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Jerry Xiaping CAO
Singapore Management University, jerrycao@smu.edu.sg

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Jerry X. Cao*
Assistant Professor of Finance
Singapore Management University
50 Stamford Road. #04-01
Singapore 178899
jerrycao@smu.edu.sg
Tel: (65) 6828-0273

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Abstract

This paper studies the impact of buyout sponsors' IPO timing on the LBO restructuring process and subsequent exit strategies. I find that LBO duration is negatively related to hot IPO market conditions. Further, following IPOs, RLBOs with shorter LBO duration experience greater deterioration of performance and higher probability of bankruptcy. This suggests that sponsor's efforts to enhance operating efficiency succumb to market timing. IPO timing does not affect sponsor's exit strategies and monitoring post IPO. Sponsors keep an active long-run presence with more reputable sponsors more likely to exit by facilitating takeovers.

Keywords: Private equity, RLBO, Market timing, Restructuring, LBO, Exiting, Buyout

JEL Classification: G24, G32

I. Introduction

The initial public offering (IPO) market has witnessed an increasing number of reverse leveraged buyouts (RLBOs) in recent years. For instance, in 2005 approximately 53% of IPOs in the U.S. were backed by private equity investors. Yet, despite the increased importance of private equity in practice, relatively little systematic study has been done on the process through which buyout sponsors exit their LBO investments. Moreover, despite the widespread view that private equity sponsors create value in restructuring LBOs, little research explores whether sponsors' exit strategies affect their restructuring efforts and in turn the extent of value creation.[2]

Some critics argue that, in fact, buyout sponsors create no value in the LBO restructuring process. They claim that rather than use the restructuring to achieve value-enhancing operating improvements, buyout sponsors simply exploit favorable market conditions and time the market (by buying low and selling high). Supporting this view, a recent C-suite survey[3] of chief executive officers, chief financial officers, and chief operating officers shows that the survey participants were primarily concerned about private equity and whether sponsors are "merely financial engineers who go in there, lever debt up, cut costs and pump the thing out (exit) some time later." In this paper I seek to shed light on the extent to which these concerns are justified. To do so, I examine private equity sponsors' exit strategies using a comprehensive sample of RLBOs from 1980 to 2006. Such analysis provides a good understanding of the drivers of RLBO activity across different market conditions.

[2] For example, private equity firms can affect an exit by selling portfolio companies to strategic buyers.

[3] C-suite is a survey of executives at public Canadian companies that addresses issues such as the business outlook and the economy.

In their survey of the IPO literature, Ritter and Welch (2002) conclude that "market conditions are the most important factor in the decision to go public." Pastor and Veronesi (2005) propose "optimal IPO timing" by suggesting that entrepreneurs tend to wait for more favourable market conditions before going public. Similarly, IPO timing applies to private-to-public transactions since buyout sponsors can react to IPO market conditions deciding when to list LBOs publicly. IPO timing would have significant value implications particularly for immature LBOs. If IPO timing leads buyout sponsors to pull capital out of LBOs prior to realizing operating efficiencies, doing so is likely to negatively impact restructuring efforts, resulting in poor operating performance or even financial distress post-IPO. Cao and Lerner (2009) provide (weak) evidence that, indeed, those LBOs that are hastily listed, or flipped, underperform other RLBOs or the market. Their paper, however, does not examine the relationship between buyout sponsors' restructuring process and IPO market conditions.

In this paper, I conduct two main analyses. In the first analysis, I examine two hypotheses regarding IPO timing of buyout sponsor in listing LBOs and timing impact on restructuring process and firm performance. The *performance timing hypothesis* posits that sponsors behave opportunistically by listing LBOs at the peak of pre-IPO cash flow or operating performance; and the *market timing hypothesis* posits that buyout sponsors tend to shorten the LBO restructuring process under more favorable external conditions for new issuance. In the second analysis, I examine whether IPO timing affects buyout sponsor's monitoring and exit strategies in post-IPO years.

Under the *performance timing hypothesis*, buyout sponsors take advantage of some temporary improvement in operating performance that leads to high equity valuations. In general, the IPO literature (e.g., Jain and Kini (1994)) finds that new IPOs experience declines in

operating performance post-issuance. Studies by Degeorge and Zeckhauser (1993) and Holthausen and Larcker (1996) document similar patterns of performance deterioration for RLBOs. Degeorge and Zeckhauser (1993) suggest that performance timing may explain such declines, with insiders listing LBOs when they see a temporary improvement in operating performance. Chou, Gombola, and Liu (2006), who document increases in discretionary accruals prior to the listings, alternatively suggest that earnings management may explain such declines. These early findings on RLBOs, however, often depend on a small sample of RLBOs from the 1980s to the early 1990s, and they ignore IPO market conditions in their analysis. The recent development[4] of the private equity industry calls for more thorough examination of RLBOs' operating performance. I empirically test the above hypothesis by examining whether the operating performance of RLBOs deteriorates after going public.

Under the *market timing hypothesis*, in contrast, buyout sponsors bring LBOs to the public to take advantage of a favorable IPO market. During hot IPO issuance periods, buyout sponsors can earn greater proceeds by selling more LBO equity even when the restructuring process has not been completed (i.e., operating efficiencies have not been fully realized). Hence, external market conditions can generate perverse incentives for sponsors to seek quick cash returns from selling immature LBOs, or to even pursue so-called "quick flips," whereby sponsors avail themselves of rare but profitable opportunities to exit soon after acquiring the LBO. When LBOs succumb to such practices, sponsors are likely to spend less time on the restructuring process. LBO duration, a proxy for LBO restructuring efforts, is therefore expected to be

[4] The buyout industry today is far larger than it was during the years when it enjoyed its greatest returns. For instance, fundraising by U.S. buyout funds was six times greater in 1998 than in 1987, and by 2005 it was nine times the 1987 level.

negatively related to favorable IPO market conditions and market returns. As a result, IPO timing is expected to result in a decline in RLBO performance. To test these predictions, I relate declines of RLBO performance post IPO to market conditions in multivariate analysis.

The empirical evidence from the above analysis rejects the performance timing hypothesis but supports the market timing hypothesis. Specifically, RLBOs show no declines in operating performance. The results provide empirical support for Pastor, Taylor and Veronesi (2009) who suggest that due to IPO timing, firm profitability declines after the IPO and that this decline is larger for firms with more volatile profitability and firms with less uncertain average profitability. The evidence suggests that RLBOs, firms with low profitability volatility and uncertainty, show no declines in profitability. I find that buyout sponsors appear to shorten LBO duration when market conditions are more favorable for new IPOs. Shortening duration leads to worse long-run performance and a greater probability of bankruptcy. Interestingly, the findings also provide support for Schultz's pseudo market timing, according to which buyout sponsors do not take advantage of mispricing by selling overpriced equity, but rather use favorable external IPO market conditions to expedite their exit of LBOs.

Next, I examine whether buyout sponsors maintain a post-issuance presence in RLBO companies following their IPO. The decision to maintain a presence post-IPO is important. First, given buyout sponsors specialize in monitoring (Gertner and Kaplan (1996)), a continued presence post-IPO suggests that buyout sponsors complete more of the restructuring process (i.e., realize more operating efficiency gains). In addition, because the lockup provisions of new issuances [5] help align the interests of insiders with those of public investors (Field and Hanka

[5] IPOs generally feature lockup agreements that prohibit corporate insiders from selling shares before a certain date, which may range from one month to several years after the IPO.

(2001), Aggarwal, Krigman, and Womack (2002)), and because RLBO lockup provisions are no different from those of other IPOs[6], the interests of RLBO buyout sponsors are expected to be further in line with those of public investors. These arguments imply that IPO timing in going-public decision is not equivalent to buyout sponsors exiting quickly or cashing out. Indeed, many RLBOs use their IPO proceeds to reduce or retire debt that is approaching maturity, a potential benefit for bond investors in RLBO firms because going public strengthens the company's balance sheet.

Note that buyout sponsors are not subject to selling restrictions once their IPO lockup provisions expire. They may, however, choose exit strategies (both when and how to exit) to time the market. Hence, to address the question of whether market conditions and reputation concern affect buyout sponsor's exit post-IPO, this analysis follows Zingales (1995) and examines buyout sponsors' post-issuance exit strategies across market conditions and sponsor's characteristics. The findings suggest that sponsors' exit choices can be explained by firm cash flows, the sponsor's reputation, market conditions, and firm ownership structure. For example, buyout sponsors are more likely to maintain a post-IPO presence in RLBO companies when they can obtain greater cash flows from doing so or when market conditions are less favorable. Further, consistent with their control rights, reputable buyout sponsors are more inclined to exit by facilitating a post-IPO takeover when their ownership share is greater.

This research contributes to the literature along several dimensions. First, it sheds light on the factors that influence buyout sponsors' restructuring processes and exit strategies. Second, unlike earlier studies, this paper employs a comprehensive sample of 594 RLBOs from 1981 to

[6] The RLBO lockup provisions in the sample averaged 186 days, not significantly different from those of other IPOs in the same industry. This result is not reported but is available upon request.

2006. This expansion of the dataset is important because it captures the structural development of the private equity industry over the last two decades. Moreover, the large sample spans both hot and cold IPO waves, thereby enabling investigation of buyout sponsors' market timing. In sum, this paper offers new evidence that buyout sponsors are able to take advantage of favorable IPO market conditions in private-to-public transactions[7].

The remainder of the paper is organized as follows. Section 2 provides a background discussion and a review of the related literature. Section 3 discusses the sample and outlines the paper's empirical methods. Section 4 presents the empirical results on performance timing and market timing, and Section 5 presents the empirical results on buyout sponsors' exit strategies in post-IPO years. Section 6 concludes the paper.

II. Background and Literature Review

RLBOs differ from other IPOs or IPOs backed by venture capitalists in two respects. First, being sponsored by private equity investors, RLBO companies usually have a highly leveraged capital structure; and second, their buyout sponsors, having concentrated ownership, are active and often controlling owners that play an intensive monitoring role. These buyout sponsors typically acquire public or private companies through their LBO funds[8] and subsequently spend time and effort restructuring the LBOs. Once the restructuring process is complete, they sell equity in the LBOs to the public through IPOs. In RLBOs specifically, the

[7] Kaplan and Stromberg (2008) find that in private-to-public transactions, private equity investors may take advantage of market mispricing between the debt and equity markets.

[8] Because LBO funds are often contracted to last for a limited life cycle, usually 10–12 years, buyout sponsors have increasing liquidity demands to exit from LBO companies as funds approach maturity.

buyout sponsors' final compensation is dependent on the so-called carried interest.[9] This compensation structure gives sponsors incentives to extract maximum profits from their investments within a certain horizon. Since private equity investor exist to generate returns for its investors or limited partners, the faster they can do so, the better. Nonetheless, because buyout sponsors' interests as they stand ready to cash out are not necessarily aligned with those of outside public shareholders, there is concern that the delivery of quick profits in LBOs sacrifices public shareholder interests, particularly in RLBOs with very little restructuring effort.

Indeed, Cao and Lerner (2009)) show that his conflict of interest is especially relevant in quick flips, portfolio companies flipped to public investors within a very short period after their LBOs (defined by the authors as less than one year from LBO to IPO).[10] Quick flips have thus been subject to recent scrutiny because public investors doubt that buyout sponsors have time to make enough improvements in operation or governance. To illustrate this problem, Figure 1 shows the operating performance of RLBO firms that are quick flips versus those that are not. Whereas the median of quick flip EBITDA/sales increases before the IPOs and decreases in post-IPO years, other RLBOs show no decline in EBITDA/sales. This peculiar pattern not only implies the propping up of performance in quick flips compared to other RLBOs but reflects the doubt about whether buyout sponsors add any value in quick flips and whether they face perverse incentives to flip certain firms quickly.

[INSERT FIGURE 1 Here]

[9] Carried interest is the right to receive a specified share (20% to 25%) of the profits ultimately earned by an investment fund over some previously agreed upon benchmark return. Because general partner carries depend on the general cash return of a given investment, general partners have incentives to monitor and realize final cash returns.

[10] Although this analysis employs different duration measures (less than one and a half years or two years), the empirical findings throughout the paper remain unchanged.

General scrutiny of RLBOs stems from the potential moral hazard as, based on insider knowledge, buyout sponsors push problematic LBO firms public before hidden problems can unfold, thereby transfering the expected bankruptcy risk and loss to public investors. In fact, approximately 10% of the RLBO sample was delisted after going public, with most going bankrupt by filing Chapter 11 or Chapter 7. Hence, this analysis links the probability of post-IPO delisting to LBO duration to identify whether buyout sponsors push immature LBOs public because of the greater susceptibility to bankruptcy risk.

The interplay among buyout sponsors' incentives and corporate decisions is a critical issue for both researchers and investors, and the debate about buyout sponsors' controversial role, especially in PE-backed IPOs, is ongoing. Such controversy is clearly illustrated by the case of Warner Bros. Music, bought in March 2004 for $2.6 billion by a group led by Thomas H. Lee Partners and Edgar Bronfman Jr. and taken public 14 months later. Along the way, the sponsors had Warner Bros. Music pay them dividends worth more than $1 billion. When Warner went public, analysts and investors said they expected the private equity firms to sell their stakes to lock in their gains. However, after the offering, these firms continued to control a majority stake worth about $2 billion. In fact, Warner Bros. Music rejected a buyout offer from EMI, another large music publisher, and as a defensive strategy even made a counterbid. This case raises several important questions: Why did the sponsors of Warner Bros. Music reject the takeover offer for quick cash? In what sense should buyout sponsors maintain an active role in RLBO companies post IPO? How can the reputation of private equity investor groups mitigate the conflict of interest between buyout sponsors and outside investors?[11]

[11] There is also a potential conflict of interest between debt holders and equity holders in LBOs and RLBOs.

Several additional studies are highly relevant to this analysis. First, in an early study, Muscarella and Vetsuypens (1990) argue that stock market listing is an exit mechanism for professional pre-IPO investors such as buyout sponsors. More recent work by Brau, Francis, and Kohers (2003) on the choice of private firms to either go public or sell to a publicly traded buyer finds that these companies favor the IPO route over a takeover when the firm size is large and the industry market-to-book ratio is low. Benninga et al. (2005), however, link the decision to go public to the possibility of sequential privatization (buyouts after IPOs). After linking these dynamic decisions to underlying cash flows, they suggest that entrepreneurs make tradeoffs between the benefits of keeping firms private and the value added of going public. One difficulty in such research is determining exactly when buyout sponsors exit from RLBOs. For instance, KKR spent approximately three years post LBO holding Safeway as a portfolio company but ultimately took more than 10 years to sell its stake in Safeway following the IPO. Therefore, like Giot and Schwienbacher (2007), this analysis focuses on sponsor's post-IPO presence in or exit from VC-backed IPOs.

IPOs tend to cluster during hot periods. The literature suggests that this phenomenon can be explained in part by high cash flows (Benninga, Helmantel, and Sarig (2005)), industry effects (Ritter (1984), Jain and Kini (2006)), and high underpricing (Lowry and Schwert (2002)). Alti (2005) further relates IPO clustering to market timing arguing that high offer-price realizations have positive spillover effects that attract subsequent IPOs. Ritter (1991) finds that IPO performance frequently involves long-run investment underperformance. In IPOs and SEOs Loughran and Ritter (1995) attribute long-run poor performance to temporary market mispricing; that is, new issuing firms take advantage of new equity overvaluation. However, Jain and Kini's (1994) study on post-issue operating performance finds that, although IPOs generally exhibit a

decline in operating performance, IPOs with concentrated entrepreneurial ownership demonstrate relatively superior performance among issuing firms. Earlier research by Degeorge and Zeckhauser (1993) suggests that RLBO firms differ from IPOs: they are not only larger than the average IPO but often use IPO proceeds to reduce debt. Nonetheless, Holthausen and Larcker (1996) find that RLBO companies in the 1980s showed better operating performance post-IPO than the industry average, although their operating performance decreased as ownership concentration (of management and other insiders) decreased.

III. Data and Empirical Methods

A. Sample Description

In this analysis, two criteria define an RLBO transaction. First, an IPO must have previously received LBO financing sponsored by a buyout group, and second, the LBO investment must be characterized by immense use of leverage. Buyout firms/funds that engage primarily in buyout investment activities were identified from Thomson's VentureXpert and Standard and Poors' Capital IQ. The sample excludes investments by buyout organizations that more closely resemble venture capital. The RLBO transactions were identified using two types of sources. The first included the Securities Data Company's (SDC) Corporate New Issues database, which flags IPOs with an identifier indicating a previous leveraged buyout, and LBO databases that indicate whether any transaction subsequently went public. These searches produced a sample of 229 RLBOs for the period from 1981 through the middle of 1998. The second set of sources included Dealogic and Capital IQ, both of which report IPOs backed by financial sponsors, as well as a search of news stories on Factiva using the same criteria. These

sources generated an additional 297 RLBOs[12] to produce a final sample of 594 RLBOs from 1981 to 2006.[13] Companies were excluded based on the following criteria: offer sizes below $5 million, offer prices below $5.00 per share, unit trust, closed-end funds, ADRs, and IPOs not listed on CRSP within six months of issuing. Real estate investment trusts (REITs) are included because they make up a fair number of the sample.

The IPO underwriter reputation data, measured by an amended version of Carter and Manaster (1990), was obtained from Jay Ritter's website,[14] and the LBO information on buyout sponsors from the Factiva press search. Ownership data and board information at the time of the IPO were collected from the IPO prospectuses, while post-IPO board information and ownership data were taken from proxy filing statements on the SEC's EDGAR website. Because of data availability issues that reduce the sample size, the analysis of post-IPO sponsor exit strategies requires a three-year window for ownership data. The regressions thus report the actual observations used in the multivariate analysis. The accounting data for RLBOs were obtained from COMPUSTAT, which measures accounting variables at the end of the calendar or fiscal year. Return, price, and delisting information were taken from the CRSP Monthly Stock database.

[INSERT Table 1 Here]

Table 1 presents the industry distribution of RLBOs and all other IPOs, the majority of which, in both cases, are concentrated in the manufacturing industry. The personal business industry accounts for the second largest concentration and retail for the third.

[12] There are overlaps between data from Dealogic/Capital IQ and the SDC's VentureXpert.

[13] To ensure the quality of the final sample, the criteria and procedure follow Cao and Lerner (2007), who discuss the complications of identifying RLBO transactions.

[14] http://bear.cba.ufl.edu/ritter

[INSERT Table 2 Here]

Table 2 lists the top 20 active RLBO sponsors and reports each sponsor's total number of RLBOs, average RLBO size, and average money left on the table (defined as the multiplication of underpricing and offer size). Many buyout sponsors are repeat players in IPO markets, with KKR topping the list as sponsor of 24 RLBOs. At the bottom of the list is Lehman Brothers with 6 RLBOs.

[INSERT Table 3 Here]

Table 3 summarizes the yearly distribution of RLBOs, the average LBO duration each year, and the subsequent delisting numbers or post-IPO takeover (being acquired) activities. RLBO distribution is highly correlated with the buyout cycles in a lagged fashion. For 1992, when many LBOs acquired in the late 80s began returning to the public market, there are a staggering 63 offerings. The first LBO wave also gave rise to the first RLBO wave: 14 and 22 RLBOs for 1986 and 1987, respectively. However, after the collapse of the junk bond/LBO markets, RLBO activities dried up, with only 4 RLBOs in 1988 and 3 in 1989.

For the private years between LBO and IPO, RLBO companies exhibited great heterogeneity: some remained private for only a short period of time (e.g., less than a year), while others stayed private for up to 10 years. RLBO firms on average remained private[15] for 3.75 years, with a median duration of 2.83 years. Among all RLBOs, 70 deals (11.8% of the total sample) were quick flips, mostly taking place in 1987 and the late 90s in hot LBO and IPO periods. A total of 61 firms subsequently delisted, and 199 firms (one third of the sample) were

[15] However, Kaplan and Stromberg's (2008) study of LBO longevity globally, including all exits including RLBOs and trade sales of portfolio companies, indicates a much longer holding period.

acquired within five years of going public. This proportion is similar to that for all listed firms acquired in takeovers.

B. Empirical Methods

Under the *performance timing hypothesis*, RLBO companies will exhibit drastic performance deterioration after going public. Therefore, the analysis of firm operating performance employs the EBITDA/sales and ROA (net income/asset) measures used in earlier studies to identify the general patterns of RLBO operating performance both around their IPOs and in post-IPO years. More specifically, based on industry and industry and performance-matched companies[16] as benchmarks, it reports the operating performance of both the whole sample and subsamples such as quick flips, as well as RLBO financial performance adjusted by the market in post-IPO years.

The multivariate analysis regresses RLBO performance on variables of interest like LBO duration and the sponsor's reputation proxy, with the cross-section regression specified as follows:

$$(1) \qquad Performance = \alpha_0 + \alpha_1 \, LBO\ Duration + \alpha_2 \, Reputation + \alpha_3 \, Controls + \varepsilon.$$

The performance measures include change in operating performance (measured by EBITDA/sales two years after IPO minus EBIDTA/sales in the year of the IPO) and stock performance (measured by buy-and-hold three-year return adjusted by the market). The other independent variables include the logarithm of firm size, changes in leverage (debt to asset ratio), a quick flip dummy, changes in industry performance, and the IPO market condition. As

[16] Barber and Lyon (1996) propose that an industry and performance benchmark is more robust to accounting measure reversals.

suggested by Holthausen and Larcker (1998), the change in industry operating performance is used to control the mean reversion in accounting measure. Consistent with Alti (2005), the IPO market condition is proxied by two variables — aggregate numbers of issuances or average underpricing of all IPOs in the previous three months, and IPO underpricing is measured as the first-day return (closing price at the IPO deflated by offer price). Following Cao and Lerner (2007), buyout sponsor reputation is measured as the capital they have historically managed and their vintage age.

Under the *market timing hypothesis*, favorable external market conditions affect LBO duration because buyout sponsors are more likely to take the LBO public quickly (hence, RLBO) to take advantage of the hotter issuance market for new IPOs. This assumption leads to two empirical predictions: a negative relationship between LBO duration and IPO market activities, and a greater likelihood of quick flips in hotter markets. Buyout sponsor reputation may also be important. For example, the reputation effect may align sponsors' interests with those of the public, encouraging more reputable sponsors to spend more time restructuring and improving LBOs before taking them public. Accordingly, the multivariate regression also assesses the determinants of LBO duration using the following OLS specification:

(2) $$Log(LBO\ duration) = \alpha_0 + \alpha_1\ Market\ Conditions + \alpha_2\ Reputation + \alpha_3\ Controls + \varepsilon,$$

where the dependent variable is the number of years that a firm stays private from LBO to RLBO. The explanatory variables include IPO market condition, industry Q, sponsor reputation, firm size, operating performance, leverage, and company EBITDA/sales.

Sponsor decisions about the length of LBO restructuring, however, are not homogeneous across RLBOs. Therefore, any analysis of the effect of duration on performance must take into account this self-selection issue, especially for quick flips. To control for this problem, I

investigate the likelihood of a quick flip and its effects on subsequent firm performance using Heckman's selection regressions, a two-step estimation procedure:

(3) Step 1: Probit (*Quick Flip*) = $\alpha_0 + \alpha_1$ *IPO condition* + $\alpha_3 \cdot$ *Controls* + ε

Step 2: *Performance* = $\alpha_0 + \alpha_1 \cdot$ *Quick Flip* + $\alpha_2 \cdot$ *Controls* + $\alpha_3 \cdot$ *Lambda* + ε.

The first step is a probit regression in which the dependent variable is a dummy equal to 1 when the RLBO is classified as a quick flip (an LBO duration of less than one year[17]), 0 otherwise. The identifying instruments on the right-hand side include the industry dummy, IPO market condition, buyout sponsor reputation,[18] the relative size of LBO firms to their buyout sponsors' capital, and RLBO firm's prior operating performance. The inclusion of relative size captures the economic significance of a given RLBO to GP capital under management. For example, sponsors may be more likely to flip a relatively smaller firm. The second-step regression includes *lambda,* the inverse Mills ratio imputed from the first-step probit regression, as an additional control variable for selection bias. The dependent variable in the second stage is either a long-run performance measure of EBITDA of sales or a delisting dummy (measured within the three post-IPO years).

Because buyout sponsors are subject to lockup restrictions, however, an RLBO is not equivalent to a quick, complete sponsor exit. Moreover, as major active investors, sponsors may have to choose to continue ownership and monitoring during post-IPO periods. I therefore compile a descriptive summary of the ownership structure and board share of sponsors in RLBOs before and after IPOs. Since buyout sponsor's full exit is not fully observable in a long horizon,

[17] When, as a robustness check, I define quick flips using an alternative duration of two years, the results hold.

[18] In the case of VC-backed IPOs, Gompers (1995) proposes a *grandstanding hypothesis* in which young venture capitalists take very young portfolio companies public to garner publicity for the next fund raising.

the analysis of buyout sponsor presence post IPO uses the Cox proportional hazard duration approach adopted by Giot and Schwienbacher (2007) in their analysis of venture capitalist's exits from VC-backed IPOs. The Cox regression for survival analysis is specified as follows:

(4) $$h(t|x) = h(t)^* exp(\alpha_1 \cdot x_1 + \alpha_2 \cdot x_2 + \ldots + \alpha_N \cdot x_N) \qquad x = x_1,\ x_2,\ \ldots, x_N.$$

In this regression, the dependent variable is a survival (no full exit) dummy set to 0 if the sponsor's ownership is positive in year t after the IPO and 1 if the ownership drops to zero in year t. Because the cut-off point is a three-year post-IPO window, the parameter t takes the values 0, 1, 2, and 3. The explanatory variables include EBITDA/sales, stock monthly excess return over the market, Tobin's Q, and sponsor reputation. Tobin's Q, which measures a firm's growth opportunity (Kaplan and Zingales (1997)), is the ratio of the market value[19] of assets divided by their book value.

Buyout sponsors can choose at least two common mechanisms for a post-IPO exit: takeovers (RLBO acquisition by third parties) and gradual distribution of shares (to public investors and limited partners). The analysis of these exiting choices employs both binomial and multinomial probit regressions:

(5) $$Exit\ Dummy = \Phi\ (\alpha + \beta\ Cash\ Flow + \delta\ Ownership + \Psi\ Reputation + \gamma\ Controls + \varepsilon).$$

In the binomial probit regression, the exit dummy takes the value of 1 (0 otherwise) if the sponsor fully exits via either takeover or gradual share distribution (i.e., ownership drops to zero). In the multinomial probit regression, the exit dummy is set to 1 if a full exit takes the form of a takeover (acquisition), 2 if a gradual distribution (ownership drops to zero), and 0 otherwise. Here, Φ is a cumulative probability function for normal distribution. Again, the cut-off point is

[19] The market value of assets is their book value plus the market value of common equity less the sum of the book value of common equity (item 60) and balance sheet deferred taxes (item 74).

three years post IPO. The explanatory variables of interest are EBITDA/sales, Tobin's Q, industry Q, ownership structure, LBO duration, and sponsor reputation. The control variables are firm size and leverage.

IV. Empirical Results

A. Univariate Analysis of Performance Timing

The univariate analysis tests the *performance timing hypothesis* that firms experience performance deterioration after their IPOs. Table 4 summarizes the key financial ratios and operating performance (both unadjusted and adjusted) of RLBO firms from year IPO-1 to year IPO+2. Panel A reports the sample mean of book asset, employees, EBITDA/sales, sales growth rate, debt/asset, long-term debt/total debt, and other credit conditions.

[INSERT Table 4 Here]

As the table shows, the debt ratio (total debt/book assets) peaks at one year before the IPO; the RLBO firms' assets and employees gradually increase around the IPO; and the ratio of convertible debt and preferred stock/long-term debt decreases substantially after the IPO, suggesting that a large portion of equity-linked (convertible) debt) is either converted into common stock or retired. The unadjusted operating performance in Panel A, however, shows no consistent pattern of performance deterioration: ROA (net income/assets) gradually increases and peaks at IPO+1, while EBITDA/sales remain fairly stable around IPOs. Like that of other firms, RLBO firms' sales growth rate reaches its peak level in the first year of the IPO and gradually deteriorates afterwards.

Panels B and C report benchmark-adjusted RLBO performance, with EBITDA/sales and ROA adjusted by the industry mean or median or by the industry and performance benchmark

(matched EBITDA/sales or ROA at year IPO-1), respectively. Neither measure of benchmark-adjusted operating performance exhibits any post-IPO deterioration. On the contrary, consistent with Degeorge and Zeckhauser (1993), RLBOs show persistently superior operating performance in post-IPO years: EBITDA/sales or ROA outperforms the relative benchmarks by a range from 1% to 5%. Such performance persistence suggests that buyout sponsors on average maintain superior RLBO operating performance; hence, the *performance timing hypothesis* can be rejected. In the special RLBO subsample of quick flips, however, there is a strong pattern of performance deterioration: both EBITDA/sales and ROA jump just before the IPO but decrease drastically after it. Given that this evidence is robust for both mean and median, the *performance timing hypothesis* is rejected for the full RLBO sample but supported for the quick flip subsample.

Panel D reports RLBO stock performance, specifically the one-year, two-year, and three-year buy-and-hold return post IPO, both unadjusted and adjusted by market (the value-weighted CRSP return). The results are consistent with Cao and Lerner (2009): RLBOs in general outperform or at least do not underperform the market. Quick flips, however, exhibit worse performance than other RLBOs and do underperform the market—their median market-adjusted buy-and-hold return is (weakly) negative and significant.

[INSERT Table 5 Here]

Table 5 reports the results of the cross-sectional regression of change in operating performance (EBITDA/sales) from the year of the IPO to year IPO+2, as well as the stock performance (the three-year buy-and-hold return over market). The explanatory variables in the OLS regression include LBO duration/a quick flip dummy, an IPO market condition proxy, sponsor reputation, and other firm characteristics. LBO duration is positively and significantly

associated with performance change: firms remaining private one additional year show almost a 1% improvement in change in EBITDA/sales after the IPO. The evidence also suggests more performance deterioration in firms with shorter LBO duration: the quick flip dummy is negatively and significantly associated with a change in operating performance after going public.

Overall, the evidence in Table 5 suggests that LBO duration is a good proxy for sponsors' LBO restructuring efforts. Moreover, the change in performance is negatively related to the IPO market condition, indicating that performance timing must be specific to market condition: RLBOs issued under more favorable IPO market conditions are more likely to experience greater deterioration in operating performance. These results are robust to other measures of performance such as net income/assets.

B. Multivariate Analysis of Market Timing

Capital market conditions affect sponsor decisions of RLBO or staying private with more restructuring. Hence, the *market timing hypothesis* suggests that sponsors will shorten LBO duration and be more likely to take (immature) LBOs public given the advantage of a favorable IPO market. The results of the OLS regression to analyze LBO duration are given in Table 6, in which the dependent variable of LBO duration (the logarithm of one-plus years as a private LBO) is regressed on the IPO market condition proxy, sponsor reputation, firm operating performance, firm size (sales), and other firm characteristics.

[INSERT Table 6 Here]

As the table shows, LBO duration is positively associated with sales, suggesting that larger LBOs may require more effort and hence more time for improvement. IPO market condition does affect LBO duration: the number of years as an LBO decreases with the aggregate

IPO underpricing (a proxy for IPO market condition) during the previous three months. The general industry valuation is also important: not only is the industry Tobin's Q negatively associated with LBO duration, but both regression coefficients are significant at either the 5% or 10% level. This evidence supports the market timing hypothesis: buyout sponsors sell portfolio companies more quickly to public investors when general IPO market conditions are more favorable or industry valuation of firm assets is higher.

C. Market Timing and Performance of Quick Flips

The extreme case of shortened duration is the quick flip, an option that must be deliberately chosen by buyout sponsors based on information about portfolio characteristics, firm quality, or market conditions. As outlined previously, the multivariate analysis controls for such selection decisions using Heckman's two-step procedure with lambda as a control: in the first-step probit regression on the quick flip decision, the dependent variable is set to 1 for quick flip, 0 for other RLBOs; in the second-step regression, the dependent variable is long-run RLBO performance (either EBITDA/sales or the delisting dummy).

[INSERT Table 7 Here]

As Table 7 shows, the relative size of RLBO firms (firm asset relative to sponsor size, measured by total historical capital under management) is negatively associated with the likelihood of quick flip, suggesting that this choice is more likely for relatively smaller LBOs. The likelihood of quick flip is also positively associated with the aggregate number of IPOs in the past three months and hotter IPO issuance periods. The coefficient of EBITDA/sales is positive and significant, possibly because firms having stable operating performance do not have to stay private for long or that, consistent with the evidence in Tables 5 and 6, quick flips experience more operating performance deterioration because sponsors are more likely to flip

firms that are experiencing a performance peak (performance timing). Such quick flip markups in EBIDTA/sales before IPOs and subsequent performance drops are also illustrated in Figure 1.

In the second-stage Heckman analysis, quick flip dummy is significantly and negatively associated with long-run operating performance (average EBITDA/sales in the three years following the IPO). In contrast, the dummy is significantly and positively related to the likelihood of a firm being delisted within five years after the IPO. The evidence also reveals that, once the selection bias is controlled for, the long-run performance of quick flips is significantly worse than that of other RLBOs. This finding further supports the role of operating performance timing in the quick flips that tend to occur in hotter IPO period. Moreover, sponsors' opportunistic timing decisions for immature LBOs lead to value destruction; that is, quick flips exhibit poorer performance in the long run.

V. Empirical Results for Sponsor Exit

A. Analysis of Sponsors' Post-IPO Presence

[INSERT Table 8 Here]

As shown in Table 8, which reports the ownership structure of RLBOs around IPOs and in post-IPO years, buyout sponsors[20] on average hold approximately 60% of equity ownership prior to IPOs, but their ownership level decreases to 40% immediately after the IPO. This decrease is partly due to share dilution and partly to IPO stock sales. Moreover, as indicated by the summary statistics of sponsor ownership levels and percentage of board directors affiliated

[20] Both sponsor-managed capital and sponsor vintage years show large cross-sectional variation. The largest buyout sponsor has about $39 billion of capital raised, whereas the smallest sponsor has less than $5 million. Vintage age, however, does not distinguish between nonexistent and still existent private equity firms.

with buyout groups post IPO (Panels B and C), buyout sponsors continue holding significant equity stakes in the long term. Specifically, their ownership decreases from about 32% to 24% from year IPO+1 to year IPO+3. Likewise, sponsors retain a significant board share: the percentage of buyout-affiliated directors decreases from 32% in year IPO+1 to 25% in year IPO+3.

In addition, since LBO funds have a limited lifecycle, sponsors have a greater impetus to exit from RLBO companies that have been held for a longer time. Hence, the analysis of sponsor decisions on post-IPO presence employs the Cox proportional duration approach (a survival model) to control for this unobserved liquidity demand. The results for the Cox proportional hazard regressions, specified in Equation (3), are presented in Table 9.

[INSERT Table 9 Here]

Whereas the coefficient of EBITDA/sales is negative and significant, the coefficient of Tobin's Q is significant and positive, suggesting that buyout sponsor's post-IPO presence/retention of stakes, which is more likely in RLBO companies with better stock performance, increases cash flow but decreases equity valuation. However, general market conditions like industry valuation or stock market performance have a weak impact on post-IPO duration: the coefficient of the industry Q is positive and significant, but the coefficient of the market returns (S&P 500) is positive but insignificant.

Overall, the evidence from this analysis suggests that sponsors retain their post-IPO presence in firms with more cash flow but are more likely to reduce duration or sell stakes when firms have higher stock valuation. These findings provide new empirical evidence for Zingales' (1995) conclusions: incumbent buyout sponsors continue their presence post IPO to extract cash

flow benefits but are more likely to cash out quickly (shorten their duration of post-IPO presence) when firms receive higher external valuations.

B. Determinants of the Exiting Mechanism

Because sponsors may find it easier to exit and cash out when they can sell RLBO companies to a third party through takeover, the mechanism of exit matters for post-IPO duration. Table 10 outlines buyout sponsor choices between exit via a facilitating takeover (being acquired) and exit through gradual share distribution (to limited partners or public investors in SEOs until ownership drops to zero) as they relate to firm fundamentals, market conditions, and sponsor reputation.

[INSERT Table 10 Here]

Columns 2 and 3 report the probit analysis results for a sponsor's post-IPO exit via a facilitating takeover based on a dummy dependent variable set to 1 if RLBO firms are acquired within three years after going public, 0 otherwise. Columns 4 and 5 report the probit analysis results for sponsor exit via gradual distribution of shares, with the dependent variable set to 1 if sponsor ownership drops to zero without takeover (in which case, sponsors typically distribute shares to investors), 0 otherwise. In both cases, the sponsor's choice of exit decreases cash flow measures like EBITDA/sales, suggesting that sponsors retain a longer post-IPO presence when they can extract more cash flow. Thus, the probability of exit via takeover/share distribution increases/decreases with sponsor ownership. The evidence also suggests that sponsors extract more control benefit by exiting via facilitating takeover and are more reluctant to distribute all shares when ownership is highly concentrated.

Columns 6 and 7, which present the multinomial probit analysis of the two exit alternatives, show that the probability of a sponsor's exit via distributions increases with Tobin's

Q, although Q is unrelated to the probability of exit via takeovers. The evidence also suggests that, among various exit choices, sponsors are more likely to choose exit via share distribution when companies have higher valuations. In addition, the coefficient of buyout sponsor reputation is significant for sponsor exit via facilitating takeover, suggesting that more reputable sponsors are more likely to choose exit via takeover than exit via share distribution. Sponsors are also more likely to choose exit via takeover when RLBOs are larger and their duration is longer. Overall, the evidence in Table 10 is consistent with a rational exit choice by buyout sponsors seeking to maximize both cash flow and control benefits.

C. Operating Performance around Sponsor's Full Exit

Because of the sponsor monitoring role, if the presence of buyout sponsors helps to improve RLBO operating performance, their full exit, possibly associated with performance deterioration, should result in an absence of monitoring. The analysis thus includes an empirical examination of RLBO operating performance around the year of the sponsors' full exit. Table 11 reports such performance adjusted by benchmarks and compares the operating performance one year before the exit with that one year after.

[INSERT Table 11 Here]

The operating performance measures like ROA and EBITDA/sales exhibit a weak pattern of deterioration following buyout sponsors' full post-IPO exit from RLBOs, and the evidence of performance drop is also fairly weak since the mean difference is either marginally significant or insignificant. This weakness may result from a selection issue: buyout sponsors are more likely to exit quickly if their ownership is less concentrated. This weak evidence does suggest, however, that the presence of buyout sponsors helps to improve operating efficiency.

VI. Conclusions

Using a comprehensive sample of RLBOs between 1980 and 2006, this analysis examines the IPO timing of buyout sponsors in listing LBOs publicly and the impact of such IPO timing on firm performance and exit strategy post IPO. In contrast to earlier findings (e.g., Degeorge and Zeckhauser (1993)), the results indicate that RLBO companies experience no significant deterioration in operating performance in post-IPO years. One explanation may be that their earlier study uses a small sample of RLBOs in the 1980s. Correspondingly, the findings of this present study suggest that performance timing and declines in performance are common in the quick flips that were typical in the early sample period.

I find evidence that buyout sponsor's LBO restructuring duration is affected by IPO timing: when facing favorable IPO conditions or high industry valuations, buyout sponsors tend to shorten the time to restructuring LBOs privately. As a consequence of such IPO timing, RLBOs with shorter duration experience more deterioration in operating performance following their IPOs. Most particularly, buyout sponsors (quickly) flip LBOs to time both operating performance and market conditions. Hence, compared to other RLBOs, quick flips experience worse operating performance and greater probability of bankruptcy post IPO. However, RLBOs as a whole do not exhibit greater declines in operating performance or poorer stock performance than comparable firms. This evidence also provides empirical support for Pastor, Taylor and Veronesi (2008) in that new listed firms with low profitability volatility and uncertainty such as RLBOs show no declines in profitability.

IPO timing drives RLBO decision but does not affect sponsor's exit post-IPO, while Lockup provisions and concern for reputation help align buyout sponsor incentives to public investors. I find that sponsors sell few IPO shares and maintain a significant long-run post-IPO

presence and that they make decisions about their post-IPO presence based on company fundamentals and market conditions. Across RLBOs, sponsors choose to maintain a longer presence in firms with higher cash flows and are more likely to exit RLBOs via facilitating takeover when their ownership is greater but via share distribution when the RLBO valuation is higher. Nonetheless, more reputable buyout sponsors are more likely to facilitate takeovers.

Overall, the combined provide empirical support for "pseudo market timing" proposed by Schultz (2003) as well as "optimal IPO timing" suggested by Pastor and Veronesi (2005), that is, buyout sponsors take advantage of favorable IPO market conditions for new LBO listings but not to sell overpriced equity. Buyout sponsor's IPO timing has important value implications for investors: listing immature LBOs destroys value and lead to financial distress, while sponsor's reputation partially mitigates this problem. Moreover, buyout sponsor's IPO timing does not necessarily lead to quick cash out, since in general they retain an active long-run presence post IPO and play important monitoring role.

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Table 1: Industry Distribution of RLBOs

Using the first 2 digits of the SIC codes and based on IPO data from the SDC new issues file, this table reports the industry distribution of the 594 RLBOs in the sample (1981 to 2006). This sample excludes RLBOs and other IPOs with an offer size below $5 million, a price below $5.00 per share, unit offers, closed-end funds, and ADRs, as well as IPOs not listed on the CRSP within six months of issuance.

	RLBOs	Other IPOs
	Frequency	Frequency
Manufacturing	44.16%	33.63%
Personal/business service	13.76%	21.98%
Retail	11.68%	5.46%
Healthcare	3.52%	3.02%
Restaurant/hotel	3.52%	2.47%
Radio/TV/telecom	3.04%	2.97%
Transportation	3.04%	2.78%
Wholesale	3.04%	3.39%
Natural resource	2.88%	2.81%
Insurance	2.24%	3.44%
Construction	1.44%	1.30%
Telecommunications	1.28%	1.01%
Other industry	6.40%	15.74%

Table 2: Distribution of RLBOs According to Sponsor

This table reports the distribution of the 594 RLBOs (1981–2006) in the full sample arranged by their 20 most active sponsors, together with the number of deals backed by each leading buyout sponsor, average first-day return, gross proceeds, and money left on the table. IPO data, such as first-day return, offer size, and offer price, were obtained from the SDC new issues file. The sample excludes IPOs with an offer size below $5 million, a price below $5.00 per share, unit offers, closed-end funds, and ADRs, as well as IPOs not listed on the CRSP within six months of issuance.

	Deal number	Average gross proceeds (in millions USD)	Money left on the table (in millions USD)
KKR	24	213.96	15.51
Warburg Pincus	17	112.45	9.59
GTCR Golder Rauner	16	140.49	11.50
Morgan Stanley Private Equity	16	179.64	17.01
Welsh, Carson, Anderson & Stowe	16	114.87	10.94
Bain Capital	14	199.54	7.68
Thomas H. Lee Partners	12	233.32	30.28
Hicks, Muse, Tate & Furst	11	284.12	22.56
Kelso & Company	11	128.92	6.45
Citicorp Venture Capital	10	111.08	9.52
Texas Pacific Group	10	224.74	79.09
Apollo Group	9	223.91	14.14
Blackstone Group	9	402.17	14.93
DLJ Merchant Banking Partners	9	115.44	25.39
Forstmann Little & Co.	9	253.94	25.15
Leonard Green & Partners	9	148.44	6.62
Madison Dearborn Partners	9	144.81	34.40
Merrill Lynch	9	69.03	4.67
Goldman Sachs	8	178.33	127.44
Lehman Brothers	8	120.66	23.41

Table 3: Descriptive Summary of RLBOs

This table reports the year-number distribution of 594 RLBOs in the sample (1981–2006), the LBO duration (years between LBO and RLBO), RLBO total market capitalization (first day or earliest available after IPO) for each year, number of quick flips, and total number of post-IPO delisting and mergers. Data on price, delisting, and merger were obtained from the CRSP.

Year	RLBOs	LBO duration	RLBOs' total market cap (millions USD)	Quick flips	Post-IPO delisting (nonmerger)	Post-IPO mergers
1981	1	3.83	280.72	0	0	0
1982	0	0.00	0.00	0	0	0
1983	2	5.17	1097.44	0	1	3
1984	3	2.83	150.78	0	1	2
1985	7	2.04	324.65	2	1	4
1986	14	3.17	1588.53	2	1	8
1987	22	1.96	4873.18	7	2	14
1988	4	1.33	402.50	0	0	2
1989	3	6.19	672.57	0	1	1
1990	9	4.07	1595.88	0	8	5
1991	33	3.90	9440.54	1	6	13
1992	63	3.74	19086.25	2	8	32
1993	45	3.76	13792.68	5	5	24
1994	25	5.14	7440.84	1	2	11
1995	25	4.47	6787.93	3	6	12
1996	37	5.13	9920.52	3	7	12
1997	38	3.36	17212.91	10	4	14
1998	25	1.39	20652.57	8	2	9
1999	36	3.38	27562.33	3	3	8
2000	31	3.17	35356.69	6	1	7
2001	28	3.10	22406.83	2	0	4
2002	25	6.74	16122.71	0	0	6
2003	15	2.54	12238.37	2	0	4
2004	38	3.76	16884.25	4	1	1
2005	38	3.94	24846.82	6	0	3
2006	27	5.44	26423.05	3	0	0
Total	594	3.75	270738.5	70	61	199

Table 4: RLBO Firm Characteristics, Leverage, and Performance

This table lists the key characteristics (mainly financial leverage) and operating/financial performance of the 594 RLBOs in the sample (1981 to 2006) and reports cross-sectional sample means for the years IPO-1, IPO, IPO+1, and IPO+2. The performance measures include ROA, EBITDA/sales, sales growth, and EBIT/sales. The leverage measures include total debt/asset, debt equity ratio, interest coverage (defined as EBITDA/interest expense), subordinated debt/long-term debt, convertible debt and preferred stock/long-term debt, debt maturing in two and four years/long-term debt, and the percentage of credit rating as investment grade. Panel B reports the industry benchmark-adjusted performance for RLBOs in the full sample and for quick flips in the subsample. Panel C reports RLBO performance adjusted by the industry and performance benchmark (at year IPO-1), and Panel D reports stock performance for both the full sample and the quick flip subsample. The mean and median significance were tested using *t*-statistics and Wilcoxon *z*-statistics; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

Panel A: RLBO Characteristics

	IPO-1	IPO	IPO+1	IPO+2
Assets ($ million)	799.69	835.82	904.66	968.32
Employees (million)	4.21	4.75	5.29	6.00
Market to book ratio, Q	--	2.27	2.05	1.82
Sales growth rate (%)	28.21	54.89	27.57	18.12
ROA (net income/asset) (%)	0.33	2.63	3.58	1.51
EBITDA/sales (%)	13.20	16.25	15.72	12.79
CAPEX/sales (%)	19.87	17.91	13.95	11.34
Total debt/assets (%)	56.55	35.82	33.48	33.14
Debt equity ratio	4.72	2.66	2.42	1.58
Interest coverage	5.31	6.27	11.96	12.13
Subordinated debt/long-term debt (%)	27.38	19.15	16.87	14.98
Convertible debt and preferred stock/long-term debt (%)	91.91	46.85	2.21	3.93
Debt maturing in 2 years/long-term debt (%)	14.06	16.25	15.73	15.03
Debt maturing in 4 years/long-term debt (%)	11.96	10.51	15.69	13.96
Credit rating (percentage of investment grade) (%)	7.06	8.77	11.28	14.73
Observations	481	496	436	374

Panel B: Industry Benchmark-Adjusted Operating Performance (based on first 3 SIC digits)

			IPO-1	IPO	IPO+1	IPO+2
Full sample:	ROA (net income/asset) (%)	-mean	-3.48***	-0.60	1.52**	-0.43
		-median	-2.58***	1.23	1.57*	0.98
	EBITDA/sales (%)	-mean	-1.89**	4.27***	3.42***	3.67***
		-median	-3.42***	2.73**	2.98**	3.35***

Quick flips:	ROA (net income/asset) (%)	-mean	-2.69**	-1.07*	-0.38	-3.80*
		-median	-1.76*	-0.53	-0.96	-2.54**
	EBITDA/sales (%)	-mean	-7.27***	2.39**	0.97	-0.34
		-median	-5.58***	1.23	1.09	-1.82*

Panel C: Industry (first 2 SIC digits) and Performance (matching EBITDA/sales at year IPO-1) Benchmark-Adjusted Operating Performance

			IPO-1	IPO	IPO+1	IPO+2
Full sample:	ROA (net income/asset) (%)	-mean	0.09	2.13***	4.19***	3.68***
		-median	0.14	1.77**	2.23**	2.59***
	EBITDA/sales (%)	-mean	0.38	5.28***	4.87***	5.13***
		-median	0.29	6.21***	5.85***	5.52***
Quick flips:	ROA (net income/asset) (%)	-mean	0.13	1.65	0.84	-2.31**
		-median	0.11	0.92	-0.26	-1.97*
	EBITDA/sales (%)	-mean	0.25	2.58**	1.72*	0.91
		-median	0.27	1.86	1.35	0.96

Panel D: Stock Performance (buy-and-hold return)

		12 months after IPO	24 months after IPO	36 months after IPO
Full sample: Raw monthly stock return (%)	-mean	20.10***	33.73***	43.35***
	-median	13.06***	18.75***	17.32***
Market-adjusted monthly stock return	-mean	9.54***	11.35***	13.73**
	-median	3.25*	-5.58	-11.63
Quick flips: Raw monthly stock return (%)	-mean	18.70***	25.08***	32.03***
	-median	-1.64	14.29	16.65
Market-adjusted monthly stock return	-mean	6.77	6.82	4.88
	-median	-9.89	-12.15	-14.52*

Table 5: Multivariate Analysis of Post-IPO RLBO Performance

This table reports the results of the OLS regressions on the performance of the 594 RLBOs between 1981 and 2006. The regression is specified as follows:

$$Performance = \alpha_0 + \alpha_1 \, LBO\ Duration + \alpha_2 \, Reputation + \alpha_3 \, Controls + \varepsilon.$$

Columns 2 and 3 report the change in EBITDA/sales from IPO to IPO+2; Columns 4 and 5 list the buy-and-hold stock return adjusted by the value-weighted market benchmark. The independent variables include LBO duration, quick flip dummy, debt ratio (total debt/asset), logarithm of firm assets, industry change in EBITDA, sponsor capital raised, and average IPO underpricing/aggregate number of new IPOs in the previous three months. The regressions also control the year fixed effects. The cross-sectional heteroscedastically robust *t*-statistics are reported in parentheses; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

	ΔEBITDA/sales from IPO to IPO+2	ΔEBITDA/sales from IPO to IPO+2	36 months market-adjusted buy-and-hold return after IPO	36 months market - adjusted buy-and-hold return after IPO
	1	2	3	4
Constant	0.056	0.071	-0.061	-0.206
	(0.19)	(0.28)	(0.15)	(0.28)
Log(LBO duration)	0.032*		-0.004	
	(1.80)		(0.31)	
Quick flip dummy	-0.023	-0.037*		-0.144
	(0.91)	(1.98)		(0.69)
Total debt/assets	-0.081**	-0.094**	-0.144	-0.171
	(2.52)	(2.21)	(0.61)	(0.72)
Log(assets)	-0.003	0.002	-0.173*	-0.215*
	(0.37)	(0.64)	(1.86)	(1.85)
Change in industry EBITDA/sales	0.238	0.307	0.009	0.011
	(1.47)	(1.19)	(0.24)	(0.09)
Log(buyout sponsor capital)	0.002	0.004	0.147*	0.148*
	(0.20)	(0.59)	(1.79)	(1.73)
IPO market average underpricing in previous 3 months	-0.325**		-0.521**	
	(2.21)		(2.09)	
Log(IPO numbers in previous 3 months)		-0.042		-0.063
		(0.77)		(0.38)
Year fixed effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.04	0.07	0.13	0.15
Number of observations	290	290	290	290

Table 6: Multivariate Analysis of LBO Duration

This table gives the results for the OLS regressions of buyout sponsors' LBO duration for the 594 RLBOs (1981–2006). The OLS regressions are specified as follows:

$$Log(LBO\ duration) = \alpha_0 + \alpha_1\ Market\ Conditions + \alpha_2\ Reputation + \alpha_3\ Controls + \varepsilon.$$

The dependent variable is the logarithm of LBO duration (years of being private between LBO and RLBO). The explanatory variables to proxy market conditions include average IPO underpricing in the past three months, logarithm of the total number of IPOs in the previous three months, and industry Tobin's Q; the explanatory variables to proxy PE group reputation include logarithm of buyout sponsor capital raised and/or vintage age. The control variables are logarithm of sales, debt ratio (total debt/assets), EBITDA/sales, and Tobin's Q, all measured at the year of IPO. The cross-sectional heteroscedastically robust *t*-statistics are reported in parentheses; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

	(1)	(2)	(3)	(4)	(5)
Constant	-0.023	-0.31	-0.28	-0.47	-0.51
	(0.78)	(0.95)	(0.86))	(1.12)	(1.33)
Log(sales)	0.073**	0.075***	0.077**	0.068**	0.075**
	(2.40)	(2.73)	(2.43)	(2.26)	(2.43)
Total debt/assets	0.092	-0.053	-0.029	-0.038	-0.031
	(0.77)	(0.49)	(0.23)	(0.32)	(0.25)
EBITDA/sales	0.880***	0.877***	0.688*	0.734**	0.687*
	(2.69)	(2.68)	(1.98)	(2.06)	(1.87)
Tobin's Q	-0.023	-0.023	-0.024	-0.025	-0.023
	(0.63)	(0.92)	(0.94)	(0.97)	(0.92)
IPO market average underpricing in previous 3 months	-0.296***	-0.307**	-0.401**	-0.419**	-0.403**
	(2.75)	(2.53)	(2.27)	(2.64)	(2.46)
Log(IPO numbers in previous 3 months)		0.024	0.028	0.033	0.028
		(0.49)	(0.53)	(0.64)	(0.51)
Log(buyout firm capital)			-0.021		-0.019
			(0.59)		(0.75)
Log(buyout firm vintage age)				-0.026	-0.007
				(0.56)	(0.34)
Industry Q					-0.053*
					(1.98)
Industry effects	Yes	Yes	Yes	Yes	Yes
LBO year effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.07	0.08	0.07	0.06	0.08
Number of observations	343	343	290	290	290

Table 7: Decision on Quick Flips and Its Effect on Performance

This table presents the results of the regressions of long-run performance on quick flip using Heckman's selection approach. Estimations are based on the following:

First step: Probit (*Quick Flip*) = $\alpha_0 + \alpha_1 \cdot$ *Control Variables* + ε

Second step: *Performance* = $\alpha_0 + \alpha_1$ *Quick Flip* + α_2 *Control Variables* + α_3 *Lambda* + ε.

Column 2 gives the first-step probit regression results for quick flips; Columns 3, 4, and 5 present the second-step OLS regression. The OLS regression in Column 3 uses EBITDA/sales; the probit regression in Column 4 uses a delisting dummy, and the OLS regression in Column 5 uses the buy-and-hold return. EBITDA/sales are calculated as the average of the years IPO, IPO+1, and IPO+2, measured at the end of the year and adjusted by industry median. The delisting dummy is set to 1 if a firm is delisted from the market within a three-year window post-IPO. The buy-and-hold return is measured three years following IPO and adjusted by the value-weighted market benchmark. Lambda is the inverse Mills ratio calculated from the first-step selection regression. The heteroscedastically robust *t*-statistics are reported in parentheses; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

	1ST Step Selection	Second-Step Regression		
	Quick Flips	Industry adjusted EBITDA/Sales	Delisting Dummy	36 months Buy-and-hold Return after IPO
Constant		0.041 (1.19)	0.137 (0.98)	-0.179 (0.49)
Quick flip dummy		-0.056* (1.87)	0.467* (1.72)	-0.072 (1.45)
Dummy for IPO debt reduction		0.023 (0.620)	0.192 (0.81)	0.033 (0.28)
Log(underwriter rank)		0.047 (1.07)	0.266 (0.20)	-0.011 (0.23)
IPO underpricing		-0.063*** (3.22)	0.185 (0.64)	-0.465* (1.69)
Buyout sponsor ownership before IPO		-0.021 (0.49)	-0.081 (0.17)	-0.735** (2.21)
Log(sales) at IPO year		-0.012 (0.35)	-0.032* (1.69)	-0.090* (1.78)
Firm assets before IPO/buyout sponsor size	-0.221* (1.61)			
Log(buyout sponsor capital)	-0.003 (0.97)			
EBITDA/sales prior to IPO	0.072* (1.73)			
Log(assets prior to IPO)	-0.004 (0.92)			
Log(total IPO numbers in previous 3 months)	0.162* (1.55)			

IPO market average underpricing in previous 3 months	0.518 (0.98)			
Lambda		-0.625*** (4.38)	-0.611 (0.38)	-0.352 (0.96)
R^2	0.06	0.18	0.23	0.08
Number of observations	272	272	272	272

Table 8: Ownership Structure of RLBOs and Sponsors' Post-IPO Presence

Panel A reports the summary statistics for the full sample of 594 RLBO firms (1981–2006) on the following characteristics: percentage of shares sold by buyout firm at IPO, buyout firm ownership before and after IPO, insider (management and directors) ownership before and after IPO, LBO holding years (years after LBO and before RLBO), buyout firm capital (total capital raised from the firm's inception to the year before RLBO), and buyout firm vintage age (the difference in years between the firm's founding and the RLBO). Panel B reports the ownership and board share of sponsors for a subsample of RLBOs between 1995, when SEC filings of proxy statements became available, and 2005.

Panel A: Whole Sample					
	Mean	Median	*SD*	Min	Max
Percentage of shares sold at IPO by buyout sponsors	6.35	0.00	18.23	-31.04	100
Buyout ownership before IPO	60.19	60.05	24.79	9.14	100
Insider ownership before IPO	54.18	59.60	35.41	0.00	100
Insider ownership immedaitely after IPO	34.68	37.85	26.55	0.00	96.6
LBO years (between LBO and RLBO)	3.75	2.83	2.82	0.25	17.5
Buyout firm capital ($ MIL)	4408.12	1794	6937.66	2.8	38990
Buyout firm vintage years	16.22	15	9.28	0.00	58
Panel B: Subsample from 1995–2005					
Buyout group ownership					
IPO year	39.77	39.65	20.10	1.70	84.08
IPO +1 year	32.36	30.82	20.94	0.00	79.80
IPO +2 year	26.91	23.40	21.57	0.00	77.10
IPO +3 year	23.95	21.05	21.81	0.00	76.20
Board share of leading buyout group (%)					
IPO year	38.35	37.50	19.07	0.00	88.90
IPO +1 year	32.05	30.00	17.31	0.00	87.50
IPO +2 year	28.14	25.00	16.67	0.00	77.78
IPO +3 year	25.26	25.00	15.74	0.00	70.00

Table 9: Duration of Sponsor's Post-IPO Exits

This table shows the regression results for buyout sponsor duration post-IPO (from RLBO to final exit). The Cox proportional duration regression is specified as follows:

$$h(t|x) = h(t)^* exp(\alpha_1 \cdot x_1 + \alpha_2 \cdot x_2 + \ldots + \alpha_N \cdot x_N) \qquad x = x_1, x_2, \ldots, x_N,$$

The dependent variable is the survival variable measuring duration of sponsor's presence post-IPO up to their full exit. The independent variables include EBITDA/sales (industry adjusted), logarithm of asset, debt ratio (debt/asset), Tobin's Q, stock performance (excess monthly stock return over value-weighted market), total number and average underpricing of all IPOs in the past three months, industry Q, market return (S&P 500 index), and buyout sponsor reputation (capital raised/vintage age). The heteroscedastically robust *t*-statistics are reported in parentheses; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

	1	2	3
Industry-adjusted EBITDA/sales	-3.378***	-3.662***	-3.661***
	(2.73)	(2.96)	(2.89)
Log(assets)	-0.006	-0.009	-0.008
	(0.16)	(0.38)	(0.23)
Total debt/assets	-0.229	-0.292	-0.276
	(0.34)	(0.44)	(0.42)
Tobin's Q	0.126***	0.122***	0.117***
	(6.22)	(5.13)	(3.68)
Excess stock monthly return over market	-0.901**	-0.105**	-0.101**
	(2.27)	(2.23)	(2.00)
Log(IPO numbers in previous 3 months)	0.382		
	(0.82)		
Average underpricing in previous 3 months		0.024	
		(0.44)	
Industry Q			0.058**
			(2.38)
Market return (S&P 500)			0.237
			(1.24)
Log(buyout firm capital)	0.019		0.021
	(0.39)		(0.86)
Log(1+buyout firm vintage age)		0.003	0.002
		(0.61)	(0.53)
Log likelihood	-1254.81	-1347.21	-1429.24
P -value, joint test	0.00	0.00	0.00
Number of observations	736	736	736

Table 10: Determination of Sponsor's Post-IPO Exit Choices

This table gives the results for the regressions of buyout sponsors' full exit decisions on cash flow and other firm characteristics for the 594 RLBOs (1981–2006). The probit regressions are specified as follows:

$$Exit\ Dummy = \alpha_0 + \alpha_1 \cdot Cash\ Flow + \alpha_2 \cdot Control\ Variables + \varepsilon.$$

In Columns 2 and 3, the dependent dummy equals 1 if the sponsors exited via takeover post-IPO, 0 otherwise; in Columns 4 and 5, it equals 1 if they exited via gradual distribution, 0 otherwise. In Columns 6 and 7, the analysis uses a multinomial probit regression in which the dependent dummy equals 1 if the exit was via takeover, 2 if via gradual distribution, and 0 otherwise. The independent variables include LBO duration, EBITDA/sales, Tobin's Q, debt ratio, sales, industry Q, and buyout reputation (capital raised/vintage age). The control variables include logarithm of assets and total-term debt/assets. The heteroscedasticaly robust *t*-statistics are reported in parentheses; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

	Probit		Probit		Multinomial probit	
	Y=1 if exit via takeover 0 otherwise		Y=1 if exit via gradual distribution, 0 otherwise		Y= 1 if exit via takeover 2 if gradual sale 0 otherwise	
Constant	-2.658	-1.232	-0.952	-0.505	-1.349	-2.928
	(0.89)	(1.92)	(0.91)	(0.73)	(2.38)	(2.07)
Log(LBO holding years)	-0.444*	-0.167	0.776*	0.832	-0.412*	0.905
	(1.62)	(1.01)	(1.58)	(1.54)	(2.11)	(1.37)
EBITDA/sales at IPO year	-0.713*	-1.448**	-0.707	-0.709	-0.103*	-0.880
	(1.64)	(2.23)	(0.40)	(0.42)	(1.84)	(0.62)
Tobin's Q at IPO year	-0.142	-0.029	0.104*	0.162*	-0.020	0.131*
	(1.33)	(1.03)	(1.69)	(1.80)	(0.26)	(1.67)
Debt/assets at IPO year	0.303	0. 347	-1.412	-1.552	0.214	-1.587
	(0.72)	(1.02)	(1.07)	(0.98)	(0.50)	(1.13)
Log(sales) at IPO year	0.061	0.072	-0.195	-0.204	0.212**	-0.235
	(0.80)	(1.16)	(0.45)	(0.65)	(2.44)	(0.45)
Industry Q		-0.033		0.257**	-0.017	0.306*
		(0.64)		(2.09)	(0.35)	(1.99)
Log(buyout firm capital)	0.256***	0.190***	-0.062	-0.108	0.394***	0.006
	(4.35)	(3.38)	(1.35)	(1.25)	(4.37)	(0.26)
Buyout sponsor ownership after IPO		1.212**		-0.376**		
		(2.50)		(2.38)		
Pseudo R^2	0.07	0.09	0.08	0.16		
Number of observations	272	198	272	198	272	

Table 11: Operating Performance Change around Sponsors' Full Exit

This table reports the summary statistics for RLBO operating performance around the year of the sponsors' final exit post IPO. Of the 594 RLBOs between 1981 and 2006, 64 had sponsors that have fully exited. The cross-sectional mean and median of the operating performance are reported for the following years: one year prior to exit, the year of exit, and one year following exit. The performance measures, ROA and EBITDA/sales, are adjusted by industry benchmarks in Panel A, and by industry and performance benchmarks (matching performance at two years before exit) in Panel B. The mean and median significance were tested using *t*-statistics and Wilcoxon *z*-statistics; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

Panel A: Industry (first 3 SIC digits) Benchmark

	1 year before exit (64 RLBOs)		Year of exit (64 RLBOs)		1 year after exit (64 RLBOs)		*P*-value, difference between -1 and +1 of exit year	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ROA (net income/assets) (%)	2.22**	1.75*	2.09*	1.38	1.67	0.87	0.16	0.22
EBITDA/sales (%)	6.19***	5.83***	5.77**	5.04***	4.28**	4.19***	0.23	0.38

Panel B: Industry (first 2 SIC digits) and Performance (matching EBITDA/sales at IPO-1 year) Benchmark

	1 Year before exit (64 RLBOs)		Year of exit (64 RLBOs)		1 Year after exit (64 RLBOs)		*P*-value, difference between -1 and +1 of exit year	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ROA (net income/assets) (%)	3.49***	2.24**	2.97***	2.08**	2.11**	1.43	0.10	0.13
EBITDA/sales (%)	5.41***	3.95***	4.82***	3.60***	3.21**	2.69**	0.09	0.11

Figure 1: Operating Performance of Quick Flips and other RLBOs around IPOs

Using the median value of EBITDA/sales for the years IPO-1, IPO, IPO+1, and IPO+2, this figure shows the operating performance of all RLBOs in the sample (1981–2006), including the 70 quick flips and the other RLBO companies. Annual accounting data are taken from COMPUSTAT.