confidence level,* ** *= significance at the 5% confidence level,* * *= significance at the 10% confidence level.*

Table 6: Descriptives of Transitory Earnings Sample (Post-Investment Only) [*]

Panel A: All	**Total Assets**	**Sales /TA (%)**	**CP/TA (%)**	**PBT/TA (%)**	**PAT/TA (%)**
Number obs.	4,202	2,952	4,202	4,202	4,202
Mean	11,811,194	102.25	–0.48	–0.51	–0.53
% > 0	100	100	68	71	70
% < 0	0	0	32	29	30
25% percentile	956,416	16.54	–1.05	–0.54	–0.75
Median	2,815,550	83.04	1.87	2.06	1.39
75% percentile	7,874,784	153.14	6.79	7.21	5.21

Panel B: PE backed sample	**Total Assets**	**Sales /TA (%)**	**CP/TA (%)**	**PBT/TA (%)**	**PAT/TA (%)**
Number obs.	2,062	1,555	2,062	2,062	2,062
Mean	15,482,927	92.14	–1.01	–1.08	–1.09
% > 0	100	100	67	69	68
% < 0	0	0	33	31	32
25% percentile	1,409,262	10.34	–1.47	-1.23	–1.31
Median	4,033,302	81.37	1.54	1.53	1.09
75% percentile	11,337,600	134.49	5.78	6.12	4.62

[*] Note: this table presents descriptive values for total assets (TA), sales, current profit (CP), profit before taxes (PBT) and profit after taxes (PAT) with all variables (except for total assets itself), deflated by total assets in the year of investment and post-investment years. This sample is used for the transitory earnings regressions as in model (4) to (6). Panel A contains values for all available observations, i.e. PE backed and non-PE backed. Panel B shows descriptives of the subsample of PE-backed companies only.

Table 7: Coefficients and Expected Signs in Interaction Regressions

Model (5): differences in earnings conservatism between PE backed and non-PE backed companies:

$$\Delta NI_t = \alpha_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \beta_4 PE + \beta_5 PE * NEG(\Delta NI)_{t-1} + \beta_6 PE * \Delta NI_{t-1} + \beta_7 PE * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

SAMPLE	ACTION	EXPECTED SIGN
Non-PE backed	Timely recognition of losses	$(\beta_2 + \beta_3) < 0$
	Losses are recognized more timely than gains	$(\beta_3) < 0$
PE backed	Timely recognition of losses	$(\beta_2 + \beta_3) + (\beta_6 + \beta_7) < 0$
	Losses are recognized more timely than gains	$(\beta_3 + \beta_7) < 0$
PE backed versus non-PE backed	PEB recognize losses more timely compared to non-PEB companies	$(\beta_6 + \beta_7) < 0$
	PEB recognize losses more timely than gains compared to non-PEB companies	$(\beta_7) < 0$

Model (6): differences in earnings conservatism between government PE backed and non-government PE backed companies:

$$\Delta NI_t = \alpha_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \beta_4 GOV + \beta_5 GOV * NEG(\Delta NI)_{t-1} + \beta_6 GOV * \Delta NI_{t-1} + \beta_7 GOV * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

SAMPLE	ACTION	EXPECTED SIGN
Non-government PE backed	Timely recognition of losses	$(\beta_2 + \beta_3) < 0$
	Losses are recognized more timely than gains	$(\beta_3) < 0$
Government PE backed	Timely recognition of losses	$(\beta_2 + \beta_3) + (\beta_6 + \beta_7) < 0$
	Losses are recognized more timely than gains	$(\beta_3 + \beta_7) < 0$
Non-government versus government PE backed	Non-government PE backed firms recognize losses more timely compared to government PE backed companies	$(\beta_6 + \beta_7) > 0$
	Non-government PE backed recognize losses more timely than gains compared to government PE backed companies	$(\beta_7) > 0$

Table 8: Transitory Earnings Regression 1*

Model 1:
(1) Basic model (4)
(2) Model inclusive PE indicator variables (model 5)

Variable		coefficient	*t*-value	coefficient	*t*-value	coefficient	*t*-value
(1) Basic model		**Current profit/loss after financial income**		**Profit before taxes, after extraordinary income**		**Profit after taxes (bottom line results)**	
Intercept	(β_0)	0.024	0.88	-0.256	-4.79***	-0.226	-4.22***
$NEG(\Delta NI)_{t-1}$	(β_1)	-0.031	-0.74	0.225	2.70***	0.163	1.99***
ΔNI_{t-1}	(β_2)	0.029	-0.33	2.541	17.00***	2.682	17.47***
$NEG(\Delta NI)_{t-1} * \Delta NI_{t-1}$	(β_3)	-0.523	-1.88**	-3.571	-7.24***	-3.835	-7.64***
Adjusted R^2			0.22%		6.48%		6.83%
N° observations			4202		4202		4202
(2) PE dummies							
Intercept	(β_0)	-0.001	-0.02	0.001	0.01	-0.004	-0.06
$NEG(\Delta NI)_{t-1}$	(β_1)	-0.001	-0.03	-0.014	-0.12	-0.004	-0.03
ΔNI_{t-1}	(β_2)	-0.083	-0.42	-0.120	-0.39	-0.112	-0.31
$NEG(\Delta NI)_{t-1} * \Delta NI_{t-1}$	(β_3)	-0.352	-0.78	-0.584	-0.73	-0.492	-0.58
PE	(β_4)	0.054	0.99	-0.361	-3.37***	-0.287	-2.66***
$PE * NEG(\Delta NI)_{t-1}$	(β_5)	-0.062	-0.73	0.330	1.99**	0.178	1.09
$PE * \Delta NI_{t-1}$	(β_6)	0.061	0.28	3.441	9.73***	3.425	8.71***
$PE * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1}$	(β_7)	-0.262	-0.45	-3.982	-3.93***	-4.350	-4.13***
Adjusted R^2			0.20%		8.46%		8.43%
n			4202		4202		4202

* *This regression using time-series relations estimates the impact of changes in past year's earnings changes on current year's earnings changes controlling for (1) previous negative earnings change and (2) receiving PE financing. ΔNI_{t-1} is the change in earnings from the previous period, $NEG(\Delta NI)_{t-1}$ is a dummy variable taking the value of 1 when previous year's earnings are negative and VC is a dummy variable taking the value 1 when the firm received PE:*

$$\Delta NI_t = \alpha_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \beta_4 PE + \beta_5 PE * NEG(\Delta NI)_{t-1}$$
$$+ \beta_6 PE * \Delta NI_{t-1} + \beta_7 PE * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

Test-statistics are White-corrected to control for heteroscedasticity and Durbin-Watson statistics suggest no autocorrelation (DW close to 2). Variance Inflation Factors and Eigenvalues (not reported here) denote a substantial amount of multicollinearity between some dependent variables. However, this finding does not lead to biased estimates and hence is not harmful for the interpretation of our regression results (Blanchard, 1967; Hamilton, 1994).

*Note: *** statistically significant at 1% confidence level, ** : statistically significant at 5% confidence level, * : statistically significant at 10% confidence level.*

Table 9: Transitory Earnings Regression 2 *

Model 2:
(1) Basic model (4)
(2) Model inclusive government PE backing dummies (model 6)

Variable		coefficient	*t*-value	coefficient	*t*-value	coefficient	*t*-value
(1) Basic model		**Current profit/loss after financial income**		**Profit before taxes, after extraordinary income**		**Profit after taxes (bottom line results)**	
Intercept	(β_0)	0.037	0.70	-0.063	-0.58	-0.008	-0.08
$NEG(\Delta NI)_{t-1}$	(β_1)	-0.047	-0.56	0.018	0.11	-0.108	-0.64
ΔNI_{t-1}	(β_2)	0.135	2.40***	0.820	7.28***	0.814	7.23***
$NEG(\Delta NI)_{t-1} * \Delta NI_{t-1}$	(β_3)	-0.771	-1.55*	-2.066	-2.31***	-2.343	-2.60***
Adjusted R^2			0.22%		2.46%		2.49%
N° observations			2062		2062		2062
(2) Government-related PE dummies							
Intercept	(β_0)	-0.089	-0.90	0.052	0.26	0.248	1.21
$NEG(\Delta NI)_{t-1}$	(β_1)	0.121	0.73	-0.134	-0.40	-0.636	-1.91*
ΔNI_{t-1}	(β_2)	0.154	2.52***	0.982	7.97***	0.967	7.85***
$NEG(\Delta NI)_{t-1} * \Delta NI_{t-1}$	(β_3)	-0.319	-0.37	-2.852	-1.93*	-3.884	-2.58***
GOV	(β_4)	0.180	1.52	-0.074	-0.31	-0.279	-1.17
$GOV * NEG(\Delta NI)_{t-1}$	(β_5)	-0.237	-1.23	0.130	0.33	0.644	1.67*
$GOV * \Delta NI_{t-1}$	(β_6)	-0.095	-0.61	-1.011	-3.34***	-0.922	-7.03***
$GOV * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1}$	(β_7)	-0.619	-0.58	2.011	1.07	2.982	1.65*
Adjusted R^2			0.50%		2.85%		3.07%
n			2062		2062		2062

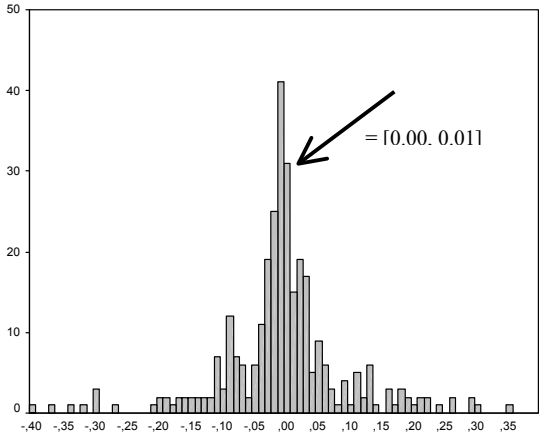
* *This regression uses time-series estimates to study the impact of changes in past years' earnings changes on current years' earnings changes and controls for (1) previous negative earnings change and (2) PE investor origin (government-related versus independent). ΔNI_{t-1} is the change in earnings from the previous period, $NEG(\Delta NI)_{t-1}$ is a dummy variable taking the value of 1 when previous years' earnings are negative and GOV ('Government dummy') is a dummy variable taking the value 1 when the firm is backed by a government-related PE firm.*

$$\Delta NI_t = \alpha_0 + \beta_1 NEG(\Delta NI)_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \beta_4 GOV + \beta_5 GOV * NEG(\Delta NI)_{t-1} + \beta_6 GOV * \Delta NI_{t-1} + \beta_7 GOV * NEG(\Delta NI)_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

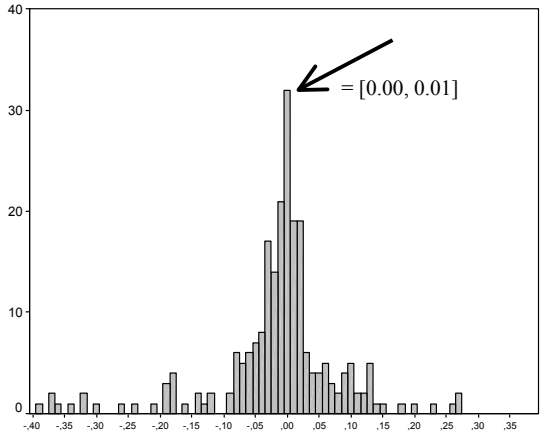
Test-statistics are White-corrected to control for heteroscedasticity and Durbin-Watson statistics suggest no autocorrelation (DW close to 2). Variance Inflation Factors and Eigenvalues (not reported here) denote a substantial amount of multicollinearity between some dependent variables. However, this finding does not lead to biased estimates and hence is not harmful for the interpretation of our regression results (Blanchard, 1967; Hamilton, 1994).

*Note: ***: statistically significant at 1% confidence level, **: statistically significant at 5% confidence level, *: statistically significant at 10% confidence level.*

<u>Figure 1</u>: Deflated Changes in Profit After Taxes for PE Backed Sample, 1 Year Before Participation (Right-Hand Graph) Versus 2 & 3 Years Before Participation (Left-Hand Graph)



Earnings changes of PE backed companies, **2 & 3 years prior to participation**



Earnings changes of PE backed companies, **1 year prior to participation**