



# **Earnings Quality and Ownership Structure: The Role of Private Equity Sponsors**

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**Working Paper**

**09-104**

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# Earnings Quality and Ownership Structure: The Role of Private Equity Sponsors\*

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Current Version: October 28, 2008

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\* This paper is based on my dissertation at Columbia University, which won the 2007 AAA Competitive Manuscript Award as well as the 2007 AAA Financial Accounting and Reporting Section, Best Dissertation Award. I would like to thank my committee members—Andrew Ang, Daniel Cohen, Bjorn Jorgensen (sponsor), Doron Nissim, and Stephen Penman (chair)—for their guidance and support. I would also like to thank the following for their helpful comments: Nerissa Brown, Fabrizio Ferri, Dan Givoly, Carla Hayn, Paul Healy, Yael Hochberg, Steven Kachelmeier (editor), Michael Kimbrough, Gregory Miller, Partha Mohanram, Edward Riedl, Joseph Weber, Yuan Zhang, two anonymous reviewers, and the participants in workshops at the U.S. Securities and Exchange Commission, the AAA 2006 annual meeting, Columbia University, Duke University, the EAA 2007 annual congress, Harvard University, Massachusetts Institute of Technology, NBER - New World of Private Equity Conference, Northwestern University, Penn State University, the University of California–Berkeley, the University of California–Los Angeles, the University of Chicago, the University of Michigan, the University of Notre Dame, and Yale. I thank Joseph Marren, my former colleague at the M&A department of Citigroup Investment Banking, for his insightful feedback. I also want to thank my wife, Elissa Swift Katz, for her support during the process. I gratefully acknowledge financial support from Columbia Business School, the Deloitte Doctoral Fellowship, and Harvard Business School. All errors are mine.

## **Earnings Quality and Ownership Structure: The Role of Private Equity Sponsors**

### **Abstract**

This study explores how firms' ownership structures affect their earnings quality and long-term performance. Focusing on a unique sample of private firms for which there is financial data available in the years before and after their initial public offering (IPO), I differentiate between those that have private equity sponsorship (PE-backed firms) and those that do not (non-PE-backed firms). The findings indicate that PE-backed firms generally have higher earnings quality than those that do not have PE sponsorship, engage less in earnings management, and report more conservatively both before and after the IPO. Further, PE-backed firms that are majority-owned by PE sponsors exhibit superior long-term stock price performance after they go public. These results stem from the professional ownership, tighter monitoring, and reputational considerations exhibited by PE sponsors.

**Keywords:** conservatism, earnings management, private and public firms, private equity sponsors.

**Data Availability:** Data are available from sources identified in the text.

## I. INTRODUCTION

Although 99 percent of the companies operating in the United States are private (AICPA 2004), their accounting practices remain largely unknown due mainly to the lack of publicly available financial statements. In this study, I use a unique database of firms with privately held equity and publicly held debt to examine how two different ownership structures—private equity sponsorship and non-private equity sponsorship—affect firms' financial reporting practices, financial performance, and stock returns in the years preceding and following the IPO.<sup>1</sup>

Firms with private equity (PE) sponsors are owned and operated by investment houses such as the Blackstone Group and Kohlberg Kravis Roberts & Co., which generally buy mature businesses via leveraged buyout (LBO) or management buyout (MBO) transactions and take them private. PE sponsors have been involved in more than one-third of the IPOs and more than one-quarter of the U.S. mergers over the past few years. The value of private equity buyouts in the United States surged to \$220 billion in 2006, and \$438 billion in private-equity deals were announced in 2007. The rapid growth and increasing globalization of the PE industry has raised demands for increased regulation and disclosure within the sector due to concerns regarding anticompetitive behavior, excessive tax benefits, and stock manipulation.<sup>2</sup>

Despite their economic importance and the management expertise they bring, little is known about the role PE sponsors play in their portfolio companies' accounting practices. Most prior research has focused on venture capital (VC) firms rather than PE sponsors. While findings about VC firms yield valuable (albeit mixed) insights into how ownership structure affects

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<sup>1</sup> Only scant data are available on privately held firms in the United States, with the exception of firms in regulated industries such as financial and insurance companies (Beatty and Harris 1998; Beatty et al. 2002; Mikhail 1999). Private firms with public debt are nevertheless subject to the same financial reporting regulations as public firms under sections 13 and 15(d) of the Securities Exchange Act of 1934.

<sup>2</sup> PE-backed IPOs (also known as reverse-LBOs) have been the subject of particular scrutiny. See *Investment Dealers' Digest*, February 23, 2006; *The Wall Street Journal*, October 10, 2006 and January 29, 2007; Economist.com, February 8, 2007; *BusinessWeek*, April 26, 2007; *Associated Press*, July 11, 2007; *Forbes*, December 10, 2007; and *USA Today*, January 29, 2008.

accounting practices, such findings cannot be generalized to PE-sponsored firms owing to significant institutional differences between VC firms and PE sponsors, as discussed in Section II.

In this study, I examine how the trade-off between PE sponsors' alleged opportunistic behavior (Degeorge and Zeckhauser 1993), on the one hand, and their tighter monitoring and reputational considerations (e.g., Cao and Lerner 2007), on the other, affect earnings management, conservatism, and post-IPO performance compared to non-PE-backed firms that are owned and controlled by their management teams. In order to obtain data on these privately held firms, I use a unique sample of 147 IPOs (1,070 firm-year observations) that occurred between 1980 and 2005, for which a longer time-series of pre-IPO financial statements is available than in a typical prospectus.

Regarding earnings management in the five years before and after being taken public, I find that PE-backed firms engage in significantly less upward earnings management than non-PE-backed firms both pre- and post-IPO, consistent with tighter monitoring by, and the reputational considerations of, PE sponsors. In terms of timeliness of loss recognition, PE-backed firms recognize losses in a timelier manner than non-PE-backed firms, especially in the pre-IPO period. This pattern is consistent with the greater demand for timely information these firms face from both PE sponsor-owners and debt holders. This finding might further reflect the fact that PE sponsors can better anticipate and prepare their portfolio firms for future IPOs (Gompers 1995; Kaplan and Strömberg 2003), and thus report more conservatively in deference to public investors' anticipated demands.

Post-IPO long-term financial and stock-price performance are also found to be associated with firms' ownership structure and PE sponsor size. Firms with majority ownership by a PE

sponsor experience better long-term stock price performance; firms where the PE sponsor has a minority ownership have worse long-term financial and stock price performance than management-owned firms. Moreover, firms run by larger PE sponsors with greater capital under management (as a reputation proxy) exhibit better long-term financial and stock price performance when the firms go public. These findings are consistent with tighter monitoring by larger PE sponsors with higher ownership stakes.

This research contributes to the literature in several ways. First, the study furthers our understanding of how ownership concentration and structure affect financial reporting practices (e.g., Haw et al. 2004; Leuz et al. 2003; Leuz 2006; among others). Its focus on the role of PE sponsors sheds light on these unique owners who, although involved in a significant number of deals, have received little academic attention due to the lack of publicly available pre-IPO financial statements. Second, this research contributes to the literature on earnings management in the context of IPOs in general (e.g., Aharony et al. 1993; Teoh et al. 1998a, 1998c) as well as IPOs backed by private equity sponsors and VCs (Chou et al. 2006; Hochberg 2008; Morsfield and Tan 2006; Wongsunwai 2008). Third, this research is based on what is likely more accurate data. Prior studies have relied heavily on prospectus filings, which have been shown to be contaminated by optimistic bias, window dressing, and earnings manipulation (Ang and Brau 2002).<sup>3</sup> Ball and Shivakumar (2008) raise the additional concern that IPO proceeds in the year of IPO could inflate typical measures of earnings management. Fourth, this study adds to the growing literature on the post-IPO performance of U.S. PE-backed firms. Thus far, research has focused on the market performance of reverse-LBOs as compared to “ordinary” IPOs (Cao and Lerner 2007; DeGeorge and Zeckhauser 1993; Holthausen and Larcker 1996), finding better

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<sup>3</sup> According to paragraph 29 of the Accounting Principles Board Opinion No. 20, companies filing publicly for the first time are permitted restatements.

long-term performance by reverse-LBO firms. Yet differences beyond ownership structure can affect these findings. For example, reverse-LBOs are mature firms that *return* to the public market, whereas ordinary IPOs typically involve much younger “growth” firms without a financial reporting history. Because both the PE-backed and non-PE-backed firms in my sample are mature firms, any age-related confounding effects are eliminated.

Finally, because my unique sample enables me to investigate private firms beyond those that are regulated (and thus have publicly disclosed financial statements), I can offer further insight into the reporting practices of such firms in a variety of industries and under different ownership structures. Overall, my findings on the effect of ownership structure are important to stakeholders such as investors, creditors, customers, employees, and suppliers that invest in, interact with, and depend on the financial health of private firms.

The study proceeds as follows. In section II, the motivation for and theory underlying the hypotheses are presented. Section III contains a description of the data collection procedures and research design. Section IV provides a description of the sample. The results are presented in Section V and a variety of robustness tests are contained in the following section. Concluding remarks are offered in the last section.

## **II. MOTIVATION, THEORY, AND HYPOTHESES**

### **Private Equity Sponsors**

The focus of this study is on the role of PE sponsors in determining financial reporting practices as distinct from the role of another type of private investor, VC firms. The evidence to date on how VC ownership affects earnings quality is limited and mixed. Several studies document *less* upward earnings management by VC-backed IPOs (as measured by lower discretionary accruals) than is observed in non-VC-backed IPOs (Hochberg 2008; Morsfield and

Tan 2006). Wongsunwai (2008) further finds that post-IPO firms with higher-quality VCs have lower discretionary accruals and exhibit less likelihood of financial restatements. Other studies, however, document lower earnings quality in the presence of VCs. Cohen and Langberg (2008) document that reported accounting earnings are less informative for VC-backed firms than for non-VC-backed firms, and Darrough and Rangan (2005) find that some VCs' share sales in the year of the IPO are negatively associated with R&D spending changes, consistent with their incentive to increase reported earnings.

Note that there are important institutional differences between VC-backed and PE-backed IPOs that make it difficult to extend the VC-related findings to PE-backed firms. For example, unlike VCs, which invest in early-stage and mostly not yet profitable companies, PE sponsors generally buy mature, profitable businesses that had been subject to full financial disclosure before the IPO. The resulting lower information asymmetry between issuer and investors (Cai 2002) limits opportunities for PE sponsors to manage earnings prior to the IPO.<sup>4</sup> On the other hand, PE sponsors hold their portfolio firms via LBO funds that have a limited life span of 10-12 years, and usually share about 20 percent of the upside gain via carried interest (in addition to management fees of about 2 percent of the assets under management). Hence, PE sponsors have a strong incentive not only to file for an IPO before the funds mature, but also to manage reported earnings upward in order to maximize profits (Cao 2008).<sup>5</sup>

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<sup>4</sup> Although information asymmetry might be lower in my sample firms, earnings management might occur more than for "ordinary" IPOs and VC-backed firms, since these latter firms have little or no earnings history and thus no significant earnings to manage (Chou et al. 2006).

<sup>5</sup> Other differences exist between PE sponsors and VCs. For example, in contrast to VC-backed firms, firms with PE sponsors tend to have larger enterprise value and use significantly more bank debt. Also, PE sponsors generally hold a majority stake and assume control of the board of directors, whereas VC sponsors generally acquire only a minority stake. Further, PE managers typically come from a financial or management consulting background and their compensation is more highly sensitive to value creation. In contrast, VC managers are often successful start-up entrepreneurs or possess specialized technology expertise (Fraser-Sampson 2007; Hand 2005; Klein and Zur 2007; Sahlman 1990; Wright and Robbie 1998). Because of this difference in backgrounds, PE sponsors are less likely than VCs to assume operational control. Further, profit levels are crucial and technology considerations largely irrelevant for PE-backed firms, whereas the converse is true for VC-backed firms.



The only U.S. study of which I am aware that addresses how PE sponsorship affects accounting practices is Chou et al. (2006), who document significant upward earnings management (positive discretionary accruals) in the year of an IPO for PE-backed firms. However, due to sample limitations, the authors cannot conclude that PE sponsors' involvement in upward earnings management is greater than that of management-owners. This result (although statistically insignificant) is nevertheless surprising in light of the finding of less upward earnings management on the part of VC IPOs reported above. Whether ownership status influences pre-IPO earnings management thus remains an empirical question. Because I examine PE-backed firms with a more complete and standardized set of financial information before the IPO, I am able to more conclusively address the accounting reporting differences between PE-backed and non-PE-backed firms.

### **Earnings Management**

The evidence to date on how ownership structure (PE-backed versus non-PE-backed) affects earnings management is limited and mixed. On one hand, theory and empirical evidence support the prediction that the active monitoring associated with the presence of PE sponsors *inhibits* earnings management. PE sponsors can actively monitor and motivate management by virtue of their board membership (Cotter and Peck 2001; Gompers 1995; Lerner 1995; Renneboog and Simons 2005). Tighter monitoring, more sophisticated ownership, and board membership are, in turn, expected to be associated with less earnings management (e.g., Cornett et al. 2006; Wongsunwai 2008; Xie et al. 2003). The separation of management and control enhances PE sponsors' monitoring role relative to that in non-PE-backed firms which are both owned and controlled by management teams. Hence, non-PE-backed firms might be expected to exhibit greater earnings management than firms with PE sponsors. Further, because PE sponsors

are “repeat players” in the LBO debt as well as IPO market, PE sponsors risk reputation loss if their LBOs or IPOs fail (Cao and Lerner 2007; Cotter and Peck 2001), which also suggests that PE-backed firms will have less upward earnings management.

On the other hand, theory and empirical evidence support *greater* earnings management by PE-backed than by non-PE-backed firms, especially in the period surrounding an IPO. First, Degeorge and Zeckhauser (1993) suggest that PE-backed firms’ decision to return to public listing is driven by opportunistic behavior and IPO timing. If PE-backed firms indeed go public because they have exhausted the benefits of the LBO ownership form or their profits are insufficient to cover their debt load, one would expect them to manage earnings upward to a greater extent than non-PE-backed firms. Second, managers who feel more compelled to meet the earnings goals of the sophisticated PE sponsors for whom they work might, at least in principle, have greater motivation to manage earnings (Cornett et al. 2006). Finally, prior literature also documents that differences in firms’ ownership concentration can affect reporting incentives and earnings management. Because in a more concentrated ownership structure, large owners typically sit on the board and are often directly involved in firm management, communicating firm performance via financial statements (and thus earnings management) becomes less important (Leuz 2006). Given that firms that are majority owned by PE sponsors have higher ownership concentration than firms that are owned by management, I further expect them to have a greater propensity to manage earnings (Haw et al. 2004; Leuz et al. 2003; Yeo et al. 2002).

Given the foregoing discussion, the first hypothesis (stated in alternative form), consistent with the monitoring role of PE sponsors, is:

**H1:** *Non-PE-backed firms engage in upward earnings management to a greater extent than do PE-backed firms.*

### **Timely Loss Recognition (Conservatism)**

Prior literature identifies timely loss recognition as an important attribute of financial reporting quality (e.g., Ball and Shivakumar 2005; Basu 1997; Givoly et al. 2007a). One would expect PE-backed firms to have *more* timely loss recognition than non-PE-backed firms because they face greater demand for timely information. Consistent with this, Ball and Shivakumar (2008) document that U.K. private firms begin to report more conservatively a few years before public listing in anticipation of expected post-IPO demands of public investors and the public market enforcement mechanism. Because PE sponsors can better anticipate and prepare their portfolio firms for future IPOs (Gompers 1995; Kaplan and Strömberg 2003), I expect PE-backed firms to report more conservatively in the pre-IPO period than non-PE-backed firms that cannot as easily anticipate the exit. Another consideration is that debt levels tend to be significantly higher for PE-backed than for non-PE-backed private firms. Debt holders tend to demand more timely loss recognition (Ball et al. 2008). Finally, Kaplan and Strömberg (2003) show that PE sponsors make control rights contingent on financial as well as non-financial measures. This might be associated with greater financial reporting discipline than is observed for management-owned firms and, hence, increased demand for higher-quality accounting information.

Alternative theory and empirical evidence support *less* timely loss recognition by PE-backed firms. Due to their higher ownership concentration, PE sponsor-owners can more easily resolve any information asymmetry through “insider access” and thus have less need to rely on public disclosure. They thus have less incentive to incorporate economic losses into accounting

income in a timely manner (for a discussion of “insider access,” see Ball et al. 2000 and Francis et al. 2005). Support for less timely loss recognition is also present in the VC literature, Cohen and Langberg (2008) finding that reported earnings are less informative for VC-backed firms and that the value of, and information within, reported earnings decrease as a function of VC ownership.

Consistent with the financial reporting discipline created by PE sponsors, the next hypothesis (stated in alternative form) is:

**H2:** *PE-backed firms are more likely than non-PE-backed firms to recognize losses in a timely fashion.*

### **Post-IPO Abnormal Returns and Financial Performance**

The next issue I address is whether ownership structure affects long-term reported financial performance and market returns in the post-IPO period. As hypothesized above, to the extent that PE-backed firms have lower pre-IPO discretionary accruals than non-PE-backed firms, reported earnings in the post-IPO years as well as overall reported financial performance are expected to reverse and deteriorate to a lesser degree (Teoh et al. 1998c). This better earnings quality is also predicted to lead to relatively higher stock returns (Chou et al. 2006). Furthermore, in addition to giving financial and strategic advice, PE sponsors play a monitoring role in their portfolio firms (Gompers 1995; Lerner 1995), and tighter monitoring has been found to be associated with better earnings quality (Wongsunwai 2008), long-term financial performance (Ivanov et al. 2008), and stock returns (Cao and Lerner 2007).

As discussed above, the counter argument to higher earnings quality is that PE-backed firms might opt to go public as a result of opportunistic behavior and IPO timing. If PE-backed firms go public because they have exhausted the benefits of the private ownership form or their

profits are insufficient to cover their debt load, their operating performance following the IPO would be expected to deteriorate to a greater extent than that of non-PE-backed firms (Degeorge and Zeckhauser 1993). Relatedly, improvements in the financial performance of PE-backed firms that go private can also be explained by agency theory, in particular, greater goal congruence between owners and management, stronger incentives to create shareholder wealth as management's ownership stake increases, and the disciplinary role of higher leverage (Bruton et al. 2002; Holthausen and Larcker 1996; Kaplan 1991). When a company returns to public listing, manager and owner interests and incentives once again diverge, monitoring costs increase, leverage decreases, and agency theory, as noted above, predicts a reintroduction of inefficiencies and loss of previously experienced performance gains (Bruton et al. 2002). Finally, other factors such as managerial risk aversion or managerial entrenchment might lead to performance *increases* following a reverse buyout of *management*-owned as opposed to PE-backed firms (Holthausen and Larcker 1996).

Consistent with the higher earnings quality and better monitoring and control associated with PE sponsor owners, the next hypothesis (stated in alternative form) is:

**H3:** *PE-backed firms are likely to have better long-term financial and stock price performance in the post-IPO period than non-PE-backed firms.*

### III. SAMPLE SELECTION AND RESEARCH DESIGN

#### Sample Selection

My sample consists of private firms that have public debt. Because their debt is public, even though they are privately held, these companies have to make their financial statements publicly available. I select all firm-year observations on COMPUSTAT in any of the 28 years from 1978 through 2005 that satisfy the following criteria: (1) the firm's stock price at fiscal year end is

unavailable, (2) the firm has total debt as well as total annual revenue exceeding \$1 million, (3) the firm is a domestic company, (4) the firm is not a subsidiary of another public firm and, (5) the firm is not a financial institution or in a regulated industry (SIC codes 6000-6999 and 4800-4900).

To ensure that my sample includes only private firms with public debt, I examine each firm and remove public firm observations (details are provided in **Table 1**).<sup>6</sup> I further categorize each firm as being in one of the following pre-IPO, mutually exclusive categories, (1) PE majority-owned, defined as firms that are majority-owned (more than 50 percent) by PE sponsors, (2) PE minority-owned, defined as firms that are minority-owned (equal to or less than 50 percent) by PE sponsors, and (3) management-owned, defined as firms that do not have a PE sponsor and are at least 50 percent owned by the founders, executives, directors, or family members. The resulting sample consists of 2,412 firm-year observations and 508 private firms.

To focus on the period surrounding the IPO, defined as five years before and five years after, I further remove all non-IPO firms. The final sample consists of 147 IPO firms, 123 PE-backed (both majority- and minority-owned) IPOs, and 24 management-owned IPOs (hereafter referred to as non-PE-backed, or management-owned, firms).

[PLACE TABLE 1 HERE]

The Corporate New Issues database of Securities Data Company (SDC) was used to identify the IPO date and first day of trading. Return data was derived from CRSP. For firms in the pre-IPO phase, corporate governance information was collected from 10-Ks and proxies in the year prior to the IPO. Prospectus information was used to identify changes in corporate

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<sup>6</sup> Because some public firms met the above criteria as a result of missing price data, to further determine whether firms qualified as private firms with public debt I hand-collected SEC filings information from EDGAR and 10K Wizard, bankruptcy information from BankruptcyData.com, and other historical information from Hoover's DataBase as well as from several news resources including Factiva, ProQuest, and LexisNexis.

governance post-IPO. The Thomson Financials VentureXpert database provided information on the PE sponsors.

## **Research Design: Earnings Management**

### Detecting Earnings Management

To be able to compare my findings with those of prior research, I identify earnings management cases using the cross-sectional modified Jones (1991) approach, which models total accruals as a function of change in sales (after subtracting the change in trade receivables) and level of property, plant, and equipment. The regression parameters are derived by estimating this model on all public firms with the same two-digit SIC code each year.<sup>7</sup>

Though widely used in the earnings management literature, accruals models such as the modified Jones model are far from perfect in detecting earnings management. One limitation is that the model assumes the relationship between cash flows and accruals to be linear, thus ignoring the asymmetry in the gain and loss recognition of accruals. To address this, I add a proxy for potentially reportable gains and losses in the form of the sign of the cash flows from operations (see Ball and Shivakumar 2006). Also, because firm performance might be a key driver of both the decision to go public and PE sponsors' provision of financial backing

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<sup>7</sup> To estimate the model yearly by two-digit SIC code, I require that at least 10 observations be available. The regression is:  $TACC_{j,t} / TA_{j,t-1} = a_1 * [1 / TA_{j,t-1}] + a_2 * [(\Delta REV_{j,t} - \Delta TR_{j,t}) / TA_{j,t-1}] + a_3 * [PPE_{j,t} / TA_{j,t-1}]$  where: *TACC* is total accruals for firm *j* in year *t*, which is defined as income before extraordinary items (#123) minus net cash flow from operating activities, adjusted to extraordinary items and discontinued operations (#308 – #124). For the years prior to 1988, *TACC* is defined as  $\Delta(\text{current assets \#4}) - \Delta(\text{current liabilities \#5}) - \Delta(\text{cash \#1}) + \Delta(\text{short-term debt \#34}) - (\text{depreciation and amortization \#125})$ . To correct for measurement errors in the balance-sheet approach, I eliminate firm-year observations with "non-articulating" events (Hribar and Collins 2002). *TA* is the beginning-of-the-year total assets (lagged #6). *ΔREV* is the change in sales in year *t* (#12), *PPE* is gross property, plant, and equipment in year *t* (#7), and *ΔTR* is the change in trade receivables in year *t* (#151).

(Morsfield and Tan 2006), and to control for systematic differences in performance, I employ in an untabulated analysis the Kothari et al. (2005) performance-matching approach.<sup>8</sup>

#### Additional Earnings Management Measure

To address changes that arise from external factors unrelated to earnings management, I differentiate between “real” performance (as indicated by free cash flow) and “managed” performance (as indicated by accruals). Following Penman and Zhang (2004), I model the operating activities as  $\text{Operating Income}_{j,t} = \text{Free Cash Flow}_{j,t} + \Delta\text{NOA}_{j,t}$ . Free cash flow is the “hard” and presumably unmanaged component of operating income,  $\Delta\text{NOA}_{j,t}$ , because it involves discretionary measurements and estimations, the “soft” and potentially managed aspect of operating income.<sup>9</sup>  $\Delta\text{NOA}_{j,t}$  can therefore be used as an additional signal of earnings management, where growth in net operating assets is estimated as:

$$\text{GNOA}_{j,t} = (\text{NOA}_{j,t} - \text{NOA}_{j,t-1})/|\text{NOA}_{j,t-1}| \quad (1)$$

Following prior literature (Teoh et al. 1998b), I report the differences between the GNOA measure for each firm and the median measure for the same year and industry.<sup>10</sup> To minimize survivorship bias, I use the average of five years’ annual UTACC and GNOA variables, and the maximum number of years for which COMPUSTAT data is available for firms that do not survive for five full years after their IPOs (for further discussion, see Ivanov et al. 2008).

<sup>8</sup> In particular, I match each observation by industry, year, and the deciles of ROA in the same industry and year, where ROA is defined as net income (#172) + net of tax interest expense (#15), standardized by total assets at the beginning of the year (lagged #6).

<sup>9</sup> *NOA* is common equity (#60) + debt in current liabilities (#34) + total long-term debt (#9) + preferred stock (#130) – cash and short-term investments (#1) – investments and advances (#32) + minority interest (#38); *Operating Income* is net income (#172) +  $\Delta$ (cumulative translation adjustment #230) + after-tax interest expense (#15) – after-tax interest income (#62) + minority interest in income (#49) (see Nissim and Penman 2003); Compustat variable numbers are shown in parentheses.

<sup>10</sup> In this and subsequent industry-based analyses, I require that there be at least five non-IPO firms present. I first consider all firms with the same 4-digit SIC code; if there are fewer than five observations, I consider firms in the same 3-digit SIC code; if there are still fewer than five non-IPO firms present, I consider firms with the same 2-digit SIC codes.



## Multivariate Earnings Management Analysis

To allow for differences in earnings management between PE-backed and non-PE-backed firms in testing **H1**, I also estimate the following regression:

$$EM_t = a_0 + a_1*PE + a_3*Size_t + a_4*BV_t + a_5*Growth_t + a_6*Leverage_t + a_7*Profitability_t + a_8*QRatio_t + a_9*Oper\_Cycle_t + a_{10}*Age_t + a_{11}*Cash_t + a_{12}*CAPEX_t + a_{13}*D\_Loss_t + a_{14}*D\_Audit\_Quality_t + e_t \quad (2)$$

where  $EM_t$  is a measure of earnings management, alternatively defined as  $UTACC_t$  or  $GNOA_t$ ,  $PE$  is a dummy variable with the value 1 for PE-backed private firms (both majority- and minority-owned) and 0 for firms owned by management,  $Size$  is alternatively defined as the natural logarithms of total assets (#6) or sales (#12),  $BV$  is equity book value (#60+ #130 + #35) divided by total assets,  $Growth$  is defined as growth in sales,  $Leverage$  is defined as total debt (#9 + #34) divided by total assets,  $Profitability$  is defined as operating income divided by net operating assets (RNOA),  $QRatio$  is the quick ratio, defined as cash and short-term investment (#1) plus total receivables (#2) divided by current liabilities (#5),  $Oper\_Cycle$  is operating cycle days (receivable collection period plus inventory turnover in days),  $Age$  is defined as number of years since incorporation (first appearance on COMPUSTAT),  $Cash$  is cash and short-term investment divided by total assets. CAPEX is capital expenditures (#128) divided by total assets,  $D\_Loss$  a dummy for loss firms (#172) and  $D\_Audit\_Quality$  a dummy for the big national accounting firms (#149).<sup>11</sup>

### **Research Design: Timely Loss Recognition**

Earnings are more conservative when losses are recognized in a timely manner, as emphasized by Basu (1997), who uses stock returns as a proxy for economic gains and losses.

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<sup>11</sup> The various control variables were used in prior research on IPOs, and the choice of private equity financing (Beuselinck et al. 2008; Chou et al. 2006; Morsfield and Tan 2006). Audit firm size is included because it might affect earnings quality (Aharony et al. 1993; Morsfield and Tan 2006).

Ball and Shivakumar (2005) and Beuselinck et al. (2008), in their examinations of private firms, use changes in accounting income to proxy for economic gains and losses. Following this approach, to test **H2** I estimate the following regression, which allows for differences in timely loss recognition between PE-backed and non-PE-backed firms:

$$\Delta OpI_t = a_0 + a_1 * D\Delta OpI_{t-1} + a_2 * \Delta OpI_{t-1} + a_3 * D\Delta OpI_{t-1} * \Delta OpI_{t-1} + a_4 * PE + a_5 * PE * D\Delta OpI_{t-1} + a_6 * PE * \Delta OpI_{t-1} + a_7 * PE * D\Delta OpI_{t-1} * \Delta OpI_{t-1} + e_t \quad (3)$$

where  $\Delta OpI_t$  is the change in earnings from year t-1 to year t standardized by total assets at the end of year t-1 (earnings are measured before interest expense and interest income),  $D\Delta OpI_{t-1}$  is a dummy variable set to 1 if  $\Delta OpI_{t-1} < 0$  and 0 otherwise, and  $PE$  is a dummy variable with 1 indicating PE-backed firms and 0 indicating non-PE-backed firms.

**H2** holds that the involvement of PE sponsors leads to a higher level of earnings quality, as measured by more timely loss recognition. Consistent with this, PE-backed firms are expected to exhibit less timely gain recognition than non-PE-backed firms, and thus gains are expected to be more persistent and tend not to reverse (i.e.,  $a_6 > 0$ ). Relatedly, PE-backed firms are expected to have more timely loss recognition than non-PE-backed firms, and therefore transitory losses are expected to be more likely to reverse over time (i.e.,  $a_7 < 0$ ).

To ensure that the timely loss recognition identified in (3) is not a result of random errors in accruals or of earnings management, an alternate model proposed by Ball and Shivakumar (2005) that recognizes unrealized gains and losses via accruals is employed. Ball and Shivakumar (2005) maintain that there is an asymmetric positive correlation between accruals and contemporaneous cash flows because of the more timely recognition of economic losses than of economic gains. As a result, this positive correlation is greater in the case of losses. To control for this effect, I follow the variation of the Ball and Shivakumar (2005) approach used by Beuselinck et al. (2008):

$$ACC_t = b_0 + b_1*DCFO_t + b_2*CFO_t + b_3*DCFO_t*CFO_t + b_4*PE + b_5*PE*DCFO_t + b_6*PE*CFO_t + b_7*PE*DCFO_t*CFO_t + e_t \quad (4)$$

where  $ACC_t$  is total accruals in year  $t$ ,  $CFO_t$  is defined, for years after 1988, as cash from operations in year  $t$  adjusted for extraordinary items and discontinued operations (#308 – #124), and prior to 1988 as funds from operations (#110) –  $\Delta$ (current assets #4) +  $\Delta$ (cash and cash equivalent #1) +  $\Delta$ (current liabilities #5) –  $\Delta$ (short-term debt #34). All variables are standardized by total assets at end of year  $t-1$ .  $DCFO_t$  is a dummy variable that takes the value 1 if  $CFO_t < 0$  and 0 otherwise.  $PE$  is a dummy variable with 1 indicating PE-backed and 0 indicating non-PE-backed firms.

I predict that the above model will demonstrate the strong role of accruals in mitigating noise in operating cash flow (i.e.,  $b_2 < 0$ ). Further, in keeping with **H2**, PE sponsorship is expected to lead to more timely recognition of losses, which, in turn, is expected to result in a positive correlation between accruals and contemporaneous cash flow in negative-cash-flow years (i.e.,  $b_7 > 0$ ).

To account for the possible endogeneity of receiving PE financing, I use Heckman's (1979) two-stage procedure. In the first stage, a PROBIT model is estimated with, as predictors, all explanatory variables included in regression (2). Estimates of the PROBIT model are used to compute the inverse Mills' ratio for each sample firm. In the second stage, the inverse of the Mills' ratio serves as a control variable in regressions (2), (3), and (4), and the coefficient is allowed to vary between the two groups of firms. (A similar approach is used in Ball and Shivakumar 2005; Beuselinck et al. 2008; Givoly et al. 2007b; and Hochberg 2008).

### **Research Design: Stock Returns and Financial Performance**

To measure subsequent stock returns, for each sample firm I compute the adjusted size and book-to-market matched returns calculated as the buy-and-hold daily returns for one year,

three years, and five years after the IPO, less the buy-and-hold returns on a benchmark of a value-weighted size and book-to-market matched control sample over the same period.<sup>12</sup> If the sample firm is delisted during the relevant period, I add the delist return to the firm's buy-and-hold return and set the size and book-to-market matched return equal to zero after the delisting date. Missing delisting returns are allocated as suggested by Shumway and Warther (1999) and the Center for Research in Security Prices "white paper" on delisting returns (CRSP 2001).

To avoid having overlapping periods in the estimation of buy-and-hold returns, following Chou et al. (2006) and Fan (2007), I also estimate the value-weighted monthly abnormal returns based on calendar time using the Fama and French (1993) three factor model. Specifically, I regress the monthly returns (in excess of the risk free-rate) on the three factors as in the following regression:

$$R_{pt} - R_{ft} = a_p + b_p (R_{mt} - R_{ft}) + s_p \text{SMB}_t + h_p \text{HML}_t + \varepsilon_t \quad (5)$$

where  $R_{pt}$  is the equally weighted portfolio returns in calendar month  $t$ ,  $R_{ft}$  is the 30-day T-bill yield in month  $t$ ,  $R_{mt}$  is the return on the value weighted CRSP index,  $\text{SMB}_t$  is the return on small firms minus the return on large firms, and  $\text{HML}_t$  is the return on high book-to-market stocks minus the return on low book-to-market stocks in month  $t$ . Equation (5) is estimated separately for each ownership stake and for different sizes of PE sponsors. Note that the estimate of the intercept coefficient ( $a_p$ ) is a measure of average monthly abnormal returns, the variable of interest.

In addition to considering the sample firms' stock performance in the post-IPO years, I consider three measures of long-term financial performance computed, alternately, over a one-year, three-year, or five-year period following the IPO. The first measure is the average industry-

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<sup>12</sup> The daily matched portfolio returns as well as the relevant breakpoints are from Kenneth French's Web site: [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

adjusted return on assets (ROA). I report the differences between the ROA measure for each firm and the median measure for the same period and industry (see footnote 10 for the industry composition). The second measure is the market-to-book ratio at the end of each period. In calculating the above two measures, for firms that did not survive the entire period considered after the IPO (one, three, or five years), the maximum number of years for which data is available is used. The third measure, stock exchange delisting, is based on whether the sample firms continued to be publicly traded. This measure is calculated as the percentage of sample firms delisted from the NYSE, AMEX, or NASDAQ exchange due to bankruptcy, default, or liquidation (CRSP delisting codes 400 and above). (For similar implementations of these measures, see Field and Karpoff 2002; Gompers et al. 2003; Ivanov et al. 2008; and Moeller et al. 2004).

#### IV. DESCRIPTIVE STATISTICS

**Table 2** presents descriptive statistics for 123 PE-backed (96 majority-owned and 27 minority-owned) and 24 non-PE-backed (management-owned) firms that had IPOs. The table compares the two groups for two periods: five years before and five years following the IPO. Note that the number of firms in the post-IPO period is reduced (to 70 majority-owned and 23 minority-owned PE-backed firms and 21 management-owned firms) as a result of IPOs filed after the sample period (i.e., after the year 2005) and other organizational structure changes (such as mergers and bankruptcy filings).

Majority-owned, PE-sponsored private firms constitute 65 percent of the pre-IPO sample, minority-owned, PE-sponsored firms 18 percent, and management-owned firms 16 percent. PE-backed firms have significantly lower quick ratios and cash as a percentage of assets than non-PE-backed firms in both the pre- and post-IPO periods. PE-backed firms also have significantly

higher leverage. For both PE-backed and non-PE-backed firms, leverage is significantly higher in the pre-IPO than in the post-IPO period.<sup>13</sup> These observations are not surprising inasmuch as PE sponsors tend to be involved in LBO and MBO activities that involve significant amounts of debt financing, especially in the pre-IPO periods. Another analysis (untabulated) indicates that the different ownership forms have a similar industry representation, although PE-backed firms tend to concentrate more in manufacturing (SIC codes 30-39) while non-PE-backed firms tend to concentrate more in service-related industries (SIC codes 70-89).

[PLACE TABLE 2 HERE]

Because different ownership structures are likely to be manifested in stock holdings, board composition, and management compensation, **Table 3** presents descriptive statistics on these variables for the PE-backed and management-owned firms in the pre- and post-IPO periods. Consistent with the findings of Cao and Lerner (2007), PE sponsors have a large ownership stake (79.9 percent and 36.4 percent, respectively, for firms that are majority- and minority-owned by PE sponsors). Suggestive of their active role in monitoring management is that 55.2 percent and 34 percent, respectively, of the boards of directors are from or affiliated with PE sponsor groups. Perhaps to accommodate this representation, PE-backed firms' boards are significantly larger than those of management-owned firms. With respect to compensation, a greater proportion of the pay of CEOs in PE-backed firms is in the form of equity and variable compensation, consistent with giving the CEO an incentive to take the company public (Cadman and Sunder 2007). The results in the post-IPO panel are similar: PE sponsors retain a significant ownership stake (48.9 percent and 20.8 percent, respectively, for majority- and minority-owned

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<sup>13</sup> PE-backed firms also have a higher concentration of below-BBB-ranked debt in the pre-IPO period (72 percent and 46 percent for majority-owned and minority-owned PE-backed firms, respectively, versus 40 percent for management-owned firms). In the post-IPO period, the concentration is approximately 50 percent across the three ownership structures.

firms) and continue to monitor managers (50.3 percent and 29.4 percent, respectively, of the boards of directors being from or affiliated with PE sponsor groups).<sup>14</sup>

[PLACE TABLE 3 HERE]

## V. EMPIRICAL RESULTS

### Earnings Management

The results of estimating earnings management by abnormal accruals (UTACC) and industry adjusted growth in net operating assets (GNOA) are presented in **Table 4, Panel A**. Consistent with the hypothesis that earnings are managed upward to a lesser extent by PE-backed than by non-PE-backed firms, the first line of Table 4 indicates that the mean values of UTACC for firms that are majority- and minority-owned by PE sponsors are -3.7 percent and -4.2 percent, respectively, whereas the mean value for management-owned firms is -0.3 percent. These differences are significant at the 0.01 level. Similar results (some of which are not significant) are obtained for differences in GNOA, in the median values, and in the post-IPO period (after including average information to minimize any survival bias). With the exception of the significantly less negative GNOA for the majority-PE-owned firms in the pre-IPO period, the analysis reveals no significant differences in the reporting behavior of majority-owned and minority-owned PE-backed firms.<sup>15</sup>

Similar results are obtained when the analysis is repeated on a yearly basis, before and after IPO. For most of the years, the differences in both mean and median values are more

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<sup>14</sup> An untabulated analysis further reveals that five years after the IPO, PE sponsors retain a significant ownership stake, 26.8 percent and 16.4 percent, respectively, for majority- and minority-owned firms, compared to 22.9 percent for non-PE-backed, management-owned firms.

<sup>15</sup> Untabulated analyses indicate that the main abnormal accruals results are qualitatively unaltered when other specifications of the Jones model are used (e.g., current accruals (with or without control for timely loss recognition and the balance sheet approach) or the Kothari et al. (2005) performance-matching approach).

negative for PE-backed than for non-PE-backed firms.<sup>16</sup> No inferences are made for the year of the IPO because, as noted earlier, receipt of IPO proceeds might affect accruals and working capital.<sup>17</sup>

**Table 4, Panel B** reports the results of regression (2) for the sample of pre- and post-IPO firms under two specifications, (1) including control for possible endogeneity, and (2) including control variables (as defined in Section III). In both periods, for both earnings management measures and under both specifications, the coefficients,  $a_1$ , the dummy variables for PE-backed firms, are negative, generally significantly so, indicating that earnings are managed upward to a lesser extent by PE-backed firms than by non-PE-backed firms. Moreover, the coefficients of the inverse Mills' variables ( $\lambda$ ) are significant when performing the regression on GNOA, suggesting the presence of endogeneity and the appropriateness of controlling for it.

Untabulated analyses further reveal the foregoing results to hold for the comparison of both majority- and minority-PE-owned firms versus management-owned firms, and no significant differences between firms that are majority-owned and those that are minority-owned by PE sponsors.

Overall, and consistent with **H1**, these results indicate that non-PE-backed firms manage earnings upward to a greater extent than PE-backed firms, as indicated by the significantly higher abnormal accruals and GNOA.

[PLACE TABLE 4 HERE]

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<sup>16</sup> Reported results for the pre-IPO and post-IPO periods (but not for the year-by-year analyses) exclude firm-years during restructuring periods. When performed on the entire sample, the results are qualitatively similar.

<sup>17</sup> The last line of Table 4, Panel A reports the results of an abnormal current accruals model for the IPO year. These results are similar in magnitude to those obtained for PE-backed firms by Chou et al. (2006). But whereas Chou et al. (2006) find weak evidence that PE-backed firms have higher discretionary accruals than non-PE-backed firm, I find a weak contrary indication.



## Timely Loss Recognition

**Table 5** reports the results of regression (3) for the sample of pre- and post-IPO firms under three specifications, (1) excluding control variables, (2) including control for possible endogeneity, and (3) including control variables.

For non-PE-backed private firms in the pre-IPO period, the coefficients,  $a_2$ , on prior positive earnings changes are significantly negative, indicating timely recognition of economic gains (on average, approximately 45 percent to 105 percent reversal of income increases). The incremental coefficients,  $a_3$ , on prior negative earnings changes are positive (but significant only under specifications (2) and (3)), indicating that losses are recognized on a less timely basis than gains. The sum of the coefficients,  $a_2 + a_3$ , is negative under all specifications, but relatively small (coefficients' sums range from -0.05 to -0.30), indicating timely loss recognition, which leads to a reversal of income decreases (on average, approximately 5 percent to 30 percent). Taken together, these results suggest that compared with PE-backed private firms, non-PE-backed private firms have lower earnings quality as measured by deferred loss recognition.

The incremental coefficients on earnings increases for PE-backed private firms,  $a_6$ , are significantly positive under the three specifications (with coefficients of 0.55, 0.74, and 1.19), indicating that PE-backed private firms are more likely than non-PE-backed private firms to defer recognition of economic gains. As further hypothesized, the incremental coefficients on earnings,  $a_7$ , decrease for PE-backed firms, and the sum of the coefficients,  $a_3 + a_7$ , is significantly negative under all specifications, indicating that PE-backed private firms are more likely than non-PE-backed private firms to incorporate transitory losses in income. These results remain qualitatively similar when earnings before and after extraordinary items are used instead of operating income.

Table 5 also presents the results of regression (3) for the sample of post-IPO firms. The sum of the coefficients,  $a_3 + a_7$ , is significantly negative under the three regression specifications, and the main coefficient of interest,  $a_7$ , is negative (but significant only under specifications (1) and (2)).

Taken together, and consistent with **H2**, PE-backed private firms have higher-quality earnings reports than non-PE-backed private firms in both the pre-IPO and post-IPO periods.

[PLACE TABLE 5 HERE]

**Table 6** reports the results of regression (4), under the above three specifications, for the sample of pre- and post-IPO firms. For non-PE-backed, pre-IPO private firms, the coefficient on prior positive cash flow,  $b_2$ , is significantly negative, indicating that, on average, between 28 percent and 62 percent of cash flow is mitigated by accruals in years with positive cash flow. The coefficient on prior negative cash flow,  $b_3$ , is negative as well (but insignificant under specification (2)), indicating that non-PE-backed private firms mitigate noise in cash flow to an even greater degree in years with negative operating cash flow.

The incremental coefficient,  $b_6$ , for PE-backed private firms in positive-cash-flow years is negative (but significant only in specification (1)), indicating that PE-backed private firms are more likely than non-PE-backed private firms to offset cash flow in years with positive cash flow. Also as hypothesized, the incremental coefficient in negative-cash-flow years,  $b_7$ , for PE-backed private firms is significantly positive under specifications (1) and (2), indicating that in negative-cash-flow years, the accruals of PE-backed private firms offset cash flow to a lesser extent than is the case for non-PE-backed private firms. The fact that the coefficients of the inverse Mills' variables ( $\lambda$ ) are not significant in the pre- or post-IPO period under both regression models, (3) and (4), suggests the absence of significant endogeneity problems.

Further analyses (untabulated) reveal that the results of both conservatism regression models, (3) and (4), hold for the comparison of both majority- and minority-PE-owned firms versus management-owned firms. They provide weak evidence that firms that are majority-owned by PE sponsors report more conservatively than firms that are minority-owned by PE sponsors.<sup>18</sup>

Overall, and consistent with **H2**, earnings reports in the pre-IPO period are of higher quality for PE-backed private firms than for non-PE-backed private firms. Although the involvement of PE sponsors appears to induce higher quality earnings reports in the years prior to an IPO, as indicated in Table 6, these results no longer hold in the post-IPO period.<sup>19</sup>

[PLACE TABLE 6 HERE]

### **Abnormal Returns and Financial Performance**

**Table 7, Panel A** reports the results of both size-and-book-to-market-adjusted buy-and-hold returns and the financial performance analyses. The abnormal returns (between one year and five years) are significantly higher for firms majority-owned than for firms minority-owned by PE sponsors.<sup>20</sup> For example, the mean one-year abnormal return for majority-owned PE-backed firms is 19.1 percent (median of 8.8 percent), but the mean for minority-owned PE-backed firms is -9.3 percent (median of -18.3 percent). This difference of 28.5 percent (27.1 percent) is significant at the 0.01 level for the medians. In the one-year and three-year periods

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<sup>18</sup> I re-estimated the earnings management and conservatism regression models (2), (3), and (4) with an industry fixed effect and also controlled for the reduction in ownership stake after the IPO (on both an absolute and a relative basis, and for both PE-backed and non-PE-backed firms). All results were qualitatively the same.

<sup>19</sup> Prior literature finds that publicly listed firms report more conservatively than private firms to accommodate shareholder demand for higher quality earnings reporting and reduce shareholder litigation costs (Givoly et al. 2007b). Because these incentives exist as soon as firms are publicly listed, regardless of the initial controlling party, they can increase timely loss recognition among non-PE-backed firms as well, and thereby reduce the differences between them and PE-backed firms in the post-IPO period. Indeed, an analysis of this indicates that post-IPO firms report more conservatively (and also have greater upward earnings management) than pre-IPO firms, regardless of the initial controlling party.

<sup>20</sup> The use of other benchmarks, such as the value-weighted market return index or S&P composite index, yields qualitatively similar results. The results are also qualitatively the same for cumulative abnormal returns.

after the IPO, the median returns for PE-backed, majority-owned firms are also significantly higher than for management-owned firms. PE-backed, minority-owned firms have the lowest abnormal returns in the one-, three-, and five-year periods.

Table 7, Panel A documents that PE-backed, minority-owned firms also have the lowest post-IPO financial performance. In particular, they have the lowest (but not statistically significant) industry-adjusted ROA and market-to-book ratios (statistically significant for one and three years) as well as the highest percentage of post-IPO delistings. Management-owned firms, on the other hand, have the highest (but not statistically significant) industry-adjusted ROA and market-to-book ratios (statistically significant for the one- and three-year periods), and, consistent with the findings reported in Table 4, the highest level of abnormal accruals in the five-year pre-IPO period.

**Table 7, Panel B** reports, separately for the different ownership groups, the results of the Fama-French three factor calendar time portfolio regressions (5). Consistent with the finding above, Panel B indicates that PE-backed, minority-owned firms have the lowest average monthly abnormal returns in the one- and three-year periods (as captured by the estimate of the intercept), and PE-backed, majority-owned firms the highest average monthly abnormal returns. These results, however, are statistically insignificant.

Taken together, and consistent with **H3**, these results suggest that firms in which PE sponsors have a majority ownership have higher abnormal returns than firms owned by management despite their lower financial performance. These results can be attributed to the PE sponsors' higher earnings quality (less engagement in upward earnings management and timelier loss recognition) and capacity for closer monitoring and control, both pre- and post-IPO. The poorer abnormal returns of PE-backed firms with minority ownership can be attributed to their

poor financial performance, and the lesser degree of monitoring and control exercised by owners with a minority stake (as indicated in Table 3).

[PLACE TABLE 7 HERE]

### **PE Sponsor Size**

Table 7 indicates that a significantly higher percentage of firms that are majority owned by PE sponsors are also owned by large PE sponsors (those with greater capital under management). PE sponsor size having been identified as a good proxy for PE sponsor reputation (Cao and Lerner 2007), firms with larger, more reputable PE sponsors are expected to establish better governance practices, exercise closer monitoring, and thus be associated with better earnings quality and financial performance in the post-IPO period (Ivanov et al. 2008; Wongsunwai 2008).<sup>21</sup>

Further analyses (untabulated) yield only weak evidence that firms owned by large PE sponsors have higher earnings quality, that is, engage in less upward earnings management (only in the pre-IPO period) and report more conservatively, than firms owned by small PE sponsors.

**Table 8, Panel A** shows the abnormal returns and financial performance of firms owned by large PE sponsors relative to firms owned by small PE sponsors. Overall, abnormal returns and the industry-adjusted ROA are significantly higher for firms owned by large PE sponsors. These firms also have a lower percentage of delisting. The results of the market-to-book ratios are mixed. **Table 8, Panel B** reports the results of the Fama-French three factor calendar time portfolio regressions (5). Consistent with the finding above, firms owned by larger PE sponsors have higher average monthly abnormal returns (significant for the one-year period). These

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<sup>21</sup> Cao and Lerner (2007) attribute superior post-IPO returns earned by firms with larger PE sponsors to these repeated players' concern for their reputations. Smaller PE sponsors, on the other hand, might have greater need of external financing and so be more strongly motivated to increase the quality of their reported earnings in order to be able to secure cheaper public debt (Bharath et al. 2008).

results indicate that lower engagement in pre-IPO earnings management and the ability of large PE sponsors to provide a higher level of monitoring and support leads to better long-term financial and market-adjusted performance of firms owned by larger PE sponsors.<sup>22</sup>

[PLACE TABLE 8 HERE]

## VI. ROBUSTNESS CHECKS

### Transition Periods

To rule out earnings management during other organizational changes as an influencing factor in the above analyses, I identify specific earnings-management incentives that arise for firms engaged in “going private” transactions such as LBOs and MBOs as well as in other contexts such as M&A and bankruptcy. Overall, my findings are consistent with the results reported in the prior literature. First, the unexpected discretionary accruals are lower in the two years prior to an MBO transaction, consistent with managers’ incentive to act in their own financial interest and influence firm price in their favor (DeAngelo 1986; Marquardt and Wiedman 2004; Perry and Williams 1994; Wu 1997). Second, unexpected discretionary accruals and growth in net operating assets are higher in the two years prior to an LBO, consistent with entrepreneurs’ incentive to manage earnings upward prior to PE financing (Beuselinck et al. 2008). Third, PE-backed public firms appear to manage earnings upward in the years prior to an M&A transaction, consistent with the assumption that these firms can anticipate an acquisition or initiate and plan for a sale, and are therefore able to manage earnings accordingly (Erickson and

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<sup>22</sup> Table 7 further indicates that PE-backed firms have significantly higher underwriter reputation and significantly lower pre-IPO abnormal accruals than management-owned firms. The same is true for firms owned by large PE sponsors relative to firms owned by small PE sponsors (Table 8). Prior literature suggests that lead underwriter reputation can affect long-term IPO returns (e.g., Carter et al. 1998). These rankings, available on Jay Ritter’s Web site, <http://bear.cba.ufl.edu/ritter/rank.xls>, vary from one to nine, nine being the best reputation. To untangle the influence of these factors as well as the association between PE ownership stake and size, and to verify that the abnormal return results are not driven by them, I further control for PE ownership stake and size, underwriter reputation, and abnormal accruals (when applicable). The main abnormal return results are qualitatively similar.

Wang 1999). Finally, PE-backed public firms appear to manage earnings downward in the two years prior to filing for bankruptcy, consistent with the incentive of managers, especially in public firms, to avoid the threat of lawsuits by stakeholders (Rosner 2003). When I remove observations during these transition periods, the results are qualitatively similar.

### **Restructuring Activities**

Renneboog and Simons (2005) argue that PE sponsors can create a “stronger incentive alignment with a focus on performance and value, the reduction in wasting corporate resources, and the improved monitoring capabilities embedded in the governance structure of an LBO.” One might thus expect PE-backed firms, especially in the pre-IPO period, to engage in more restructuring activities than non-PE-backed firms. Because this could affect the findings, I identify and compare PE-backed and non-PE-backed firms using several proxies for restructuring activities including magnitude of discontinued operations, involvement in M&A activities, and yearly increase or decrease in assets greater than 50 percent. These analyses indicate that the involvement of the two groups of firms in restructuring activities is not significantly different in the period surrounding an IPO. Further, removing observations during restructuring periods produces qualitatively similar results.<sup>23</sup>

## **VII. SUMMARY AND CONCLUSIONS**

In this study, I explore a how the ownership structure of private companies (private equity sponsorship with either majority or minority holdings, and management ownership) affects earnings management, reporting conservatism, and post-IPO performance. The findings indicate that the presence of and monitoring by PE sponsors restrains upward earnings

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<sup>23</sup> The proportion of special items is significantly higher for majority PE-backed than for non-PE-backed firms in the pre-IPO period. Controlling for these differences by performing the conservatism analyses on earnings definitions that exclude such special items yields qualitatively similar results.

management and induces a higher frequency of timely loss recognition, both pre- and post-IPO. Further, majority ownership by a PE sponsor is associated with better stock price performance relative to management-owned firms. Similarly, larger PE sponsor size is positively associated with both better long-term financial and stock price performance when a firm goes public. These results can be attributed to less upward earnings management, more timely loss recognition, and tighter monitoring and control by large PE sponsors or those holding a majority stake, both pre- and post-IPO. In contrast, firms minority owned by PE sponsors have worse long-term financial and stock price performance in the years following an IPO than management-owned firms because of the lesser ability of these PE sponsors to control and monitor management.

This study has several limitations. Because the sample consists of private firms that, by virtue of having public debt, have publicly available financial statements, the sample size is relatively small. Further, in order to raise public debt these firms are more likely to be larger and to have better earnings quality than other private firms (Bharath et al. 2008). For these reasons, it is unclear whether this sample is representative of other private firms. The potential sample selection bias concerns, however, are mitigated to some extent because these limitations apply to both the PE-backed and non-PE-backed firms in the sample.

It is worth exploring the incentives for PE-backed and non-PE-backed firms to manage earnings in order to minimize taxes or manipulate bond prices, and the association of both actions with auditor compensation. Comparing PE-backed and non-PE-backed firms in international settings could enhance the results obtained in this study of domestic firms and shed further light on the effect of institutions on PE-backed and non-PE-backed firms.



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**TABLE 1**  
**Sample Selection**

**Private Firms with Public Debt (1980-2005)**

	<b>No. of Firm- year Observations</b>	<b>No. of Firms</b>
<b>“Potential” private firms with public debt (COMPUSTAT)<sup>a</sup></b>	<b>13,062</b>	<b>3,355</b>
<u>Eliminate firms that:</u>		
Do not have historical prospectus data <sup>b</sup>	(3,233)	(1,242)
Are public firms	(2,324)	(371)
Are subsidiaries of public firms	(561)	(102)
Are public spin-offs	(111)	(34)
Are involved in bankruptcy proceedings	(295)	(100)
Have insufficient information	(1,683)	(344)
Are foreign firms	(772)	(184)
Other <sup>c</sup>	(918)	(396)
Subtotal of private firms with public debt	3,165	582
<u>Eliminate firms that:</u>		
Are cooperatives, LPs, government- or employee-owned, and firms for which ownership structure cannot be ascertained	(753)	(74)
<b>Private firms with public debt</b>	<b>2,412</b>	<b>508</b>
<b>Final sample of IPO firms<sup>d</sup></b>	<b>1,070</b>	<b>147</b>
<b>Firms with private equity sponsors</b>	<b>884</b>	<b>123</b>
<b>Firms that do not have private equity sponsors</b>	<b>186</b>	<b>24</b>

<sup>a</sup> The sample of “potential” private firms with public debt consists of all firm-year observations on COMPUSTAT in any year from 1978 to 2005 that satisfy the following criteria: (1) the firm’s stock price at fiscal year end is unavailable, (2) the firm has total debt as well as total revenues exceeding \$1 million, (3) the firm is a domestic company, (4) the firm is not a subsidiary of another public firm, and (5) the firm is not a financial institution or in a regulated industry (SIC codes 6000-6999 and 4800-4900).

<sup>b</sup> COMPUSTAT reports three years of historical information for public firms that file for initial public offering. This financial information is taken from the prospectus.

<sup>c</sup> “Other” includes observations of the same firm with different names, firms that do not have information for consecutive years, firms that have joint ventures and partnerships with public firms, holding companies of public firms, and observations with information available only for the years 1978-1979.

<sup>d</sup> Firms owned by PE sponsors or management and that filed for an initial public offering (IPO). There are as many as 11 firm-year observations for each of these firms (the IPO year and five years before and after the IPO).

**TABLE 2**  
**Descriptive Statistics of Financial Variables in the Pre-IPO and Post-IPO Periods**

		5 Years Pre-IPO						5 Years Post-IPO					
		PE <sup>a</sup> Majority (1)	PE Minority (2)	Mgmt (3)	Diff. <sup>b</sup> (1) - (2)	Diff. (1) - (3)	Diff. (2) - (3)	PE Majority (4)	PE Minority (5)	Mgmt (6)	Diff. (4) - (5)	Diff. (4) - (6)	Diff. (5) - (6)
No. of Firms		96	27	24				70	23	21			
No. of Firm-year Observations		329	85	86				254	93	76			
Total Assets (in \$ millions)	Mean	849	814	1146	35	-296*	-331	1412	1228	1483	184	-71	-255
	Median	516	390	382	126***	134***	8	913	654	594	260***	319***	60
Total Sales (in \$ millions)	Mean	974	979	963	-6	10	16	1886	1354	891	532**	996***	463**
	Median	540	533	504	7	36***	29	1127	782	661	345***	466***	121*
Sales Growth	Mean	6.9%	8.5%	7.6%	-1.6%	-0.7%	0.9%***	9.3%	8.2%	14.7%	1.0%	-5.4%	-6.5%
	Median	5.5%	4.6%	5.2%	0.9%***	0.3%***	-0.6%	7.5%	4.4%	9.1%	3.1%***	-1.6%***	-4.7%
Leverage	Mean	72.8%	76.5%	58.3%	-3.7%	14.5%***	18.2%***	47.7%	50.5%	42.2%	-2.8%	5.5%*	8.3%**
	Median	68.7%	71.0%	54.5%	-2.3%***	14.2%***	16.5%	45.0%	44.7%	44.8%	0.3%***	0.2%***	-0.1%
ROA	Mean	5.2%	3.4%	3.6%	1.9%	1.7%	-0.2%	5.2%	4.4%	5.1%	0.8%	0.2%	-0.7%
	Median	5.5%	5.4%	5.1%	0.1%***	0.4%***	0.3%	6.3%	5.5%	5.0%	0.8%***	1.3%***	0.6%
Q-Ratio	Mean	83.2%	70.3%	109.6%	13.0%**	-26.4%***	-39.3%***	81.3%	85.2%	105.1%	-3.9%	-23.8***	-19.9%*
	Median	75.1%	62.4%	102.9%	12.7%***	-27.8%***	-40.6%	73.9%	69.2%	91.4%	4.7%***	-17.5%***	-22.1%
Cash	Mean	3.9%	4.2%	5.8%	-0.4%	-2.0%**	-1.6%	4.5%	4.0%	7.9%	0.5%	-3.4%***	-3.9%***
	Median	2.1%	1.3%	2.4%	0.8%***	-0.3%***	-1.1%	1.7%	1.2%	3.2%	0.5%***	-1.5%***	-2.0%
TACC	Mean	-7.9%	-7.8%	-5.1%	-0.1%	-2.9%**	-2.7%*	-5.1%	-6.7%	-6.1%	1.6%**	0.9%	-0.6%
	Median	-6.9%	-7.1%	-5.2%	0.2%***	-1.7%***	-1.8%*	-4.7%	-6.2%	-5.9%	1.45***	1.2%***	-0.3%**
CFO	Mean	7.6%	5.1%	4.2%	2.5%	3.4%	0.9%	7.7%	9.6%	7.3%	-1.9%*	0.5%	2.3%*
	Median	6.8%	5.3%	5.7%	1.4%*	1.1%*	-0.4%	8.3%	8.2%	7.3%	0.1%***	1.0%***	0.8%**
% of Loss Firms	Mean	48.6%	57.6%	36.0%	-9.0%	12.6%	21.6%	22.8%	34.4%	27.6%	-11.6%**	-4.8%	6.8%
% Audited by a "Big" Auditor	Mean	96.0%	82.4%	93.0%	13.7%	3.0%	-10.7%	99.6%	93.5%	97.4%	6.1%**	2.2%	-3.8%

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

Mean and median values of the variables over the five-year period are reported.

The distribution of each variable is Winsorized at the extreme  $\pm 1\%$  values.

<sup>a</sup> Management ownership was based on the holdings of the founders, top executives, directors, and family members.

<sup>b</sup> Differences in means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test.

**TABLE 2 (Continued)**  
**Descriptive Statistics of Financial Variables in the Pre-IPO and Post-IPO Periods**

*Total Assets* are total end-of-the-year assets in millions of dollars (COMPUSTAT data item #6). *Total Sales* are sales (net) in millions of dollars (#12). *Leverage* is total debt (#9 + #34) divided by total assets at end of the year (#6). *Sales Growth* is growth in sales (#12) from year  $t-1$  to year  $t$ . *ROA* is net income (#172) plus net of tax interest expense (#15) divided by total assets at end of year  $t-1$  (lagged #6). *Q-Ratio* is cash and short-term investment (#1) plus total receivables (#2) divided by current liabilities (#5). *Cash* is cash and short-term investment (#1) divided by total assets at end of year  $t$  (#6). *TACC* is total accruals divided by total assets at end of year  $t-1$  (lagged #6). For year  $\geq 1988$ : total accruals [income before extraordinary items (#123) – net cash flow from operating activities (#308) + extraordinary items and discounted operations (#124)] divided by total assets at end of year  $t-1$  (lagged #6). For year  $< 1988$ : [change in current assets during period  $t$  (#4) – change in current liabilities during period  $t$  (#5) – change in cash and cash equivalents during period  $t$  (#1) + change in current maturities of long-term debt and other short-term debt included in current liabilities during period  $t$  (#34) – depreciation and amortization expense during period  $t$  (#125)]. In addition, firm-year observations with the following "non-articulating" events were removed: firm-year observations in which a company is involved in a merger or acquisition (#AFTNT35 code #1); firm-year observations in which a company reports "discontinued operations" greater than \$10,000 (#66); and firm-year observations in which a company reports a gain or loss on foreign currency translations greater than \$10,000 (#150). *CFO* is cash flow from operations divided by total assets at the end of year  $t-1$ . For year  $\geq 1988$ : net cash flow from operating activities (#308) divided by total assets at end of year  $t-1$  (lagged #6). For year  $< 1988$ : [funds from operations (#110) – change in current assets during period  $t$  (#4) + change in cash and cash equivalent during period  $t$  (#1) + change in current liabilities during period  $t$  (#5) – change in current maturities of long-term debt and other short-term debt included in current liabilities during period  $t$  (#34)]. *Loss Firms* are firms with negative net income (#172) during year  $t$ . *Audited by a "Big" Auditor* is the percentage of firms audited by one of the big national auditing firms (#149).



**TABLE 3**  
**Descriptive Statistics on Ownership, Board Composition, and CEO Compensation in the Pre-IPO and Post-IPO Periods**

		Pre-IPO						Post-IPO					
		PE Majority (1)	PE Minority (2)	Mgmt (3)	Diff. <sup>a</sup> (1) - (2)	Diff. (1) - (3)	Diff. (2) - (3)	PE Majority (4)	PE Minority (5)	Mgmt (6)	Diff. (4) - (5)	Diff. (4) - (6)	Diff. (5) - (6)
No. of Firms		62	12	18				62	12	18			
<b>Ownership</b>													
Owned by PE Sponsors	Mean	79.9%	36.4%		43.5%***			48.9%	20.8%		28.0%***		
	Median	82.8%	39.9%		42.9%***			50.1%	20.5%		29.6%***		
Owned by Management	Mean	12.9%	15.3%	57.0%	-2.5%	-44.2%***	-41.7%***	6.5%	12.5%	49.6%	-6.0%*	-43.0%***	-37.0%***
	Median	9.4%	13.1%	68.5%	-3.7%***	-59.1%*	-55.4%	4.6%	13.4%	51.6%	-8.8%***	-47.0%	-38.2%**
Owned by CEO	Mean	5.6%	14.9%	38.3%	-9.3%*	-32.7%***	-23.4%**	3.2%	6.2%	15.0%	-3.1%	-11.8%*	-8.8%
	Median	3.0%	11.2%	26.4%	-8.3%***	-23.5%**	-15.2%	1.9%	3.8%	8.0%	-1.9%***	-6.1%***	-4.2%
<b>Board</b>													
Chair is CEO	Mean	56.5%	83.3%	61.1%	-26.9%**	-4.7%	22.2%	54.8%	91.7%	61.1%	-36.8%***	-6.3%	30.6%**
Insiders	Mean	33.9%	29.9%	56.7%	4.0%	-22.7%***	-26.7%***	25.3%	27.6%	37.4%	-2.4%	-12.1%***	-9.8%**
	Median	29.3%	28.6%	50.0%	0.7%***	-20.7%***	-21.4%***	22.2%	28.6%	40.0%	-6.3%***	-17.8%***	-11.4%*
PE Sponsors on Board	Mean	55.2%	34.0%		21.1%***			50.3%	29.4%		20.9%***		
	Median	57.1%	37.5%		19.6%***			50.0%	31.0%		19.0%***		
Board Size	Mean	7.1	6.3	5.4	0.8**	1.7**	0.9	8.2	6.3	6.6	1.8***	1.5***	-0.3
	Median	7.0	6.0	5.0	1.0***	2.0***	1.0	8.0	7.0	6.5	1.0***	1.5***	0.5
<b>CEO Compensation</b>													
Options (% of total compensation & options)	Mean	68.4%	68.7%	13.2%	-0.2%	55.3%**	55.5%**	69.9%	65.7%	46.9%	4.2%	23.0%*	18.8%
	Median	71.0%	68.7%	13.2%	2.3%***	57.8%***	55.5%	74.3%	66.1%	43.7%	8.2%***	30.6%***	22.4%
Total Options (in \$ millions)	Mean	\$3.93	\$1.17	\$0.09	\$2.76***	\$3.84	\$1.10	\$8.41	\$3.36	\$0.65	\$5.04	\$7.76***	\$2.72
	Median	\$1.78	\$1.17	\$0.09	\$0.61***	\$1.69***	\$1.10	\$2.74	\$1.55	\$0.39	\$1.18***	\$2.34***	\$1.16
Variable Compensation (% of total compensation & options)	Mean	61.9%	55.2%	51.8%	6.7%	10.2%	3.5%	73.8%	69.0%	45.4%	4.8%	28.4%***	23.6%**
	Median	59.7%	58.0%	54.6%	1.7%***	5.1%***	3.4%	82.5%	69.8%	50.2%	12.7%***	32.3%***	19.6%
Total Compensation (excludes options, in \$ millions)	Mean	\$1.06	\$0.77	\$1.36	\$0.29*	-\$0.30	-\$0.59*	\$1.62	\$1.09	\$0.77	\$0.53	\$0.84**	\$0.32
	Median	\$0.78	\$0.68	\$0.82	\$0.10***	-\$0.04***	-\$0.14	\$0.95	\$0.72	\$0.60	\$0.23***	\$0.35***	\$0.12

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

**TABLE 3 (continued)**  
**Descriptive Statistics on Ownership, Board Composition, and CEO Compensation in the Pre-IPO and Post-IPO Periods**

<sup>a</sup> Differences in means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test.

*Chair is CEO* is the percentage of firms for which the CEO is the chairman of the board of directors. *Insiders* are the number of directors who serve as executives in the firm divided by total board size. *PE Sponsors on Board* are the number of directors who represent PE sponsors divided by total board size. *Board Size* is the total number of directors on the board. *Options* is the total options divided by the sum of the total compensation and total options. *Total Options* are the cumulative value of options distributed to the CEO during her/his tenure as well as the cumulative value of options realized. (When the cumulative value was absent, the average value of options distributed during the year was used.) *Variable Compensation* is the sum of the total options, bonus, other annual compensation, and other compensation (excluding salary) divided by the total compensation and total options. (Note: Variable includes instances in which options were NOT distributed.) *Total Compensation* is the sum of the salary, bonus, other annual compensation, and other compensation.

**TABLE 4**  
**Measures of Earning Management:**  
**Magnitude of Abnormal Accruals and Growth in Net Operating Assets**

**Panel A: Univariate Analysis**

Years		PE Majority			PE Minority			Mgmt			Diff. <sup>a</sup> PE Majority v. PE Minority		Diff. PE Majority v. Mgmt		Diff. PE Minority v. Mgmt				
		N	UTACC (1)	GNOA (2)	N	UTACC (3)	GNOA (4)	N	UTACC (5)	GNOA (6)	UTACC (1) - (3)	GNOA (2) - (4)	UTACC (1) - (5)	GNOA (2) - (6)	UTACC (3) - (5)	GNOA (4) - (6)			
5 Years Pre-IPO	Mean	277	-3.7%	-4.9%	69	-4.2%	-9.6%	79	-0.3%	-0.9%	0.5%	4.7%**	-3.4%***	-4.0%	-3.9%***	-8.7%*			
	Median		-3.5%	-3.2%		-2.1%	-7.9%		-1.1%	-2.9%	-1.4%*	4.7%**	-2.3%***	-0.3%***	-1.0%**	-4.9%**			
Avg. 5 Years Post-IPO <sup>b</sup>	Mean	206	-0.3%	-1.5%	81	-1.4%	2.3%	62	3.3%	13.4%	1.1%	-3.7%	-3.6%	-14.9%**	-4.7%	-11.2%*			
	Median		-0.6%	-0.8%		-0.2%	1.2%		1.7%	4.9%	-0.4%	1.2%	-2.3%*	-5.6%*	-1.9%	-3.6%			
-5	Mean	32	-4.9%	6.0%	5	-8.7%	-22.7%	12	8.8%	15.8%	3.9%	28.7%	-13.7%***	-9.8%	-17.6%**	-38.5%*			
	Median		-4.0%	-1.5%		-1.3%	-15.4%		7.1%	-0.6%	-2.7%***	14.0%	-11.1%***	-0.8%	-8.4%***	-14.8%*			
-4	Mean	48	-3.5%	-5.5%	11	-25.5%	86.6%	13	-3.8%	7.0%	21.9%	-92.1%	0.3%	-12.5%	-21.6%	79.6%			
	Median		-2.8%	-2.6%		-2.3%	-10.0%		-4.0%	-2.2%	-0.6%**	7.4%*	1.2%	-0.4%**	1.8%	-7.9%			
-3	Mean	65	-4.3%	-1.1%	18	-4.3%	-8.0%	17	-2.0%	-5.5%	0.0%	6.9%	-2.3%	4.4%	-2.3%	-2.6%			
	Median		-3.1%	-6.4%		-0.7%	-7.1%		-1.4%	-6.4%	-2.4%***	0.7%**	-1.7%***	0.0%**	0.8%	-0.7%			
-2	Mean	87	-4.3%	1.4%	23	-5.9%	9.3%	20	-0.2%	-3.8%	1.6%	-7.9%	-4.1%*	5.2%	-5.7%**	13.1%			
	Median		-3.7%	-6.5%		-4.5%	-5.9%		-1.6%	-4.3%	0.8%**	-0.7%	-2.0%**	-2.2%**	-2.9%*	-1.6%			
-1	Mean	96	-4.3%	6.4%	27	-3.5%	5.7%	24	-0.1%	-3.8%	-0.7%	0.7%	-4.1%**	10.2%	-3.4%	9.5%			
	Median		-3.9%	-3.3%		-5.4%	-7.9%		1.1%	-5.3%	1.5%***	4.6%	-5.0%***	2.0%	-6.5%**	-2.6%			
IPO Year	Mean	84	-1.9%	5.7%	24	0.5%	25.1%	24	7.3%	365.4%	-2.4%	-19.4%	-9.2%	-359.7%	-6.8%	-340.3%			
	Median		-1.3%	0.0%		0.5%	-2.0%		1.1%	12.7%	-1.7%***	2.0%	-2.4%**	-12.7%*	-0.6%	-14.7%			
+1	Mean	70	0.6%	11.9%	23	0.5%	-0.5%	21	1.1%	46.9%	0.1%	12.4%*	-0.5%	-34.9%	-0.6%	-47.3%*			
	Median		0.3%	0.0%		0.2%	-2.4%		-1.1%	6.6%	0.1%	2.4%	1.3%	-6.6%	1.2%	-9.0%*			
+2	Mean	60	-1.8%	3.8%	22	-3.3%	3.0%	17	16.1%	8.9%	1.5%	0.8%	-17.9%	-5.1%	-19.4%	-6.0%			
	Median		-1.2%	0.0%		-2.1%	-0.3%		-0.4%	0.3%	0.9%	0.3%	-0.8%	-0.3%	-1.7%	-0.6%			
+3	Mean	49	4.3%	-1.9%	20	-0.2%	8.7%	14	0.4%	2.8%	4.5%	-10.6%	3.9%	-4.7%	-0.5%	5.9%			
	Median		-0.8%	-4.3%		-0.3%	0.1%		2.9%	-0.9%	-0.5%	-4.4%*	-3.7%**	-3.4%**	-3.2%	1.0%			
+4	Mean	41	-1.5%	-6.9%	15	-4.0%	10.7%	12	-5.7%	-6.8%	2.6%	-17.7%	4.2%	-0.1%	1.6%	17.5%			
	Median		0.1%	-2.4%		-2.6%	-5.4%		-1.3%	1.6%	2.7%	3.0%	1.4%	-4.0%*	-1.3%	-7.0%			
+5	Mean	34	-1.5%	6.2%	14	-1.3%	-3.1%	12	-0.8%	17.6%	-0.2%	9.3%	-0.7%	-11.4%	-0.5%	-20.7%			
	Median		-1.0%	0.5%		-1.8%	-8.6%		0.1%	-1.7%	0.8%	9.1%	-1.1%	2.2%	-2.0%	-6.9%*			
IPO Year	Mean	84	2.2%			24	3.7%			24	12.3%			-1.5%		-10.2%		-8.6%	
Current UACC <sup>c</sup>	Median	1.4%			2.6%			3.1%			-1.2%		-1.7%**		-0.5%				

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

**TABLE 4 (continued)**  
**Measures of Earnings Management:**  
**Magnitude of Abnormal Accruals and Growth in Net Operating Assets**

**Panel B: Multivariate Analysis**

Independent Variable	Predicted Sign	5 Years Pre-IPO								5 Years Post-IPO								
		UTACC				GNOA				UTACC				GNOA				
		Coef. (1)	t-stat (1)	Coef. (2)	t-stat (2)	Coef. (3)	t-stat (3)	Coef. (4)	t-stat (4)	Coef. (5)	t-stat (5)	Coef. (6)	t-stat (6)	Coef. (7)	t-stat (7)	Coef. (8)	t-stat (8)	
Intercept	(a <sub>0</sub> )	?	0.031	1.37	-0.124	-2.74***	0.197	2.59***	-0.247	-1.66*	0.134	1.33	0.167	1.09	0.964	6.91***	-0.492	-2.28**
PE	(a <sub>1</sub> )	-	-0.081	-3.41***	-0.022	-2.35**	-0.305	-3.81***	-0.022	-0.74	-0.156	-1.51	-0.071	-2.47**	-1.029	-6.16***	-0.122	-2.99***
LAMBDA			0.030	1.74*			0.154	2.72***			0.052	0.73			0.587	5.81***		
PE*LAMBDA			0.020	0.76			0.024	0.29			-0.018	-0.19			-0.395	-2.82***		
Pseudo-R-square <sup>d</sup>			67.92%				67.92%				49.69%				49.69%			
ln(Total Assets)					-0.014	-1.99**			0.032	1.33			0.005	0.19			0.010	0.30
ln(Sales)					0.020	2.56**			-0.008	-0.30			-0.017	-0.64			0.014	0.38
Book Value / Total Assets					0.070	2**			0.083	0.72			-0.034	-0.31			0.374	2.42**
Sales Growth					-0.062	-2.97***			0.183	2.72***			-0.040	-0.54			0.074	0.70
Leverage					0.023	0.66			0.001	0.01			0.000	0.00			0.193	1.26
RNOA					0.036	4.7***			-0.009	-0.38			0.137	1.60			0.784	6.4***
Q-Ratio					0.016	1.96*			0.065	2.45**			0.024	0.85			0.042	1.04
Oper_Cycle					0.000	1.59			0.000	0.67			0.000	0.52			0.000	2.11**
Age					0.000	0.37			-0.001	-0.94			0.000	-0.05			-0.001	-0.92
Cash / Total Assets					-0.104	-1.43			-0.238	-1.00			-0.198	-1.05			0.501	1.85*
CAPEX / Total Assets					-0.079	-0.79			0.813	-2.48**			0.015	0.06			0.459	1.20
D_loss					-0.032	-4.44***			-0.031	-1.33			-0.055	-1.79*			0.087	1.97**
D_Audit_Quality					0.057	2.69***			-0.011	-0.15			-0.031	-0.40			0.047	0.42
Adj-R-square			5.69%		26.25%		6.20%		13.37%		1.70%		3.92%		14.79%		27.87%	
No. of Observations			297		297		304		304		319		319		324		324	

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

<sup>a</sup> Differences in means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test.

<sup>b</sup> The average of five years' annual UTACC and GNOA variables. For firms that do not survive for five full years after the IPO, the maximum number of years for which COMPUSTAT data is available is used.

<sup>c</sup> Current unexpected discretionary accruals are derived from the cross-sectional modified Jones model used by Teoh et al. (1998a, 1998b) where current accruals are defined as the difference between the change in noncash current assets and the change in current operating liabilities.

<sup>d</sup> MacKelvey-Zavonia Pseudo-R-square for the first stage PROBIT model in the Heckman (1979) procedure.

**TABLE 4 (continued)**  
**Measures of Earnings Management:**  
**Magnitude of Abnormal Accruals and Growth in Net Operating Assets**

Panel A's summary of five years' pre-IPO and five years' post-IPO excludes firm-year observations during restructuring periods. The distribution of each variable is truncated at the extreme  $\pm 1\%$  values. *UTACC* are unexpected discretionary total accruals derived from the cross-sectional modified Jones model. To control for the asymmetric recognition of gains and losses, the modified Jones model is augmented with the following independent variables: cash flow from operations in year  $t$  ( $CF_t$ ), a dummy variable set to 1 if  $CF_t < 1$  and 0 otherwise ( $DCF_t$ ), and an interactive variable,  $CF_t \times DCF_t$ . *GNOA* is industry adjusted growth in net operating assets after subtracting the industry median (same 4-digit SIC codes) *GNOA* for the same year:  $GNOA_{j,t} = (NOA_{j,t} - NOA_{j,t-1}) / |NOA_{j,t-1}|$ , where *NOA* is defined as common equity (#60) + debt in current liabilities (#34) + total long-term debt (#9) + preferred stock (#130) – cash and short-term Investments (#1) – investments and advances (#32) + minority interest (#38). *PE* is a dummy variable set to 1 for PE-backed firms (both majority- and minority-owned) and 0 for firms owned by management. *LAMBDA*: following the Heckman (1979) procedure, in the first stage a PROBIT model is estimated with, as predictors, size (alternatively defined as the natural logarithms of total assets or sales), ratio of book value of equity to total assets, growth (in sales), leverage, profitability (operating income divided by net operating assets), quick ratio, length of the operating cycle, age, cash and capital expenditures (both divided by total assets), a dummy for loss firms, and audit quality (a dummy for the big national accounting firms). Estimates of the PROBIT model are used to compute an inverse Mills' ratio for each firm. In the second stage, the inverse Mills' ratio is added to equation (2) as a control variable. To allow its coefficient to vary between the two groups of firms, an interactive variable ( $PE \times LAMBDA$ ) is also included.  $\ln(\text{Total Assets})$  is the natural logarithm of total assets (#6).  $\ln(\text{Total Sales})$  is the natural logarithm of total sales (#12). *Book Value* is the book value of equity: total common equity (#60) + carrying value of preferred stock (#130) + deferred taxes and investment tax credit (#35). *Sales Growth* is defined in Table 2. *Leverage* is defined in Table 2. *RNOA* is operating Income (OpI) divided by net operating assets at end of year  $t-1$  ( $NOA_{t-1}$ ), where *NOA* is as defined in *GNOA*. *OpI* is defined as net income (#172) + change in cumulative translation adjustment (#230) + after-tax interest expense ( $\#15 \times (1 - \text{marginal tax rate})$ ) – after-tax interest income ( $\#62 \times (1 - \text{marginal tax rate})$ ) + minority interest in income (#49), where the marginal tax rate is the top statutory federal tax rate plus 2% average state tax rate. The top federal statutory corporate tax rate was 48% in 1971-1978, 46% in 1979-1986, 40% in 1987, 34% in 1988-1992, and 35% in 1993-2003. *Q-Ratio* is defined in Table 2. *Oper\_Cycle* is operating cycle days (receivable collection period plus inventory turnover in days), calculated as: (yearly average accounts receivable #2) / (total revenues/360 #12) + (yearly average inventory #3) / (cost of goods sold/360 #41). *Age* is the number of years since incorporation (first appearance on COMPUSTAT). *Cash* is defined in Table 2. *CAPEX* is capital expenditures (#128) divided by total assets at end of year  $t$  (#6). *D\_Loss* is a dummy variable set to 1 for firms with negative net income (#172) during year  $t$  and 0 otherwise. *D\_Audit\_Quality* is a dummy variable set to 1 for firms audited by one of the big national auditing firms (#149).

**TABLE 5**  
**Timely Loss Recognition by Ownership Structure**

$$\Delta \text{OpI}_t = a_0 + a_1 * D\Delta \text{OpI}_{t-1} + a_2 * \Delta \text{OpI}_{t-1} + a_3 * D\Delta \text{OpI}_{t-1} * \Delta \text{OpI}_{t-1} + a_4 * \text{PE} + a_5 * \text{PE} * D\Delta \text{OpI}_{t-1} + a_6 * \text{PE} * \Delta \text{OpI}_{t-1} + a_7 * \text{PE} * D\Delta \text{OpI}_{t-1} * \Delta \text{OpI}_{t-1} + e_t$$

Independent Variable	Predicted Sign	5 Years Pre-IPO						5 Years Post-IPO					
		Coef. (1)	t-stat (1)	Coef. (2)	t-stat (2)	Coef. (3)	t-stat (3)	Coef. (4)	t-stat (4)	Coef. (5)	t-stat (5)	Coef. (6)	t-stat (6)
Intercept	(a <sub>0</sub> ) ?	0.015	0.69	0.061	1.39	-0.182	-2.57**	0.018	0.66	0.046	0.52	-0.035	-0.38
DΔOpI <sub>t-1</sub>	(a <sub>1</sub> ) ?	0.010	0.28	-0.006	-0.19	0.004	0.15	0.009	0.19	0.017	0.37	0.028	0.76
ΔOpI <sub>t-1</sub>	(a <sub>2</sub> ) ?	-0.445	-1.7*	-0.844	-3.06***	-1.052	-5.3***	-0.093	-0.50	-0.151	-0.77	-0.084	-0.55
DΔOpI <sub>t-1</sub> *ΔOpI <sub>t-1</sub>	(a <sub>3</sub> ) ?	0.396	1.06	0.764	2.2**	0.752	2.93**	0.342	1.04	0.560	1.29	-0.533	-1.38
PE	(a <sub>4</sub> ) ?	-0.028	-1.05	-0.043	-0.93	-0.041	-2.21**	-0.026	-0.84	-0.013	-0.14	0.002	0.07
PE*DΔOpI <sub>t-1</sub>	(a <sub>5</sub> ) ?	-0.013	-0.33	-0.023	-0.61	0.022	0.84	-0.029	-0.58	-0.035	-0.68	-0.014	-0.35
PE*ΔOpI <sub>t-1</sub>	(a <sub>6</sub> ) +	0.548	1.68*	0.741	2.3**	1.185	5.12***	0.064	0.30	0.088	0.39	-0.069	-0.40
PE*DΔOpI <sub>t-1</sub> *ΔOpI <sub>t-1</sub>	(a <sub>7</sub> ) -	-1.023	-2.37**	-1.182	-3.01***	-1.343	-4.74***	-1.017	-2.71***	-1.128	-2.41**	-0.024	-0.06
LAMBDA	?			0.026	0.81					0.033	0.54		
PE*LAMBDA	?			-0.043	-0.99					-0.177	-1.29		
Pseudo-R-square <sup>a</sup>				59.51%						51.37%			
ln(Total Assets)						-0.012	-1.10					-0.009	-0.64
ln(Sales)						0.023	1.99**					0.005	0.35
Book Value / Total Assets						0.113	2.13**					0.035	0.49
Sales Growth						0.058	1.65					0.037	0.96
Leverage						0.102	1.93*					0.077	1.17
RNOA						0.660	12.66***					0.693	9.11***
Q-Ratio						-0.010	-0.84					-0.009	-0.55
Oper_Cycle						0.000	1.72*					0.000	-1.09
Age						-0.001	-2.46**					0.000	0.72
Cash / Total Assets						0.020	0.18					0.003	0.02
CAPEX / Total Assets						-0.248	-1.52					-0.642	-3.76***
D_loss						0.005	0.47					-0.035	-1.88*
D_Audit_Quality						0.006	0.21					-0.006	-0.15
Adj-R-square		11.06%		19.11%		63.08%		7.21%		9.88%		49.00%	
No. of Observations		258		210		210		306		246		246	

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

<sup>a</sup> MacKelvey-Zavonia Pseudo-R-square for the first stage PROBIT model in the Heckman (1979) procedure.

**TABLE 5 (continued)**  
**Timely Loss Recognition by Ownership Structure**

Each variable in the table is truncated at the extreme  $\pm 1\%$  values of its distribution.  $\Delta OpI$  is a change in the operating income from year  $t-1$  to year  $t$ , standardized by net operating assets at the end of year  $t-1$ . Operating income ( $OpI$ ) and net operating assets (NOA) are both as defined in Table 4.  $D\Delta OpI$  is a dummy variable set to 1 if  $\Delta OpI < 0$  and 0 otherwise.  $PE$  and all control variables are as defined in Table 4.

**TABLE 6**  
**Accrual Model for Timely Loss Recognition by Ownership Structure**

$$ACC_t = b_0 + b_1*DCFO_t + b_2*CFO_t + b_3*DCFO_t*CFO_t + b_4*PE + b_5*PE*DCFO_t + b_6*PE*CFO_t + b_7*PE*DCFO_t*CFO_t + e_t$$

Independent Variable	Predicted Sign	5 Years Pre-IPO						5 Years Post-IPO						
		Coef. (1)	t-stat (1)	Coef. (2)	t-stat (2)	Coef. (3)	t-stat (3)	Coef. (4)	t-stat (4)	Coef. (5)	t-stat (5)	Coef. (6)	t-stat (6)	
Intercept	(b <sub>0</sub> )	?	-0.038	-3.05***	-0.010	-0.40	-0.012	-0.28	-0.020	-1.54	-0.055	-1.73*	-0.088	-2.35**
DCFO <sub>t</sub>	(b <sub>1</sub> )	?	0.021	0.49	0.053	1.18	0.013	0.29	0.056	1.36	0.042	1.15	0.041	1.27
CFO <sub>t</sub>	(b <sub>2</sub> )	-	-0.284	-2.38**	-0.375	-2.51**	-0.615	-3.94***	-0.406	-3.65***	-0.397	-3.29**	-0.466	-4.39***
DCFO <sub>t</sub> *CFO <sub>t</sub>	(b <sub>3</sub> )	?	-2.037	-2.15**	-1.427	-1.60	-1.471	-1.65*	0.498	0.49	0.376	0.44	0.101	0.13
PE	(b <sub>4</sub> )	?	0.010	0.72	-0.036	-1.47	-0.010	-0.68	0.012	0.84	0.054	1.65*	0.012	0.89
PE*DCFO <sub>t</sub>	(b <sub>5</sub> )	?	-0.014	-0.30	-0.035	-0.74	-0.006	-0.13	-0.084	-1.9*	-0.043	-1.04	-0.039	-1.06
PE*CFO <sub>t</sub>	(b <sub>6</sub> )	?	-0.365	-2.77***	-0.170	-1.05	0.070	0.42	-0.118	-0.95	-0.077	-0.58	-0.050	-0.42
PE*DCFO <sub>t</sub> *CFO <sub>t</sub>	(b <sub>7</sub> )	+	2.506	2.58**	1.593	1.68*	1.502	1.59	-0.210	-0.20	-0.543	-0.59	-0.101	-0.12
LAMBDA	?			0.020	1.32						-0.022	-1.14		
PE*LAMBDA	?			0.022	1.08						-0.011	-0.40		
Pseudo-R-square <sup>a</sup>					57.65%							51.69%		
In(Total Assets)							-0.020	-3.12***					-0.010	-1.79*
In(Sales)							0.018	2.64**					0.013	1.97**
Book Value / Total Assets							0.013	0.43					0.080	2.87***
Sales' Growth							0.001	0.05					0.030	1.99**
Leverage							-0.041	-1.38					-0.006	-0.23
Q-Ratio							0.019	2.88***					0.007	1.81*
Oper_Cycle							0.000	0.87					0.000	3.57***
Age							0.000	0.90					0.000	0.02
Cash / Total Assets							-0.104	-1.63					-0.141	-2.43**
CAPEX / Total Assets							0.166	1.84*					0.047	0.61
D_Audit_Quality							0.001	0.08					0.009	0.56
Adj-R-square			36.33%		36.67%		42.07%		24.41%		31.62%		45.30%	
No. of Observations			371		293		293		400		295		295	

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

<sup>a</sup> MacKelvey-Zavonia Pseudo-R-square for the first stage PROBIT model in the Heckman (1979) procedure.



**TABLE 6 (continued)**  
**Accrual Model for Timely Loss Recognition by Ownership Structure**

Each variable in the table is truncated at the extreme  $\pm 1\%$  values of its distribution. *ACC* is total accruals divided by total assets at end of year  $t-1$ , as defined in Table 2. *CFO* is cash flow from operations divided by total assets at the end of year  $t-1$ , as defined in Table 2. *DCFO* is a dummy variable that is 1 if  $CFO_t < 0$  and 0 otherwise. *PE* and all control variables are as defined in Table 4.

**TABLE 7**  
**Market-Adjusted Performance by Ownership Structure**

**Panel A: Market-Adjusted Performance**

		PE	PE		Diff. <sup>a</sup>	Diff.	Diff.
		Majority	Minority	Mgmt	(1) - (2)	(1) - (3)	(2) - (3)
		(1)	(2)	(3)			
No. of Firms		92	26	21			
<b>Size and Book-to-Market (5x5) Adj. Returns<sup>b</sup></b>							
1 Year	Mean	19.1%	-9.3%	3.9%	28.5%	15.3%	-13.2%
	t-stat				(2.66)	(1.81)	(-0.97)
	Median	8.8%	-18.3%	-12.6%	27.1%***	21.4%**	-5.7%
3 Year	Mean	19.0%	-27.5%	-4.9%	46.5%	23.9%	-22.6%
	t-stat				(2.59)	(1.15)	(-0.86)
	Median	9.7%	-36.7%	-16.8%	46.3%**	26.5%*	-19.9%
5 Year	Mean	17.3%	-56.8%	-3.5%	74.1%	20.8%	-53.4
	t-stat				(2.67)	(0.58)	(-1.66)
	Median	-0.4%	-66.3%	-12.9%	65.9%*	12.5%	-53.4*
<b>Industry Adj. ROA</b>							
1 Year	Mean	0.7%	0.5%	1.7%	0.2%	-1.0%	-1.2%
	Median	0.5%	0.7%	1.9%	-0.3%	-1.4%	-1.2%
3 Year	Mean	-0.2%	-1.1%	-0.1%	1.0%	-0.1%	-1.1%
	Median	-0.2%	-0.1%	-0.7%	-0.1%	0.4%	0.5%
5 Year	Mean	-0.2%	-1.1%	0.4%	1.0%	-0.6%	-1.5%
	Median	-0.2%	-0.6%	0.0%	0.5%	-0.1%	-0.6%
<b>Market-to-Book</b>							
1 Year	Mean	3.28	2.26	3.19	1.01	0.09	-0.92
	Median	2.14	2.05	2.20	0.09***	-0.06***	-0.15
3 Year	Mean	2.31	1.75	3.03	0.57	-0.72	-1.29*
	Median	2.08	1.49	2.93	0.59***	-0.85***	-1.44
5 Year	Mean	2.77	2.01	2.84	0.76	-0.07	-0.83
	Median	2.36	1.86	1.62	0.50***	0.74***	0.24
<b>Delisting</b>							
1 Year	Mean	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 Year	Mean	0.0%	7.7%	0.0%	-7.7%	0.0%	7.7%
5 Year	Mean	5.4%	11.5%	4.8%	-6.1%	0.7%	6.8%
Pre-IPO UTACC	Mean	-4.0%	-4.7%	0.4%	0.7%	-4.4%***	-5.1%***
	Median	-3.5%	-3.7%	0.7%	0.2%***	-4.2%***	-4.3%***
Underwriter Reputation	Mean	8.82	8.78	8.32	0.04	0.50	0.46
	Median	9.10	9.10	8.83	0.00	0.27***	0.27
Large PE Sponsors	Mean	32.6%	3.8%		28.8%***		

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.  
The distribution of each variable is winsorized at the extreme  $\pm 1\%$  values.

**TABLE 7 (continued)**  
**Market-Adjusted Performance by Ownership Structure**

<sup>a</sup> Differences in means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test.

<sup>b</sup> Due to the cross-correlation problem, the t-statistics for abnormal returns should not be translated into *p*-values; these t-statistics appear in parentheses.

*Size and Book-to-Market (5x5) Adj. Returns* are calculated, for each IPO, as the buy-and-hold daily returns on the periods of 1 year, 3 years, and 5 years after the IPO, less the buy-and-hold returns on a Fama and French size and book-to-market (5x5) matched portfolio of daily value-weighted market returns index over the same period. If the sample firm delists during the relevant period, the delist return is added to the firm's buy-and-hold return and the market-adjusted return is set equal to zero after the delisting date. *Industry Adj. ROA* is the average of 1 year, 3 years, or 5 years after the IPO matched-adjusted return on assets (as defined in Table 2) minus the industry median ROA for the same period (based on 4-digit SIC codes). For firms that do not survive for the full 1 year, 3 years, or 5 years after the IPO, the maximum number of years for which COMPUSTAT data is available is used. *Market-to-Book* is measured at the end of 1 year, 3 years, or 5 years since the IPO. For firms that do not survive the full 1 year, 3 years, or 5 years after the IPO, the maximum number of years for which COMPUSTAT data is available is used. Market value of equity is defined as common shares outstanding (#25) multiplied by fiscal year closing price (#199). Book value of equity is defined as total common equity (#60) + carrying value of preferred stock (#130) + deferred taxes and investment tax credit (#35). *Delisting* is the percentage of firms delisted from the NYSE, Amex, or Nasdaq due to bankruptcy, default, or liquidation (CRSP delisting codes 400 and above). *Pre-IPO UTACC* is the average of 5 years' pre-IPO annual UTACC, as defined in Table 4. *Underwriter Reputation* is the lead underwriter reputation rankings. (Source: Jay's Ritter Web site: <http://bear.cba.ufl.edu/ritter/rank.xls>.) *Large PE Sponsors* include: Warburg Pincus, Carlyle Group, KKR, Apax, Blackstone, Goldman Sachs, J.P. Morgan, Welsh Carson Anderson & Stone, Hicks Muse Tate & Furst, 3i Group, Bain Capital, Thomas H. Lee, Morgan Stanley, and Cinven. Small PE sponsors include all other PE sponsors. PE sponsors are ranked according to total investment (in \$US) during the years 1980-2005. (Source: Thomson Financials, VentureXpert.)

**TABLE 7 (continued)**  
**Market-Adjusted Performance by Ownership Structure**

**Panel B: Fama-French Three Factors Calendar Time Portfolio Regressions**

Independent Variable	1 Year Ret		3 Years Ret		5 Years Ret	
	Coef. (1)	t-stat (1)	Coef. (2)	t-stat (2)	Coef. (3)	t-stat (3)
<b>PE Majority</b>						
Intercept	0.004	0.82	0.003	0.99	0.001	0.39
RMF	1.211	7.77***	0.953	9.41***	0.911	10.28***
SMB	0.915	4.72***	0.742	5.92***	0.753	6.87***
HML	0.328	1.43	0.336	2.28**	0.386	2.99***
Adj-R-square	31.90%		38.78%		43.55%	
No. of Observations	197		219		219	
<b>PE Minority</b>						
Intercept	-0.014	-1.36	-0.006	-1.13	-0.004	-0.87
RMF	1.527	4.99***	1.128	7.05***	1.162	8.7***
SMB	0.985	2.41**	1.070	5.33***	1.026	6.13***
HML	0.507	1.11	0.255	1.08	0.352	1.78*
Adj-R-square	18.83%		28.99%		36.63%	
No. of Observations	149		232		232	
<b>Mgmt</b>						
Intercept	-0.009	-0.95	-0.001	-0.08	-0.009	-1.51
RMF	1.382	4.65***	1.148	5.56***	1.289	7.61***
SMB	0.512	1.57	0.889	3.82***	0.629	3.05***
HML	0.793	1.91*	0.281	1.01	0.460	1.89*
Adj-R-square	14.58%		22.51%		25.12%	
No. of Observations	121		174		213	

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

The distribution of each variable is truncated at the extreme  $\pm 1\%$  values. Regression coefficients estimated in calendar time from the Fama-French (1993) three factor regression model:  $R_{pt} - R_{ft} = a_p + b_p (R_{mt} - R_{ft}) + s_p \text{SMB}_t + h_p \text{HML}_t + \varepsilon_t$ , where  $R_{pt}$  is the equally weighted portfolio returns in calendar month  $t$ ;  $R_{ft}$  is the 30-day T-bill yield in month  $t$ ;  $R_{mt}$  is the return on the value weighted CRSP index;  $\text{SMB}_t$  is the return on small firms minus the return on large firms; and  $\text{HML}_t$  is the return on high book-to-market stocks minus the return on low book-to-market stocks in month  $t$ .

**TABLE 8**  
**Market-Adjusted Performance by PE Sponsor Size**

**Panel A: Market-Adjusted Performance**

		Large PE	Small PE	Diff. <sup>a</sup>
		(1)	(2)	(1) - (2)
No. of Firms		31	87	
<b>Size and Book-to-Market (5x5) Adj. Returns<sup>b</sup></b>				
1 Year	Mean	22.5%	8.8%	13.7%
	t-stat			(1.66)
	Median	9.1%	1.7%	7.3%
3 Year	Mean	42.3%	-2.7%	44.9%
	t-stat			(1.85)
	Median	17.6%	-13.3%	30.8%
5 Year	Mean	65.1%	-27.8%	93.0%
	t-stat			(2.96)
	Median	48.7%	-31.3%	80.0%***
<b>Industry Adj. ROA</b>				
1 Year	Mean	3.3%	-0.3%	3.6%**
	Median	0.4%	0.5%	-0.03%
3 Year	Mean	1.5%	-1.0%	2.5%*
	Median	1.3%	-0.4%	1.7%**
5 Year	Mean	1.2%	-1.0%	2.2%*
	Median	0.8%	-0.7%	1.5%**
<b>Market-to-Book</b>				
1 Year	Mean	1.86	3.53	-1.66
	Median	2.21	2.14	0.07***
3 Year	Mean	1.62	2.38	-0.76
	Median	1.56	2.03	-0.48***
5 Year	Mean	2.83	2.37	0.46
	Median	2.23	2.23	0.01***
<b>Delisting</b>				
1 Year	Mean	0.0%	0.0%	0.0%
3 Year	Mean	0.0%	2.3%	-2.3%
5 Year	Mean	3.2%	8.0%	-4.8%
<b>Pre-IPO UTACC</b>				
	Mean	-4.6%	-3.9%	-0.7%
	Median	-4.1%	-3.5%	-0.6%***
<b>Underwriter Reputation</b>				
	Mean	8.95	8.76	0.19*
	Median	9.10	9.10	0.00

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

<sup>a</sup> Differences in means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test.

<sup>b</sup> Due to the cross-correlation problem, the t-statistics for abnormal returns should not be translated into *p*-values; these t-statistics appear in parentheses.

The distribution of each variable is winsorized at the extreme  $\pm 1\%$  values. All variables are as defined in Table 7, Panel A.

**TABLE 8 (continued)**  
**Market-Adjusted Performance by PE Sponsor Size**

**Panel B: Fama-French Three Factors Calendar Time Portfolio Regressions**

Independent Variable	1 Year Ret		3 Years Ret		5 Years Ret	
	Coef. (1)	t-stat (1)	Coef. (2)	t-stat (2)	Coef. (3)	t-stat (3)
<b>Large PE</b>						
Intercept	0.012	2.59**	0.002	0.70	0.001	0.27
RMF	1.235	8.79***	1.034	9.63***	0.973	10.73***
SMB	0.965	5.56***	0.832	6.39***	0.810	7.36***
HML	0.349	1.71*	0.262	1.69*	0.339	2.58**
Adj-R-square	44.12%		39.26%		44.38%	
No. of Observations	165		252		252	
<b>Small PE</b>						
Intercept	-0.018	-2.06**	-0.009	-1.55	-0.007	-1.34
RMF	1.332	5.12***	1.020	6.37***	1.107	8.07***
SMB	1.047	3.08***	0.999	4.9***	1.002	5.73***
HML	0.497	1.29	0.335	1.41	0.446	2.18**
Adj-R-square	17.87%		26.47%		34.94%	
No. of Observations	183		198		198	

\*\*\* significance at the 0.01 level, \*\* significance at the 0.05 level, \* significance at the 0.10 level.

The distribution of each variable is truncated at the extreme  $\pm 1\%$  values. All variables are as defined in Table 7, Panel B.