

Financial Reporting Quality at IPOs Backed by Listed Private Equity Firms

M. Sinan Goktan
California State University – East Bay
sinan.goktan@csueastbay.edu

Volkan Muslu
University of Houston
vmuslu@uh.edu

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Abstract

Some private equity firms list their shares in public stock exchanges, thereby committing to regular and extensive public disclosures. This commitment stands in stark contrast with the traditional model of private equity, which relies on private contracting and communication with partner institutional investors. We investigate the existence of any incremental capital market benefits of the two models of private equity. We find that IPO companies that are backed by listed private equity firms report lower discretionary accruals and recognize losses on a more timely basis than IPO companies that are backed by unlisted private equity firms. IPO companies that are backed by listed private equity firms also have higher stock returns during the year after the IPOs. The findings are robust to controls for endogenous selection of portfolio companies by listed and unlisted private equity firms. Overall, the findings suggest a spillover of high-quality financial reporting between the listed private equity firms and their portfolio companies.

JEL Codes: G24, D80

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1. Introduction

Private equity firms have traditionally contracted and communicated privately with their partner institutional investors. At the same time, a number of private equity firms, such as Blackstone, KKR, and 3i Group, have listed their shares in stock exchanges in the recent decades, providing retail investors with investment exposure in private companies. Unlike unlisted private equity firms, listed private equity firms make regular and extensive disclosures about their operations and investments.

In this paper, we ask whether capital markets benefit more from the emerging public reporting model of listed private equity firms or from the private contracting model of unlisted private equity firms. We cannot compare investment performances of listed and unlisted private equity firms for this purpose due to two factors. First, while both types of private equity firms are known to exhibit similar investment styles and returns (Bergmann et al. 2010), there is not a comprehensive dataset on the investment performance of unlisted private equity firms. Second, any difference in investment performance between the listed and unlisted private equity firms can be attributed to differences in the private equity firms' characteristics—some unobservable—such as size, resources, and managerial talent, rather than to differences in their reporting models.

Instead, we compare the financial reporting quality of private companies that are taken to IPOs by the listed and unlisted private equity firms (hereafter LPE and UPE firms, respectively). If differences in private equity reporting models are not consequential, LPE-backed and UPE-backed IPO companies will have similar financial reporting quality around their IPO dates. This is because both groups of IPO companies are at similar stages of their life cycles, and their IPOs are subject to similar regulatory and investor scrutiny [*null prediction*]. However, relative to

UPE firms, LPE firms may guide their portfolio companies for higher quality reporting because of their experience and superior know-how in public disclosures. Furthermore, in order to successfully raise funds in the future, LPE firms have incentives to develop a good reputation with retail investors by making high-quality disclosures about their portfolio companies. Such disclosures will need to be justified by high-quality disclosures from the portfolio companies [*prediction of positive effects of public reporting by LPEs*]. On the other hand, due to the effect of short-term market pressures on public companies in general (Stein, 1989; Teoh et al., 1998; Bhojraj and Libby, 2005), LPE firms may avoid due diligence in their portfolio companies and window-dress their short-term earnings and fund valuations (Zuckerman, 2011). In this case, LPE firms will transfer their know-how in window-dressing to the portfolio companies in order to justify their lower quality financial reports. Consequently, LPE-backed companies will have lower quality financial reports than UPE-backed companies [*prediction of negative effects of public reporting by LPEs*].

Using a comprehensive sample of private-equity-backed IPOs worldwide between years 1980 and 2009, we test the above predictions and document the following findings. First, LPE-backed companies report lower total and discretionary accruals than UPE-backed companies during the period between two years before and five years after the IPO year. Second, LPE-backed companies recognize losses on a more timely basis than UPE-backed companies. Third, LPE-backed companies have higher stock returns during the year after the IPO dates. Given that more mature private equity firms have greater resources and guide their portfolio companies towards higher reporting standards (Wongsunwai, 2013), our multivariate analyses control for the age of lead private equity firm in addition to IPO company characteristics.

In the cross-section, our findings are stronger for IPOs backed by LPEs that directly invest in private companies—versus other types of LPEs such as management companies or “fund of funds,” which do not directly invest in private companies. Our findings are also stronger for small and foreign companies, which typically have higher information asymmetry with outside investors. The cross-sectional results strengthen our conclusion that LPE firms guide their portfolio companies for higher quality financial reporting.

Our findings can also be explained by a selection hypothesis. That is, LPE (UPE) firms may select to invest in either private companies that have already established higher (lower) quality public reporting procedures or managers who are more (less) likely to produce higher quality reports in the future. This explanation is unlikely because the portfolio companies typically do not make public disclosures before receiving private equity investments. Furthermore, private equity firms guide their portfolio companies over a long period prior to IPOs, thereby altering company characteristics and establishing public disclosure procedures for the first time (Gompers and Lerner 2001). Still, we address the selection hypothesis using two independent methods. First, we match portfolio companies of LPE firms with those of UPE firms based on observable company characteristics such as country, industry, size, and cash flow volatility. Second, we use the Heckman selection model in order to control for the effect of unobservable company characteristics on investment selection of private equity firms. All findings persist under both methods.

Our research contributes to the literature on the capital market benefits of private equity firms. Through their investments, private equity firms help to reduce information asymmetry between IPO companies and outside investors (Amit et al., 1998; Gompers and Lerner, 2001). IPO companies backed by venture capital firms manage earnings less during the IPO year

(Morsfield and Tan, 2006; Hochberg, 2012). Moreover, IPO companies backed by higher quality venture capital firms (defined as older and larger venture capital firms) exhibit less aggressive financial reporting both during the quarter immediately preceding the expiration of IPO lockups (Wongsunwai, 2013) and in the following quarters (Lee and Masulis, 2011). In contrast to prior literature that focuses on a specific quarter or year, we investigate financial reporting of IPO companies over a longer period that includes pre- and post-IPO periods, allowing us to test the conflicting predictions more broadly. Our findings suggest that the public reporting model of private equity firms helps to reduce earnings management of IPO companies, independent of the previously documented effects of venture capital quality. Accordingly, our findings are informative about the recent regulatory efforts in improving accountability of private equity firms.¹

Our research also contributes to the literature on the earnings quality of IPO companies. Ball and Shivakumar (2008) show that private companies report more conservatively prior to their IPOs as a result of stronger regulatory monitoring and investor demand for high-quality information. We extend this result by showing that financial reporting quality varies based on whether the private equity firms backing the IPO companies are themselves subject to regulatory monitoring and investor demand for high-quality information.

Finally, our research contributes to the literature on the pricing of IPO stocks. Loughran and Ritter (1995) argue that investors, on average, overestimate the prospects of IPOs, resulting in a stock price correction when IPO company performance lags initial expectations. Teoh et al.

¹ The Dodd-Frank Act of 2010 in the U.S. and the Alternative Investment Fund Managers Directive (AIFM) of 2010 in the EU are introduced to improve accountability of private equity firms. The Dodd-Frank Act requires that all private equity firms file information with the Securities Exchange Commission (SEC) and the Financial Stability Oversight Council. However, such disclosures are not public and cannot close large differences in public reporting between listed and unlisted private equity firms (Seretakakis, 2013).

(1998) and Purnanandam and Swaminathan (2001) link initial overvaluation of IPO stocks to poor reporting quality and earnings management. Barry et al. (1990) document that first-day IPO returns decrease with tenure of venture capitalists on boards, suggesting a lower information asymmetry and more efficient pricing of IPOs. Krishnan et al. (2011) show that more reputable venture capital firms are more actively involved with their portfolio companies even after the IPOs, positively influencing the long-run performance of IPO companies. We contribute by showing that the type of private equity backing affects pricing of IPOs. LPE-backed IPO companies outperform their UPE-backed counterparts in the long run, likely because the greater transparency in information flow to investors around the IPO dates reduces the extent of stock price correction after the IPO dates.

Our paper is structured as follows. Section 2 develops predictions on how the public reporting model of listed private equity firms influences the financial reporting quality of their portfolio companies relative to the private communication model of unlisted private equity firms. Section 3 presents sample selection. Section 4 reports empirical results. Section 5 concludes.

2. Predictions

Private equity firms invest in company equity in the form of buyout capital, venture capital, and growth capital.² Private equity firms are active investors. They sit on boards of their portfolio companies, guide management, and certify company information, thereby improving transparency between their portfolio companies and outside investors (Megginson and Weiss,

² *Buyout capital* refers to investments in which a mature company or business assets are acquired and managed, typically using financial leverage. *Venture capital* refers to investments in early-stage firms for the launch, development, or expansion of a business. *Growth (development) capital* refers to minority investments in mature companies for acquisitions, capacity improvements, product development, turnaround, and change of ownership. In addition, some private equity firms engage in lending activities such as mezzanine or distressed debt financing.

1991; Barry et al., 1990). This role is especially important for IPO companies whose shares are first offered to outside investors (Lerner, 1995).

Private equity firms are holding entities of limited partnership funds, which are managed by private equity managers (general partners) and funded by institutional investors (limited partners). The prospect of a successful distribution of the funds' proceeds aligns the interests of general partners and limited partners (Cumming et al., 2010). Partners contract privately at the funds' inception and communicate privately throughout the funds' operations (Lerner and Schoar, 2004). Overall, private equity firms have traditionally relied on private contracting and communication with partner institutional investors.

2.1. Listed private equity firms

LPE firms, which have a small but growing share in the overall private equity market, provide retail investors with exposure in private equity investments.³ The liquidity benefits of the listings have even led many institutional investors to invest in the shares of listed private equity firms instead of (or in addition to) investing in limited partnership funds (Cumming et al., 2010).

Listed private equity has three different ownership structures (Bergmann et al., 2010). First, direct private capital investment firms invest in private companies directly (i.e., not through limited partnerships). A majority of LPE firms are direct private capital investment firms. Second, managing partners that manage several limited partnerships offer their own shares to investors. Third, indirect private equity investment firms or "fund of funds" invest in a pool of several limited partnerships that are not managed by the same managing partners. All three structures similarly provide retail investors with exposure to private equity investments.

³ Total market capitalization of LPE firms peaked at more than \$100 billion in 2007. The UK, non-UK European, and North American LPE firms evenly share the worldwide market capitalization of LPE firms.

2.2. Public reporting by listed and unlisted private equity firms

The UPE and LPE firms differ little in investment and financing styles but substantially in their public reporting (Bergmann et al., 2010). The UPE firms have traditionally had loose reporting requirements in the U.S. They avoided registration with the Securities and Exchange Commission (SEC). Their legislative duties were limited to general anti-fraud clauses, compliance, and recordkeeping.⁴ The Dodd-Frank Act of 2010 required private equity firms with assets higher than \$150 million to register with and report to the SEC information about their compliance practices, valuation policies, investors, employees, assets, leverage, and performance at the fund level (Seretakis 2013; Dodd-Frank Act Sections 404, 408, and 410). Yet this information is not public and primarily assists the Financial Stability Oversight Council to assess systemic risks in financial markets. The UPE firms may voluntarily disclose fund-level information such as performance, contributions, and distributions but not portfolio-company information such as performance of individual investments (Simpson, Thacher and Bartlett LLP, 2010). Public reporting of UPE firms outside of the U.S. is similarly opaque (Seretakis, 2013).

At the same time, LPE firms make regular and extensive public disclosures about their operations in order to meet information demands of retail investors and to adhere to the reporting standards of exchanges in which their shares are traded. In these disclosures, LPE firms describe their investments at the portfolio-company level. Moreover, LPE firms use standardized valuation methods so that their valuations are comparable over time and across competitors (Hurdle, 2004). Therefore, outside investors can more easily observe the investment performance of LPE firms at the portfolio-company level (Red Rocks Capital, 2011).

⁴ Under the “private adviser” exemption, Section 203(b)(3) of the Investment Advisors Act of 1940 allowed fund managers who had fewer than 15 clients and who did not hold themselves out to the general public as investment advisors to avoid registration with the SEC.

2.3. Financial reporting quality of IPO companies backed by private equity firms

In this paper, we investigate the existence of incremental capital market benefits of the public reporting model of LPE firms versus the private contracting model of UPE firms. Specifically, we compare the financial reporting quality of LPE-backed IPO companies and UPE-backed IPO companies, after controlling for investment selection by LPE firms. The regular and more extensive public reporting of LPE firms may spill over as high-quality public reporting of portfolio companies for two reasons. First, LPE firms may better solve agency problems and guide their portfolio companies toward high-quality financial reports because LPE firms have superior know-how in public reporting than UPE firms. Second, LPE firms may have greater regulatory and reputational reporting incentives than UPE firms. In order to comply with regulations and maintain their ability for raising funds from retail investors, LPE firms may want to avoid negative publicity associated with poor reporting quality of their portfolio companies, which indirectly affects their own reporting quality.

In contrast, the public status of LPE firms may showcase a fundamental tension between short-term-oriented retail investors and long-term-oriented institutional investors. If LPE firms become too preoccupied with short-term earnings and valuations because of their mandatory quarterly disclosures, they may lose their focus on deal making and due diligence. For instance, LPE firms might be tempted to sell a holding to help bolster profits during a tough quarter instead of holding on and selling for a greater return down the line (Zuckerman, 2011). In the extreme, short-term market pressures may encourage LPE managers to window-dress their earnings and fund valuations. If such incentives for window-dressing dominate incentives for high-quality reporting, LPE firms will transfer their own know-how and experience in window-dressing to their portfolio companies, partly because LPE firms will have to justify their reported

performance and valuations. This will reduce the financial reporting quality of LPE-backed companies relative to UPE-backed companies.

Except for the effects of the public status of LPE firms, LPE-backed and UPE-backed companies are expected to have similar financial reporting quality around their IPOs because both groups of IPO companies are at similar stages of their life cycles, and their IPOs are subject to similar regulatory and investor scrutiny. Overall, how public reporting of LPE firms affects the financial reporting quality of IPO companies is an empirical question.

Our question extends knowledge in this area. IPO companies backed by venture capital firms manage earnings less during the IPO year (Morsfield and Tan, 2006; Hochberg, 2012).⁵ Moreover, IPO companies backed by higher quality venture capital firms (defined as older and larger venture capital firms) exhibit less aggressive financial reporting both during the quarter immediately preceding the expiration of IPO lockups (Wongsunwai, 2013) and in the following quarters (Lee and Masulis, 2011). Yet whether the public reporting model of private equity firms affects financial reporting quality is not clear.

2.3.1. Measuring financial reporting quality

We use two proxies of financial reporting quality around the IPO years of portfolio companies. The first proxy is discretionary accruals, i.e., abnormal changes in working capital that cannot be explained by changes in revenues and long-term assets (Jones, 1991; Teoh et al., 1998). IPO companies may find accrual management attractive because it can be completed at the end of a fiscal period once the actual earnings are known to the management (Badertscher, 2011). The second proxy is asymmetric recognition of losses over gains. Both shareholders and

⁵ Nonetheless, IPO companies can also delay disclosures of bad news around the expiration of IPO lockups, enabling large venture capital investors to sell their shares at more favorable prices (Ertimur et al., 2014)

bondholders demand more timely recognition of losses than gains, and many accounting rules and practices are consistent with this demand (Ball and Shivakumar, 2005). Overall, high-quality financial reporting is typically associated with lower discretionary accruals and more timely recognition of losses than gains (Ball and Shivakumar, 2008; Cohen and Zarowin, 2010).

2.4. Pricing of IPO companies backed by private equity firms

High-quality financial reporting reduces information asymmetry between managers and outside investors, reduces company cost of capital, and contributes to market efficiency (Myers and Majluf, 1984; Botosan, 1997; Francis et al., 2005). These effects are particularly critical for IPO companies. In their seminal study, Loughran and Ritter (1995) document an initial overvaluation of IPO stocks followed by price correction in the long run.⁶ Loughran and Ritter (1995) argue that this pattern is largely driven by investors' overestimation of the prospects of IPO companies whose post-IPO performances lag initial expectations. Documenting similar evidence, Teoh et al. (1998) and Purnanandam and Swaminathan (2001) link initial IPO overvaluation to poor reporting quality.

Loughran and Ritter (1995) suggest that IPO-day returns may not reliably measure the impact of corporate reporting on share value. Thus, we compare long-run post-IPO returns of LPE-backed IPOs and UPE-backed IPOs. If the public reporting model of LPE firms results in high-quality financial reporting of LPE-backed companies, stocks of LPE-backed companies will outperform their counterparts due to greater transparency in information flow and thus smaller stock price correction subsequent to IPOs. If, on the other hand, the public reporting model of LPE firms results in low-quality financial reporting of LPE-backed companies, stocks of LPE-

⁶ This phenomenon has been confirmed in the U.S. markets (Teoh et al., 1998; Ritter and Welch, 2002) and international markets (Hamao et al., 2000; Loughran et al., 1994; Levis, 1993).

backed companies will underperform their counterparts due to lower transparency in information flow and thus larger stock price correction subsequent to IPOs.

3. Sample

We obtain private-equity-backed IPO companies worldwide between years 1980 and 2009 from the *Securities Data Company (SDC) Venture Xpert* database. We compute total and discretionary accruals as well as other financials of LPE-backed and UPE-backed IPO companies using the *Compustat North America* and *Compustat Global* databases. We exclude financial companies (with two-digit SIC codes between 60 and 69), companies with total assets lower than \$10 million at the time of their IPOs, and companies that belong to industries with fewer than ten observations in a given year (Kothari et al., 2005). Consistent with prior research, we also exclude companies with missing variables needed to estimate the Jones accrual model.

We determine the public status of private equity firms by matching their names with the LPX Group's list of 113 publicly-listed private equity firms.⁷ Private equity firms are classified as LPE firms only after their year of listing in a stock exchange. Our sample consists of 27 unique LPE firms and 1,911 unique UPE firms. LPE firms have backed 88 unique IPO companies, and UPE firms have backed 1,484 unique IPO companies. If an IPO company is backed in a syndicate by both LPE and UPE firms, it is defined as an LPE-backed company. The Appendix lists LPE firms in the sample along with their direct-LPE status, country, and number of invested IPO companies. The total number of IPOs in the Appendix is 93, which is greater than 88 IPOs stated above because multiple LPE firms have occasionally invested in the same IPO company.

⁷ The LPX Group is a pioneer in researching listed private equity firms worldwide (Bergmann et al., 2010).

Each IPO company stays in the sample for fiscal years from two years before to five years after the IPO year. This testing period is determined to best measure the effect of private equity backing on the financial reporting of IPO companies. Table 1 compares IPO companies that are backed by LPE and UPE firms. LPE-backed and UPE-backed companies are not statistically different in total assets at the time of the IPO, total assets, leverage, book-to-market ratio, CFO volatility, return-on-assets, and age. This evidence supports the argument in Bergmann et al. (2010) that listed private equity firms invest in portfolio companies that have comparable characteristics with those invested by unlisted private equity firms. At the same time, this evidence provides little credence to the selection argument that LPE and UPE firms choose to invest in companies with inherently different reporting quality. LPE-backed companies are more likely to be based outside of the U.S., consistent with Goktan and Ucar (2012). LPE firms make larger investments per company and over a greater number of rounds. LPE firms also co-invest with a larger number of investors.

4. Empirical Analysis

4.1. Comparison of accruals in LPE- and UPE-backed IPO companies

$Accruals_t$ is defined as income before extraordinary items less operating cash flows during year t , deflated by total assets at the end of year $t-1$. Table 2, Panel A shows that average level of $Accruals$ for companies backed by LPE and UPE firms are -8.2% and -8.0%, respectively. The difference is not statistically significant. The negative level of accruals for both sets of companies is not fully surprising because recording of accruals is endogenous with the IPO decision (Ball and Shivakumar, 2008). Companies usually have lower accruals prior to and

during IPOs because they are cash constrained and they will stretch payables and collect receivables faster (Lo, 2008).

We estimate the following Jones model regression within each two-digit SIC industry and year using the *Compustat North America* and *Compustat Global* universe (Jones, 1991; Cohen and Zarowin, 2010):

$$Accruals_t = \alpha + \beta_1 \Delta Sale_t + \beta_2 PPE_t + \varepsilon_t \quad (1)$$

where $\Delta Sale_t$ is the change in net sales during year t deflated by TA_{t-1} and PPE_t is gross value of property, plant, and equipment at the end of year t deflated by TA_{t-1} .⁸ *Discretionary accruals* are defined as the residual of Eq. (1). Table 2, Panel A shows that LPE-backed companies have significantly lower discretionary accruals. Average (median) discretionary accruals are -2.8% (-1.4%) for LPE-backed companies and -1.2% (0.0%) for UPE-backed companies.

Table 2, Panel A also presents discretionary accruals during the pre-IPO, IPO, and post-IPO periods, defined as fiscal years [-2] and [-1]; fiscal years [0] and [1]; and fiscal years [2] to [5], respectively. The difference in discretionary accruals between LPE-backed and UPE-backed companies is statistically significant during the post-IPO period and only marginally significant during the pre-IPO period. Given that private equity firms keep ownership stakes at their portfolio companies after the IPOs (Megginson and Weiss, 1991), this finding is consistent with LPE firms finding greater means to guide their portfolio companies for high-quality reporting after the IPOs. In addition, this finding is consistent with Ball and Shivakumar (2008), who argue that higher than usual litigation risk, regulatory scrutiny, and investor monitoring could mitigate earnings management around large events such as IPOs.

⁸ The Jones model above can also be modified by subtracting annual changes in accounts receivable from $\Delta Sale_t$ (Kothari et al., 2005). This modification does not qualitatively change our findings.

When we group LPE firms based on ownership structure, the difference in discretionary accruals is statistically significant for companies backed by direct private capital investment firms and only marginally significant for companies backed by other LPE firms (i.e., management companies or “fund of funds”). This finding suggests that the largest spillovers of financial reporting quality occur when private equity firms directly guide reporting decisions of their portfolio companies.

When we divide the sample with respect to country, the difference in discretionary accruals is statistically significant for foreign countries and only marginally significant in the U.S. This finding suggests that a wider range of financial reporting quality in foreign countries provides LPE firms with greater opportunity to guide their portfolio companies. Finally, we divide the sample by size at the sample median, total assets of \$100 million at the time of the IPO. The difference in discretionary accruals is statistically significant in large companies and only marginally significant in small companies.

4.2. Controlling for investment selection of private equity firms—Matching

The comparison of discretionary accruals is confounded if LPE and UPE firms invest in fundamentally different companies. For instance, LPE firms may invest in companies with more stable cash flows and thus lower accruals. Such a possibility of investment selection is likely not critical for our study given similar characteristics of IPO companies backed by LPE and UPE firms. Still, we address this possibility by matching each annual observation of an LPE-backed company with a UPE-backed company from the same country, industry, and with the closest size and cash flow volatility.⁹ Due to data availability, the sample size drops to 555 from 583.

⁹ Seven out of 88 LPE-backed IPO companies do not have UPE-backed company matches from the same country. In these cases, we use a less restrictive common law/code law match.

Table 2, Panel B presents pair-wise comparisons between the two groups of companies. Consistent with Panel A, LPE-backed companies have significantly lower total and discretionary accruals than UPE-backed companies. Average (median) discretionary accruals are -2.7% (-1.2%) for LPE-backed companies and -0.5% (-0.3%) for UPE-backed companies. Consistent with Panel A, discretionary accruals of LPE-backed companies are significantly lower than those of matched UPE-backed companies only for the post-IPO period and only for foreign companies. Other cross-sectional comparisons slightly differ from those in Panel A. The difference in discretionary accruals is significant for companies backed by both direct LPEs and indirect LPEs. The difference in discretionary accruals is statistically significant in small companies and marginally significant in large companies.

4.3. Controlling for investment selection of private equity firms—Multivariate analyses

In another attempt to address investment selection by LPE firms versus UPE firms, we estimate the following regression model:

$$\begin{aligned}
 \text{Discretionary Accruals}_t = & \alpha + \beta_1 LPE_t + \beta_2 PE\ Age_t + \beta_3 \text{Log}(TA)_t + \beta_4 \text{Log}(Sale)_t + \beta_5 B/M_t \\
 & + \beta_6 \text{Sale Growth}_t + \beta_7 \text{Leverage}_t + \beta_8 CFO_t + \beta_9 \text{Loss}_t + \beta_{10} \text{Age}_t + \text{Country fixed effects} + \varepsilon_t,
 \end{aligned}
 \tag{2}$$

where *LPE* is an indicator that is one if the company is backed by a listed private equity firm and zero otherwise; *PE Age* is the standardized rank (between 0 and 1) of the age of the IPO company's lead private equity firm at the first round of investment; *Log(TA)* is the natural logarithm of total assets; *Log(Sale)* is the natural logarithm of annual sales; *B/M* is the ratio of total assets to the sum of equity market capitalization and liabilities; *Sale Growth* is annual growth in sales; *Leverage* is total liabilities divided by total assets; *CFO* is operating cash flows divided by total assets; *Loss* is an indicator that is one if net income before extraordinary items is

negative; and *Age* is the company's age at the first round of investment. These variables control for the effect of company characteristics that may drive the level of discretionary accruals (Katz, 2009). Eq. (2) also includes *PE Age* in order to control for the effect that the private equity firm's experience might have on the company's discretionary accruals (Wongsunwai, 2013). Finally, Eq. (2) includes country fixed effects but excludes industry and year fixed effects because discretionary accruals are computed within each SIC industry and year.

Table 2, Panel C presents results from different versions of Eq. (2). The coefficient estimate on *LPE* is negative without control variables in Column (1) and with control variables in Column (2), both suggesting that the public status of listed private equity firms is associated with lower discretionary accruals of their portfolio companies. In addition, the coefficient estimate on *PE Age* is not significant. The private equity firm's experience is not incrementally informative when the public status of the private equity firm is controlled for.¹⁰

In our next model, we address possible endogeneity arising from unobservable company characteristics. Katz (2009) accounts for possible endogeneity of receiving private equity financing and company characteristics using the Heckman (1979) procedure. We closely follow this methodology. In the first stage, a Probit model is estimated using company-specific explanatory variables of Eq. (2):

$$LPE_t = \alpha + \beta_1 \text{Log}(TA)_t + \beta_2 \text{Log}(Sale)_t + \beta_3 B/M_t + \beta_4 \text{Sale Growth}_t + \beta_5 \text{Leverage}_t + \beta_6 CFO_t + \beta_7 \text{Loss}_t + \beta_8 \text{Age}_t + \mathcal{E}_t, \quad (3)$$

The coefficient for $\text{Log}(TA)_t$ is positive and significant; the coefficient for CFO_t is negative and significant, suggesting that LPE firms select to invest in larger and less profitable companies.

¹⁰ The statistical insignificance of the coefficient on *PE Age* remains if we use the actual age of the private equity firm (instead of the standardized rank) or the natural logarithm of the age of the private equity firm.

Other coefficient estimates are insignificant. In the second stage, the Inverse Mills ratio serves as a control variable for any unobserved factors in investment selection by LPE firms:

$$Discretionary\ Accruals_t = \alpha + \beta_1 LPE_t + \beta_2 PE\ Age_t + \beta_2 Inverse\ Mills_t + Country\ F.E. + \mathcal{E}_t, \quad (4)$$

Column (3) of Panel C presents results from Eq. (4). The coefficient estimate on *LPE* remains negative and significant. Overall, investment selection by LPE firms does not appear to affect our finding that LPE-backed companies report lower discretionary accruals than UPE-backed companies.

4.4. Timely recognition of losses versus gains

Besides the level of discretionary accruals, we measure financial reporting quality by companies' timely recognition of losses over gains. Following Ball and Shivakumar (2005), we estimate the following model:

$$\begin{aligned} \Delta E_t = & \alpha + \beta_1 Neg\Delta E_{t-1} + \beta_2 \Delta E_{t-1} + \beta_3 Neg\Delta E_{t-1} * \Delta E_{t-1} \\ & + \beta_4 LPE_t + \beta_5 LPE_t * Neg\Delta E_{t-1} + \beta_6 LPE_t * \Delta E_{t-1} + \beta_7 LPE_t * Neg\Delta E_{t-1} * \Delta E_{t-1} \\ & + \beta_8 PE\ Age_t + \beta_9 PE\ Age_t * Neg\Delta E_{t-1} + \beta_{10} PE\ Age_t * \Delta E_{t-1} + \beta_{11} PE\ Age_t * Neg\Delta E_{t-1} * \Delta E_{t-1} \\ & + Industry, year, and country fixed effects + \mathcal{E}_t, \end{aligned} \quad (5)$$

where ΔE_t is the change in earnings before extraordinary items from year $t-1$ to year t , deflated by total assets at the end of year $t-1$; $Neg\Delta E_{t-1}$ is an indicator that is one if ΔE_{t-1} is negative and zero otherwise. High-quality financial reporting is associated with asymmetric (i.e., more timely) recognition of losses versus gains. If gains are deferred until underlying cash flows are realized, then the recognized gains will not reverse in the next period. That is, β_2 will be 0. If losses are recognized before the underlying cash flows are realized, then the recognized losses will reverse

in the next period. That is, $\beta_2 + \beta_3$ or β_3 will be negative.¹¹ If timely loss recognition is greater in LPE-backed companies (UPE-backed companies), then β_7 will be negative (positive). We do not make any predictions on β_6 , i.e., whether timely gain recognition is stronger in LPE-backed companies versus UPE-backed companies. Similarly, we do not make any predictions for the incremental intercept coefficients, β_1 , β_4 , and β_5 . Besides industry, year, and country fixed effects, Eq. (5) controls for effects of the age of the private equity firm, which proxies for the private equity firm's maturity and reputation (Wongsunwai, 2013).

Table 3 presents results of Eq. (5) using the full sample and sample partitions. When we use the full sample in Column (1), the coefficient on the timeliness of loss recognition, β_3 , is negative (-0.53) and significant. In comparison, β_2 is insignificant, suggesting that losses reverse faster than gains. Regarding our primary hypothesis, β_7 is negative (-0.38) and significant, whereas β_6 is insignificant. This suggests that LPE-backed companies reverse losses relative to gains on a more timely basis than UPE-backed companies. At the same time, β_{11} is positive (0.16) and marginally significant, suggesting that companies backed by younger—not older—private equity firms reverse losses relative to gains on a more timely basis.

Regarding sample partitions, β_3 remains negative and statistically significant for IPO years and post-IPO years but not for pre-IPO years (Columns 2 to 4); direct LPEs but not indirect LPEs (Columns 5 and 6); IPOs in the U.S. (marginally) and foreign countries (Columns 7 and 8); and small IPOs but not large IPOs (Columns 9 and 10). These cross-sectional findings largely overlap with those in Table 2. Overall, Table 3 shows consistent evidence that LPE-backed companies recognize losses over gains on a more timely basis.

¹¹ Ball and Shivakumar (2005) argue that this changes specification has two advantages over a levels specification. First, changes identify transitory income components more efficiently. Second, survival biases will be less critical.

4.5. Long-run stock performance of IPOs

We compare stock performance of LPE-backed IPOs and UPE-backed IPOs by comparing their cumulative abnormal returns and buy-and-hold abnormal returns (Ritter, 1991; Foerster and Karolyi, 2000). A company's abnormal return in month t is defined as:

$$AR_t = R_t - R_{m,t} \quad (6)$$

where R_t is the monthly return for the company adjusted for dividends and stock splits, and $R_{m,t}$ is the monthly return for the stock index of each country from the *Compustat Global* database. For the IPO month, we only use returns of post-IPO days, consistent with previous studies. The cumulative abnormal return from IPO month i to month $i+K$ is the sum of monthly abnormal returns:

$$CAR_{i, i+K} = \sum_K AR_{i+k} \quad (7)$$

The buy-and-hold abnormal return from IPO month i to month $i+K$ is the compounded monthly abnormal returns:

$$BHAR_{i, i+K} = \prod_K (1 + AR_{i+k}) - 1 \quad (8)$$

We calculate BHAR and CAR for one- and two-year horizons; therefore K is set at 11 or 23. As in our earlier analyses, we match each LPE-backed company with a UPE-backed company from the same country, industry, and with the closest size and cash flow volatility.¹²

Table 4, Panels A and B show that LPE-backed IPOs outperform their UPE-backed IPO matches. The stock return differences are large in magnitude and statistically significant during the one-year horizon. The average one-year CAR (BHAR) for LPE-backed companies is 9.3% (10.2%), whereas the respective returns for UPE-backed companies are -12.6% (-12.6%). The

¹² We drop two observations from the sample because their returns were outliers and impacted our results due to the limited size of the sample. The two observations dropped were Devgen (a Belgian biotechnology company) and Layne Inc. (a U.S. water management company) which had 669% and 200% 2-year BHAR, respectively.

statistical significances disappear for the two-year horizon. This is not entirely surprising, since market abnormalities disappear in the long term when returns are properly benchmarked (Brav and Gompers, 1997; Brav et al., 2000).

Panel C presents cross-sectional results. Direct LPE-backed IPOs significantly outperform UPE-backed IPOs; the same does not hold for indirect LPE-backed IPOs. Foreign LPE-backed IPOs significantly outperform UPE-backed IPOs; the same does not hold for LPE-backed IPOs in the U.S. Small LPE-backed companies significantly outperform UPE-backed IPOs; the same does not hold for large LPE-backed companies. Overall, the cross-sectional results are consistent with Table 2. Spillovers of high-quality financial reporting from LPE firms are more pronounced when LPE firms guide their IPOs more directly and when information asymmetry between IPO companies and outside investors is larger (i.e., among foreign companies and small companies).

The prior literature argues that IPO firms typically report strong operating performance prior to IPOs. Investors tend to ignore the mean-reverting nature of operating performance and overvalue IPOs (Loughran and Ritter, 1995; Fama and French, 1996; Dharan and Ikenberry, 1995). The poor financial reporting quality around the IPO year exacerbates IPO overvaluations (Teoh et al., 1998; Purnanandam and Swaminathan, 2001). Our findings are consistent with the prior literature. LPE-backed IPO companies, which have received guidance for high-quality financial reporting, experience no or less severe stock return reversals after the IPO dates.¹³

4.6. Robustness: IPO-day returns

The strong long-run performance of LPE-backed IPOs should also be reflected as lower IPO-day returns if LPE-backed IPOs exhibit lower information asymmetry with outside investors

¹³ Under the assumption of strong market efficiency, our findings can also be interpreted as investors discounting the value of LPE-backed IPOs less because of greater transparency in information flow during the post-IPO years.

around the IPO dates. Given overarching investor optimism about IPO prospects, we hesitate using IPO-day returns as unbiased proxy for the effect of LPE-backing on stock values. In addition, we do not have reliable IPO-day return data for some foreign IPOs. However, in unreported tests, we find that the IPO-day return (IPO underpricing) is marginally lower for LPE-backed IPOs in the U.S. before and after controlling for the likelihood of going for an IPO. This evidence is consistent with lower information asymmetry between LPE-backed companies and outside investors around the IPO dates.

5. Conclusion

In this paper, we study whether capital markets benefit more from the public reporting model of LPE firms or the traditional private contracting model of UPE firms. For this purpose, we compare differences in financial reporting quality between LPE-backed and UPE-backed IPO companies.¹⁴ We find that IPO companies that are backed by LPE firms make higher-quality financial reporting as measured by lower total and discretionary accruals and more timely recognition of losses relative to gains. Furthermore, IPO companies that are backed by LPE firms experience no or less severe stock return reversals after their IPOs. The findings are consistent with positive effects of the public reporting model of LPE firms relative to the private contracting model of UPE firms.

There are two potential reasons for why the public reporting model of private equity firms may manifest in higher reporting quality of their IPO companies. First, given their

¹⁴ Financial reporting quality can be defined only in the context of a specific decision model (Dechow et al. 2010). This paper's premise is that improving earnings quality monotonically brings more information and thus higher benefits (net of costs) to capital markets. To the extent that improving earnings quality of IPOs after a certain level becomes suboptimal for capital markets, our interpretation of the findings in favor of the public reporting model of listed private equity firms becomes less clear.

experience in public reporting and higher reputational and regulatory incentives for high-quality reporting, LPE firms may better solve potential agency problems and better provide reporting guidance to their portfolio companies (*causality argument*). Second, LPE firms may select to invest in companies with high-quality reporting or those that are expected to exhibit high-quality reporting in the future (*selection argument*). While distinguishing between these explanations is empirically difficult, we believe that the former explanation is more likely for two reasons. First, LPE-backed and UPE-backed IPO companies are at similar stages in their life cycles, they are subject to similar regulatory and investor scrutiny, and they report publicly for the first time under the guidance of the private equity firms. Second, using different econometric techniques, we show that the findings are robust to controlling for investment selection differences between LPE firms and UPE firms.

Our findings are consistent with the existence of capital market benefits brought by the public reporting model of listed private equity (LPE) firms. LPE firms appear to guide their investments for higher-quality reporting as a result of their superior know-how and experience in public reporting as well as stronger regulatory monitoring and stronger market-based reputational incentives. Therefore, our findings extend the finding of Morsfield and Tan (2006) that venture capital firms bring exacting oversight to management's preparation and the auditor's review of the financial statements of IPO companies. LPE firms, which are a special subgroup of private equity firms, provide more exacting oversight to management's preparation and the auditor's review of the financial statements of IPO companies. Furthermore, the public listing effect that we document in this paper appears to be distinct from the effect of private equity firm quality and experience on IPO reporting quality documented in Wongsunwai (2013). While our research is confined to the effects of the public reporting model of LPE firms, future research can

examine whether the public reporting model of other financial institutions also helps to reduce information asymmetry in capital markets.

Our findings also have regulatory implications. Favorable tax treatments, exemptions from reporting requirements, and various costs of public listing have traditionally prevented private equity firms from listing their shares on public exchanges. The long-standing criticism regarding inadequate disclosures by private equity firms (Higson, 2007), coupled with the financial crisis of 2008, prompted a new wave of regulations regarding private equity firms, such as the Dodd-Frank Act in the U.S. and AIFM in the E.U. Our results suggest that the new mandates on tighter reporting requirements for private equity firms could improve the reporting quality of companies that are taken to IPOs by these private equity firms. For instance, the SEC occasionally takes enforcement initiatives over private equity firms. The SEC has reviewed whether private equity firms inflate values of their portfolio companies to attract investors when marketing new funds (Baumgaertel, 2012). In their review, the SEC has largely omitted LPE firms. This exclusion appears warranted in light of spillovers of high-quality financial reporting between the LPE firms and their portfolio companies, which we document in this paper.

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Appendix
Listed Private Equity Firms

The Appendix presents the listed private equity firms in the sample. *Direct LPE* indicates if the listed private equity firm (LPE) is a direct private capital investment firm that invests directly in individual private companies. Indirect LPEs are either management companies that manage several limited partnerships and offer shares of the management companies only, or “fund of funds” that invest in several limited partnerships that are managed by different management companies. *Country* is the LPE’s country of origin. *Number of IPOs* is the number of IPOs with total assets higher than \$10 million that the LPEs backed. The sample period is between years 1980 and 2009. The total number of IPOs in the Appendix is 93 whereas listed private equity firms backed 88 unique IPOs. The difference arises because some IPOs were occasionally backed by more than one LPE firms.

	Direct LPE	Country	Number of IPOs
3i Group Plc.	Yes	U.K.	25
Allied Capital (Ares Capital)	No	U.S.	7
3i Group	Yes	U.S.A	6
GIMV N.V.	Yes	Belgium	6
Safeguard Scientifics, Inc.	Yes	U.S.A.	5
JAFCO Co., Ltd.	Yes	Japan	4
JAFCO Co., Ltd.	Yes	Singapore	4
Onex Corporation	Yes	Canada	4
CapMan Plc.	No	Finland	3
Deutsche Beteiligungs AG	Yes	Germany	3
KKR	No	U.S.A.	3
Ares Capital	No	U.S.A.	3
Wendel	Yes	France	3
Capital Southwest Corporation	Yes	U.S.A.	2
JAFCO Ventures	Yes	U.S.A.	2
Equus Capital Corp.	No	U.S.A.	2
Dunedin Capital Partners, Ltd.	Yes	U.K.	1
Fortress Investment Group Llc.	No	U.S.A.	1
HAL Investments BV	No	Netherlands	1
Harris & Harris Group, Inc.	Yes	U.S.A.	1
Henderson Private Capital	No	U.K.	1
HgCapital (Mercury Private Equity)	Yes	U.K.	1
Intermediate Capital Group Plc.	No	U.K.	1
Japan Asia Investment Company, Ltd.	Yes	Japan	1
Unternehmens Invest AG	Yes	Austria	1
3i BioScience Investment Trust	Yes	U.K.	1
k1 Ventures Limited (Keppel Marine)	Yes	U.S.A.	1

Table 1 IPO sample

The table reports summary statistics for the 88 and 1,484 unique IPO companies that were backed by listed private equity firms (LPE) and unlisted private equity firms (UPE), respectively. Each IPO company stays in the sample between two years before and five years after the IPO year. *Total Assets at IPO* is company total assets at the beginning of the IPO year. *Total Assets* is average company total assets. *Leverage* is average total liabilities divided by total assets. *B/M* is average ratio of total assets to the sum of equity market capitalization and liabilities. *CFO Volatility* is standard deviation of the ratio of cash flow from operations to total assets. *Return-on-Assets (ROA)* is average net income before extraordinary items divided by total assets. *U.S.* is an indicator that is one if the company is based in the U.S. and zero otherwise. *Age* is company's age at the first round of investment. *Total Investment* is the total amount of private equity investments in the IPO company. *Number of Rounds* is the number of investment rounds that the IPO company receives. *Number of Investors* is the number of private equity firms investing in the IPO company. All continuous variables are winsorized at 1% and 99%. The p-values are presented for the mean and median tests of each variable. *, **, *** denote significance at 10%, 5%, and 1%, respectively.

	Private Equity Backing	Mean	Q1	Q2	Q3	Std dev
Total Assets at IPO (mn. \$)	Listed	675	55	139	715	1,344
	Unlisted	640	45	93	278	4,247
	<i>p-value</i>	<i>0.94</i>		<i>0.03**</i>		
Total Assets (mn. \$)	Listed	801	74	152	829	1,557
	Unlisted	807	66	152	445	4,293
	<i>p-value</i>	<i>0.99</i>		<i>0.25</i>		
Leverage (%)	Listed	25.5	9.3	20.1	39.2	19.9
	Unlisted	22.8	4.6	16.9	35.1	21.2
	<i>p-value</i>	<i>0.25</i>		<i>0.09*</i>		
B/M (%)	Listed	95.5	62.6	81.4	121.0	54.2
	Unlisted	84.9	43.9	72.4	109.2	55.3
	<i>p-value</i>	<i>0.20</i>		<i>0.08*</i>		
CFO Volatility (%)	Listed	13.4	4.8	9.0	18.9	12.2
	Unlisted	14.7	6.1	10.8	18.0	13.1
	<i>p-value</i>	<i>0.95</i>		<i>0.18</i>		
Return-on-Assets (%)	Listed	-16.3	-31.6	-0.3	6.5	31.1
	Unlisted	-9.4	-18.6	1.3	7.8	29.9
	<i>p-value</i>	<i>0.16</i>		<i>0.21</i>		
U.S.	Listed	0.48	0	0	1	0.50
	Unlisted	0.72	0	1	1	0.45
	<i>p-value</i>	<i>0.00***</i>		<i>0.00***</i>		

(Table 1 continued)

Company Age	Listed	7.51	0	2	11	10.25
	Unlisted	7.61	0	3	11	9.72
	<i>p-value</i>	0.92		0.45		
Total Investment (mn. \$)	Listed	59.1	13.8	35.1	125.3	52.2
	Unlisted	45.0	8.3	25.0	68.9	45.8
	<i>p-value</i>	0.01**		0.02**		
Number of Rounds	Listed	4.20	2	3	6	3.21
	Unlisted	3.54	1	3	5	2.90
	<i>p-value</i>	0.04**		0.03**		
Number of Investors	Listed	6.60	2	4	9	6.36
	Unlisted	4.88	1	3	7	4.65
	<i>p-value</i>	0.02**		0.02**		

Table 2 Accruals

Panel A provides statistics for annual accruals and Jones-model discretionary accruals of IPO companies that were backed by listed private equity firms (LPE) and unlisted private equity firms (UPE) for the sample between years 1980 and 2009. The total number of observations is 583 (9,230) firm-years from 88 (1,484) unique IPO companies that were backed by 27 (1,911) unique LPE (UPE) firms. Panel A also provides statistics for discretionary accruals for the sample divided across the following characteristics: IPO phase (pre-IPO, IPO, and post-IPO); type of LPE backing (direct LPE and indirect LPE backing); country (U.S. and foreign); and size (IPO total assets lower or higher than the sample median of \$100 million). Panel B provides statistics for discretionary accruals of IPO companies backed by LPE firms and IPO companies backed by UPE firms that are matched to the first group by country, industry, and smallest deviation in *Total Assets at IPO* and *CFO Volatility*. Panel C reports results of regressing discretionary accruals for the whole sample on the *LPE* and controls for possible endogeneity. *LPE* is an indicator that is one if the company is backed by a listed private equity and zero otherwise. *PE Age* is the standardized rank (between 0 and 1) of the age of the company's lead private equity firm at the first round of investment in the IPO company. *Log(TA)* is the natural logarithm of total assets. *Log(Sale)* is the natural logarithm of sales. *B/M* is ratio of total assets to the sum of equity market capitalization and liabilities. *Sale Growth* is annual growth in sales. *Leverage* is total liabilities divided by total assets. *CFO* is operating cash flows divided by total assets. *Loss* is an indicator that is one if net income before extraordinary items is negative and zero otherwise. *Age* is company's age at the first round of investment. *Inverse Mills* is calculated using the Heckman (1979) procedure as follows. In the first stage, a probit model of LPE is estimated with, as predictors, *Log(TA)*, *Log(Sale)*, *B/M*, *Sale Growth*, *Leverage*, *CFO*, *Loss*, and *Age*. In the second stage, estimates of the probit model are used to compute an inverse Mills ratio for each firm. Accruals, discretionary accruals, and continuous variables are winsorized at 1% and 99% levels in order to eliminate the outlier effects and potential data errors. The standard errors are clustered by firm. P-values are reported in parentheses. *, **, *** denote significance at 10%, 5%, and 1%, respectively.

Panel A: Univariate tests of accruals – Unmatched sample

	LPE-backed IPOs		UPE-backed IPOs		<i>Difference, p-value</i>
	N	Mean (Median)	N	Mean (Median)	
Accruals (%)	583	-8.16 (-6.01)	9,230	-7.94 (-6.36)	0.74 0.85
Discretionary Accruals (%)	583	-2.80 (-1.40)	9,230	-1.19 (0.00)	0.01*** 0.01***
<i>Discretionary Accruals (%)</i>					
Pre-IPO (-2, -1)	76	-6.09 (-3.96)	897	-3.81 (-1.25)	0.26 0.06*
IPO (0, 1)	169	-1.28 (-0.44)	2,680	-0.85 (0.26)	0.38 0.30
Post-IPO (2, 3, 4, 5)	338	-2.82 (-1.28)	5,653	-0.93 (0.08)	0.00*** 0.01***
Direct LPE-backed	452	-2.89 (-1.46)	9,230	-1.19 (0.02)	0.02** 0.00***
Indirect LPE-backed	131	-2.51 (-1.19)	9,230	-1.19 (0.02)	0.16 0.03**

(Table 2, Panel A continued)

U.S. IPOs	266	-2.88 (0.38)	6,457	-1.32 (0.17)	0.10* 0.22
Foreign IPOs	317	-2.74 (-2.93)	2,773	-0.89 (-0.35)	0.01*** 0.00***
Small IPOs	232	-2.05 (-1.45)	4,681	-0.99 (0.46)	0.30 0.02**
Large IPOs	351	-3.30 (-1.34)	4,549	-1.40 (-0.34)	0.01*** 0.01***

Panel B: Univariate tests of accruals – Matched sample

	LPE-backed IPOs		UPE-backed IPOs		<i>Difference, p-value</i>
	N	Mean (Median)	N	Mean (Median)	
Accruals (%)	555	-8.08 (-5.93)	555	-6.16 (-5.44)	0.01*** 0.03**
Discretionary Accruals (%)	555	-2.66 (-1.19)	555	-0.52 (-0.28)	0.00*** 0.00***
<u>Discretionary Accruals (%)</u>					
Prior to IPO (-2, -1)	48	-6.29 (-3.48)	48	-1.29 (-0.40)	0.08* 0.19
IPO (0, 1)	169	-1.11 (-0.84)	169	-1.28 (-0.44)	0.91 0.76
Post IPO (2, 3, 4, 5)	338	-2.82 (-1.28)	338	-0.12 (-0.64)	0.00*** 0.00***
Direct LPE-backed	429	-2.86 (-1.25)	429	-0.95 (-0.64)	0.02** 0.04**
Indirect LPE-backed	126	-1.95 (-0.86)	126	0.95 (0.44)	0.00*** 0.00***
U.S. IPOs	257	-2.46 (0.59)	257	-1.22 (-0.25)	0.26 0.69
Foreign IPOs	298	-2.82 (-2.92)	298	0.08 (-0.49)	0.00*** 0.00***
Small IPOs	218	-1.75 (-1.23)	218	1.31 (2.55)	0.00*** 0.00***
Large IPOs	337	-3.24 (-1.18)	337	-1.71 (-0.85)	0.06* 0.34

Panel C: Multivariate analysis

	Pred.	Dependent variable: Discretionary accruals (%)		
LPE	-	-1.04*	-1.46***	-1.11*
		(0.09)	(0.01)	(0.08)
PE Age	-	0.15	0.29	0.01
		(0.78)	(0.23)	(0.86)
Log(TA)			0.04	
			(0.85)	
Log(Sale)			0.39**	
			(0.03)	
B/M			-0.16	
			(0.24)	
Sale Growth			-1.23***	
			(0.00)	
Leverage			-2.89***	
			(0.00)	
CFO			-17.20***	
			(0.00)	
Loss			-10.33***	
			(0.00)	
Company Age			0.02	
			(0.17)	
Inverse Mills				-3.01*
				(0.07)
Country fixed effects		Yes	Yes	Yes
N		9,813	9,813	9,813
Adjusted R ²		2.2%	18.4%	2.2%

Table 3 Timeliness in Loss Recognition

The table shows results from regressions of change in earnings on lagged change in earnings and the interactions of lagged change in earnings with $Neg\Delta E_t$, LPE_t , and $PE\ Age_t$. ΔE_t is the change in earnings before extraordinary items between years $t-1$ and t , deflated by total assets at end of year $t-1$. $Neg\Delta E_t$ is an indicator that is one if ΔE_t is negative. LPE_t is an indicator that is one if the company is backed by a listed private equity. $PE\ Age_t$ is the standardized rank (between 0 and 1) of the age of the company's lead private equity firm at the first round of investment in the IPO company. Continuous variables are winsorized at 1% and 99% levels in order to eliminate the outlier effects and potential data errors. The standard errors are clustered by firm. P-values are reported in parentheses. *, **, *** denote significance at 10%, 5%, and 1%, respectively.

	Dependent variable: ΔE_t (x100)									
	Full Sample	Pre-IPO years	IPO years	Post-IPO years	Direct LPE backed	Indirect LPE backed	U.S. IPOs	Foreign IPOs	Small IPOs	Large IPOs
$Neg\Delta E_{t-1}$	-2.67*** (0.00)	-5.95 (0.41)	7.45** (0.05)	-3.23*** (0.00)	-2.68*** (0.00)	-2.74*** (0.00)	-2.38** (0.03)	-2.68** (0.02)	-2.74* (0.06)	-1.35 (0.14)
ΔE_{t-1}	-1.51 (0.63)	-37.96 (0.21)	11.40 (0.32)	-2.83 (0.38)	-1.85 (0.55)	-0.66 (0.83)	-0.17 (0.96)	-16.49*** (0.00)	-0.71 (0.87)	0.64 (0.90)
$Neg\Delta E_{t-1} * \Delta E_{t-1}$	-53.31*** (0.00)	-55.83** (0.03)	-53.14*** (0.00)	-48.34*** (0.00)	-52.15*** (0.00)	-54.44*** (0.00)	-55.10*** (0.00)	-30.01*** (0.00)	-59.97*** (0.00)	-39.65*** (0.00)
LPE_t	-0.65 (0.58)	-3.30 (0.67)	1.87 (0.65)	-2.03* (0.09)	-0.71 (0.64)	-0.77 (0.52)	-2.05 (0.31)	-1.10 (0.45)	2.48 (0.38)	-0.12 (0.93)
$LPE_t * Neg\Delta E_{t-1}$	0.10 (0.96)	9.32 (0.35)	4.06 (0.48)	-0.05 (0.98)	-0.51 (0.80)	3.73 (0.15)	1.73 (0.58)	-1.05 (0.57)	-3.15 (0.36)	1.80 (0.36)
$LPE_t * \Delta E_{t-1}$	9.20 (0.14)	111.07 (0.18)	17.34 (0.37)	11.94 (0.03)	7.40 (0.28)	20.03** (0.03)	10.19 (0.35)	13.52 (0.12)	-3.14 (0.80)	6.27 (0.56)
$LPE_t * Neg\Delta E_{t-1} * \Delta E_{t-1}$	-38.37*** (0.00)	-12.23 (0.89)	-74.58*** (0.01)	-44.79*** (0.03)	-40.94*** (0.00)	-5.87 (0.85)	-32.23* (0.08)	-63.07*** (0.00)	-42.61** (0.03)	-4.59 (0.81)
$PE\ Age_t$	0.73 (0.44)	10.33 (0.11)	8.82** (0.04)	0.00 (1.00)	0.61 (0.52)	0.80 (0.41)	1.32 (0.28)	0.71 (0.61)	0.44 (0.82)	1.33 (0.17)
$PE\ Age_t * Neg\Delta E_{t-1}$	0.77 (0.56)	6.23 (0.57)	-12.56** (0.03)	1.55 (0.27)	0.87 (0.52)	0.96 (0.49)	-0.20 (0.92)	1.40 (0.42)	-1.30 (0.64)	0.82 (0.57)
$PE\ Age_t * \Delta E_{t-1}$	-1.66 (0.78)	73.11* (0.08)	-14.00 (0.45)	-6.51 (0.27)	-0.53 (0.93)	-1.97 (0.75)	-1.70 (0.81)	12.75 (0.17)	-0.00 (1.00)	-0.06 (0.46)
$PE\ Age_t * Neg\Delta E_{t-1} * \Delta E_{t-1}$	15.79* (0.09)	-54.05 (0.38)	22.53 (0.38)	24.50** (0.02)	13.20 (0.15)	15.60* (0.10)	12.59 (0.26)	-5.16 (0.78)	1.66 (0.90)	19.96* (0.07)
Ind., year, country F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6,787	196	927	5,664	6,689	6,468	4,643	2,144	3,336	3,451
Adjusted R ²	21.8%	58.1%	40.3%	17.4%	21.4%	21.9%	22.4%	22.3%	27.4%	15.1%

Table 4 Long run stock performance

Panel A provides statistics for post-IPO cumulative abnormal returns (CAR) for IPO companies backed by LPE firms and IPO companies backed by UPE firms that are matched to the first group by country, industry, and smallest deviation in *Total Assets at IPO* and *CFO Volatility*. Panel B provides the same comparative statistics for buy-and-hold abnormal returns (BHAR). Panel C provides comparative statistics for BHAR's across direct versus indirect LPE-backed IPO companies; U.S. versus foreign IPO companies; and small versus large IPO companies, respectively. Consistent with previous studies, we compute CAR and BHAR starting one day after the IPOs and use the relevant country's market index as the return benchmark. *, **, *** denote significance at 10%, 5%, and 1%, respectively.

Panel A: Cumulative abnormal returns

	LPE-backed IPOs		UPE-backed IPOs		<i>Difference, p-value</i>
	N	Mean (Median)	N	Mean (Median)	
1-year CAR (%)	86	9.3 (-1.1)	86	-12.6 (-11.6)	0.08* 0.27
2-year CAR (%)	86	10.2 (3.6)	86	-12.6 (-10.0)	0.12 0.46

Panel B: Buy-and-hold abnormal returns

	LPE-backed IPOs		UPE-backed IPOs		<i>Difference, p-value</i>
	N	Mean (Median)	N	Mean (Median)	
One-year BHAR (%)	86	10.2 (-8.3)	86	-13.3 (-22.0)	0.05*** 0.10*
Two-year BHAR (%)	86	7.9 (-23.1)	86	-12.7 (-21.8)	0.12 0.45

Panel C: One-year buy-and-hold abnormal returns

	LPE-backed IPOs		UPE-backed IPOs		<i>Difference, p-value</i>
	N	Mean (Median)	N	Mean (Median)	
<i>Type of LPE backing</i>					
Direct LPE-backed	67	15.4 (-7.7)	67	-15.0 (-22.5)	0.04** 0.05*
Indirect LPE-backed	19	-8.1 (-9.3)	19	-7.2 (-13.3)	0.95 0.75
<i>Country of IPO</i>					
U.S. IPOs	41	2.4 (-17.2)	41	-3.7 (-22.5)	0.63 0.86
Foreign IPOs	45	17.3 (-3.2)	45	-22.1 (-21.5)	0.04** 0.04**
<i>IPO Size</i>					
Small IPOs	42	17.1 (-11.9)	42	-22.9 (-28.0)	0.05* 0.03**
Large IPOs	44	3.61 (1.7)	44	-4.1 (-12.8)	0.54 0.77