

## **Do Buyout Sponsors Time RLBO to Exit?**

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### **Abstract**

This paper empirically examines whether buyout sponsors' time RLBO (Reverse Leverage Buyout) and their subsequent full exit decision. There is no evidence of performance timing in the sponsors' RLBO decision. RLBO companies do not experience significant deterioration of operating performance after IPOs. There is strong evidence of market timing. LBO duration is negatively related to market conditions, suggesting that sponsors spend less time in portfolio companies in hotter IPO period and with more favorable valuations. RLBOs with shorter LBO duration experience greater deterioration of performance after IPOs. Quick flipping – listing of immature LBOs, leads to poorer long-run performance. RLBO is not equivalent to exit. The buyout sponsors usually continue their ownership in the RLBO firms. The post IPO presence is longer when companies have higher cash flow. Reputable sponsors with greater ownership are more likely to exit via facilitating takeovers. Overall, buyout sponsor's exit choices are consistent with a value-maximization strategy.

**Keywords:** Private Equity, RLBO, Market Timing, Performance Timing, and Exit.

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## **Do Buyout Sponsors Time RLBO to Exit?**

### **1. Introduction**

The recent Initial Public Offering (IPO) market has witnessed a wave of Reverse Leveraged Buyouts (RLBOs). In 2005, approximately 53% of all IPOs were private equity-backed; in 2006, 42% of IPOs were RLBOs. Disproportional to the increasing importance of private equity in practice, little systematic study has been done, especially regarding issues such as the process through which buyout sponsors exit. This paper explores the rationales of buyout sponsors' RLBO decision and their subsequent full exit strategies.

Some public opinion suggests that buyout sponsors sell LBOs to public investors at inflated prices. This opinion may bear some truth, but ignores the reputation effects of private equity sponsors involved in repeated IPOs and the fact that buyout sponsors often marginally sell their stakes at the IPOs. Sponsors typically sell less than 7% of shareholdings at an IPO and continue ownership in the company several years after the IPO. Going public is therefore not equivalent to quick exit of buyout sponsors. Furthermore, Cao and Lerner's (2007) find that buyout-backed RLBOs outperform other IPOs in the long run, implying value creations by buyout sponsors. Quick cashing out might not be an optimal exit strategy for sponsors. A careful study of the exit strategy of buyout sponsors is therefore in need. This paper examines two closely related questions regarding sponsors' exit strategy. First, do buyout sponsors opportunistically time firm performance or market conditions when selling LBOs to public investors? Second, among several alternatives to cash out, which mechanism do buyout sponsors choose to ultimately exit in post IPO years?

In performance timing, buyout sponsors essentially take advantage of temporary improvement or positive shock to operating performance of the company for higher valuations. The temporary performance improvement right before IPOs is not sustainable

and the consequence is a drastic deterioration of operating performance after IPOs. DeGeorge and Zeckhauser (1993) document declines in operating performance for approximately 70 RLBO companies from the late eighties. This paper re-examines performance timing with a comprehensive sample of 594 RLBOs from 1981 to 2006 and find that the performance timing story is not robust in the new sample period except for the quick flips.

Buyout sponsor may also time RLBO to the IPO market conditions<sup>2</sup>. Favorable market conditions render buyout sponsors an incentive to overweight the benefits of cash proceeds from IPOs and underweight potential future benefits of keeping portfolio companies private. Market conditions therefore affects LBO duration -- the years of being private between LBO and RLBO, which proxies the years that sponsors spend on improving a portfolio company before selling it to public.<sup>3</sup> This paper documents that RLBO companies exhibit great heterogeneity in the years of being private. Some RLBO companies stayed private for a short period of time, e.g., less than a year, while others stayed private up to 10 years. Furthermore, the LBO duration is shorter when the IPO market is hotter or market valuation is higher, implying a market timing behavior in RLBO decision.

The majority buyout sponsors continue their ownership and monitoring role in RLBO firms. For example, in KKR's presence in Safeway Inc, it took KKR approximately three years holding Safeway as a portfolio company, while it took KKR more than 10 years to ultimately exit in Safeway after its IPO. RLBO only partially undoes the LBO structure. The presence of buyout sponsors in post IPO years can potentially continue to add value. It is therefore important to understand how buyout sponsors make decision on post IPO presence. In the spirit of Zingales (1995), sponsors' exit choices in post IPO years should maximize the ultimate returns that include both cash flow and control benefits. Some sponsors can choose to exit post IPO via facilitating takeovers, while others might prefer gradual distributions of shares to exit. Consistent with Zingales (1995) prediction, I find that the choices are explained by the firm cash

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<sup>2</sup> Altı (2005) shows that decision of going public is sensitive to IPO market conditions.

<sup>3</sup> Cao and Lerner (2007) find evidence that LBO duration is weakly and negatively related to the stock performance of RLBOs and that quick flips show poorer returns.

flow and ownership structure. Buyout sponsors are more likely to continue with post IPO presence (not to exit) in RLBO companies with more cash flow. Larger buyout sponsors are more likely to exit by facilitating a takeover post-IPO when their ownership is greater. These patterns are consistent with a rational decision of value-maximization.

Overall, this research contributes to the RLBO literature in the following four dimensions. First, it is the first paper providing a comprehensive and detailed understanding of sponsors RLBO decision and exit choices. Second, it uses a more comprehensive sample of 594 companies from 1981 to 2006 to reexamine the performance timing of RLBOs. Expansion of the dataset is important due to structural development<sup>4</sup> in the private equity industry over the last two decades. Third, the sample spans both hot and cold IPO markets, making it possible to examine the market timing behavior and the relationship between duration of LBOs and market conditions. For example, I find that quick flips - LBOs going public within less than a year of being private - are more common in hot markets. Finally, this paper examines how firms' cash flow, ownership structure, and sponsors' reputations affect the exit choices of buyout sponsors in post IPO year, providing empirical tests for Zingales (1995) in the context of RLBOs.

The rest of the paper is organized as follows. Section 2 provides a literature review and a background description. Section 3 discusses the data and empirical methodology. Section 4 presents the empirical results on performance timing and market timing. Section 5 presents the empirical results on exit patterns of buyout sponsors in post-IPO. Section 6 finally concludes the paper.

## **2. Backgrounds and Literature Review**

RLBOs are different from other IPOs or venture capitalist backed IPOs. Sponsored by private equity investors, RLBO companies usually have a highly leveraged

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<sup>4</sup> Fundraising by U.S. buyout funds was 36 times greater (in inflation-adjusted dollars) in 1998 than it was in 1985, and by 2006, it was more than one hundred times the level in 1985

capital structure. Furthermore, buyout sponsors have concentrated ownership and play an intensive monitoring role as active owners, sometimes controlling owners. Buyout sponsors invest in LBO companies through LBO funds. LBO funds are often contracted to last for a limited life, usually 10-12 years. The life cycle of the contractual arrangements means that buyout sponsors have increasing liquidity demands to exit from LBO companies as funds approach maturity. Buyout sponsors' compensation schemes are largely based on carried interest<sup>5</sup>. Such compensation structure gives buyout sponsors incentives to extract maximum profits from their investments within a short horizon. As buyout sponsors stand ready to cash out, their interests are not necessarily aligned with outside public shareholders. The potential conflict of interest between buyout sponsors and public investors can be mitigated by reputations.

Private equity is in a business to generate returns for their investors or limited partners. The faster they can do it, the better. There is a concern, however, that delivery of quick profits in LBOs is based on sacrificing public shareholders, particularly in quick-flipped RLBOs. Unlike other RLBOs, quick flips imply that buyout sponsors bring LBOs to public investors within a very short period after their LBO transactions (less than one year<sup>6</sup>). Quick flips have recently received scrutiny since public investors doubt buyout sponsors have time to make enough improvements on operation or governance. Figure 1 illustrates operating performance of RLBO firms that are quick flips and those are not. The median of EBITDA/sales of quick flips increases before the IPOs and decreases in post IPO years. In a contrast, other RLBOs do not show decline in EBITDA/sales. This peculiar pattern suggests that a possibility of performance propping up in quick flips compared to other RLBOs. Generally, investors are skeptic towards RLBOs. Chou et al. (2006) find positive and significant discretionary current accruals coincident with offerings of reverse LBOs between 1981 and 1999. They interpret their findings as evidence of earning management by insiders. The suspicion is whether buyout sponsors

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<sup>5</sup> Carried interest is a right to receive a specified share (20 percent to 25 percent) of the profits ultimately earned by an investment fund over some previously agreed upon benchmark return. General partner's carries depend on cash return of a given investment in general, while they have to be based on non-cash returns such as market value of securities when fund matures and assets are distributed to limited partners.

<sup>6</sup> I use other duration measures, such as less than one year and a half. The empirical evidence throughout the paper remains unchanged.

add any value in quick flips and whether sponsors face perverse incentives to flip certain firms quickly.

The general scrutiny towards RLBOs stems from the potential moral hazard problems in which buyout sponsors push problematic firms public with certain “inside knowledge.” For example, “problematic” LBO companies are flipped to the public before hidden “problems” unfold, thus sponsors transfer the expected bankruptcy risk and loss to public investors. There is a fairly large percentage of RLBO going delisted, about 61 delistings, or approximately 10% of the sample. Most of them went bankrupt by filing Chapter 11 or Chapter 7. In this paper, I relate the post IPO delisting probability to LBO duration. Such analysis would reveal whether buyout sponsors push immature LBOs public since these companies are more susceptible to bankrupt risks.

The interplay among buyout sponsors’ incentives and corporate decisions is a critical issue for researchers and investors. Particularly for PE-backed IPOs there is an on-going debate about the controversial role of buyout sponsors. The following case illustrates this hotly debated issue. Warner Music, a business that was bought in March 2004 for \$2.6 billion by a group led by Thomas H. Lee Partners and Edgar Bronfman Jr., was taken public 14 months later. Along the way, the sponsors had Warner 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, the firms still controlled a majority stake worth about \$2 billion after the offering. In fact, Warner Music rejected a buyout offer from EMI, another big music publisher, and as a defensive strategy, even made a counterbid. The Warner Music example raises some questions such as why the sponsors of Warner Music reject the takeover offer and quick cash. In what sense buyout sponsors are more likely to maintain an active role in RLBO companies post IPO?

Several studies, in addition to those mentioned in the previous introduction, are related to this paper. Muscarella and Vetsuypens (1990) argue that stock market listing is an exit mechanism for professional pre-IPO investors such as buyout sponsors. Brau et al. (2003) examine a choice of private firms between going public and selling to a publicly

traded buyer. They find that IPO route is favored over takeover when the firm size is large and the industry market-to-book ratio is low. Benninga et al (2005) link going public decisions to a possibility of sequential privatization (buyouts after IPOs). They relate these dynamic decisions to underlying cash flows and suggest that entrepreneurs make tradeoffs between benefits of control to keep firms private and benefits of value added as public firms. This paper focuses exclusively on IPO route, in which buyout sponsors' duration decision and subsequent exit strategies are related to market conditions and firm's cash flows.

Another strand of related literature studies the source of performance improvement and value creation in RLBOs. Holthausen and Larcker (1996) find that RLBO companies have better operating performance post-IPO than the industry average while companies' operating performance decreases as ownership concentration (of management and other insiders) decreases. One concern with the early works on RLBOs is they often use a small sample from the 1980s when the buyout market was in its rudimentary stage. Buyout markets and RLBOs have experienced many structural changes over time.

### **3. Data and methodology**

#### *3.1 Sample description*

Two criteria are set to define an RLBO transaction. First, LBO financing was undertaken/sponsored by a buyout group. Second, LBO investment was characterized by the immense use of leverage. Buyout firms/funds that primarily engage in buyout investment activities are identified from Thomson's VentureXpert and Standard and Poors' Capital IQ. Investments by buyout organizations that more closely resemble venture capital are excluded. The RLBO transactions are identified through several sources. The first of these is Securities Data Company's (SDC) Corporate New Issues database. The database flags IPOs with an identifier indicating that it had previously conducted a leveraged buyout. This gives us a sample of 229 RLBOs for the period from 1981 through the middle of 1998. The second approach was to search databases of LBOs, and seek to identify whether any transactions subsequently went public. I also searched

news stories, the SDC Corporate New Issues database, and employed the VentureXpert, SDC Mergers and Acquisitions databases, and Capital IQ. These sources generate an additional 297 RLBOs<sup>7</sup>. Finally, The more recent RLBOs between 2004 and 2006 are compiled from Dealogic and Factiva according to the same criteria specified above. The final sample includes 594 RLBOs from 1981 to 2006<sup>8</sup>.

The underwriter reputation data and IPO firm's founding year are obtained from Jay Ritter's website<sup>9</sup>. The underwriter reputation measure is the amended version of Carter and Manester (1990). The exit information and special dividends paid to sponsors pre-IPO are manually collected using Factiva press search. Ownership data and board information around IPO were collected from the IPO prospectuses. Post-IPO corporate governance and ownership data are collected from proxy statements at the SEC's EDGAR website. I required a three-year window of these data in post-IPO years. The availability of such data reduces sample size in regressions, which report the actual observations used in the analysis. The accounting data are obtained from COMPUSTAT and the accounting variables are measured at the end of the calendar or fiscal year. Return, price and delisting information are obtained from CRSP Monthly Stock database.

Table 1 presents the industry distribution of RLBO and overall IPO companies. Similar to each other, the majorities are focused in manufacturing. Personal business accounts for the second and retail the third. Table 2 shows the top 20 active LBO sponsors, the number of RLBO companies sponsored, average IPO size, and underpricing. Many buyout sponsors are repeated players in IPO markets with KKR sponsored 24 RLBO deals during the sample period, putting it on the top of the list. Table 3 summarizes the year distribution of RLBOs, types, and subsequent delisting or M&A activities. The RLBO distribution is highly correlated with the buyout cycles in a lag fashion. There are staggering 63 offerings in 1992, as many LBOs acquired in the late

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<sup>7</sup> There are overlaps between data from Capital IQ and SDC's ventureXpert.

<sup>8</sup> The complications of identify RLBO transactions are discussed in Cao and Lerner (2007). The criteria and procedure follows Cao and Lerner (2007) to ensure the quality of the final sample. The followings are excluded: companies with offer sizes below \$5 million, with 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 since there are a fair number of them in the sample.

<sup>9</sup> <http://bear.cba.ufl.edu/ritter>

80s return to public market following the first LBO wave. Year 1986 and 1987 observes 14 and 22 RLBO offerings respectively, but only four in 1988 and three in 1989 due to the collapse of the junk bond market around. RLBO firms stay private on average for 3.75 years; the median duration is 2.83 years. The LBO duration also fluctuates with the condition. Paying special dividends to buyout sponsors is a practice observed in recent years. Among all RLBOs, 70 deals (11.8% of the total sample) are quick flips, mostly took place in 1987 and late 90s when LBO and IPO were in hot markets. There are totally 61 firms subsequently delisted. 199 firms were subsequently acquired, suggesting that buyout sponsors play an important role in facilitating takeovers.

### 3.2 Methodology

Under the performance timing hypothesis, RLBO companies will exhibit drastic performance deterioration after going public. I use EBITDA/sales and ROA (net income/asset), measurements used in the previous literature, to measure the firm operating performance. I describe general patterns of operating performance of RLBOs around IPOs and in the post IPO years. Both the industry and the industry & performance matched benchmarks are used to adjust operating performance of RLBO companies post IPO.<sup>10</sup> Specifically, I also report the performance of sub-sample such as quick flips or those backed by younger or smaller PE. Furthermore, I explain the performance change difference in cross section.

$$\Delta Performance = \alpha_0 + \alpha_1 LBO\ Duration + \alpha_2 Reputation + \alpha_3 Controls + \varepsilon \quad (1)$$

where, the change in operating performance is measured by the increase of EBITDA/sales from one year before IPO or the year of IPO to two years after IPO. The dependent variables include size, leverage (debt-assets ratio) changes, sponsor's reputation, LBO duration, quick flip dummy, industry performance changes, year fixed effects, and IPO market condition. IPO market condition has two measures: aggregate numbers of IPOs or average underpricing of all IPOs in the past three months. IPO underpricing is measured as first-day return (close price at IPO deflated by offer price). These measures are also consistent with the previous literature, e.g., Alti (2005).

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<sup>10</sup> Barber and Lyon (1996) propose industry and performance benchmark is more robust to accounting measure reversals. Hotchkiss, Guo and Song (2008) find performance is sensitive to benchmark and recommend industry and performance matched benchmark.

Under the market timing hypothesis, IPO market condition affects RLBO decision. Buyout sponsors are more likely to quickly take LBOs public (hence RLBO) in more favorable IPO market conditions. There are two implications. First, there should be a negative relation between LBO duration and IPO market activities. LBO duration can also be related to the reputation measures of buyout sponsors. Second, quick flips should be more likely in hot market. On the other hand, the reputation effect may encourage the more reputable sponsors to spend more time in restructuring and improving LBOs before taking them public. In a multivariate regression, I analyze the determinants of LBO duration.

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

where, the dependent variable is the number of years that the firm stays private from LBO to RLBO. The explanatory variables include firm size, operating performance, leverage, company's cash flow, IPO market condition, industry's Q, and the sponsor reputation in the year of IPO. The reputation is measured with the capital historically managed by buyout sponsors and vintage age of sponsors, Cao and Lerner (2007). The vintage age is the difference between buyout sponsors' founding year and the portfolio firms' IPO year.

Furthermore, I use Heckman's selection regressions to investigate the likelihood of quick flip and its effects on the subsequent firm performance. There are two-steps in the estimation procedures:

$$1^{\text{st}} \text{ Step: Probit } (Quick\ Flip) = \alpha_0 + \alpha_1 \text{IPO condition} + \alpha_2 \text{Performance} + \alpha_3 \cdot \text{Controls} + \varepsilon$$

$$2^{\text{nd}} \text{ Step: } Performance = \alpha_0 + \alpha_1 \cdot Quick\ Flip + \alpha_2 \cdot \text{Controls} + \alpha_3 \cdot \text{Lambda} + \varepsilon \quad (3).$$

The first-step is a probit regression. The dependent variable is a dummy equal one when the RLBO is classified as *Quick Flip*, which means that the LBO duration is less than one year. The identifying instruments on the right hand-side include buyout sponsor reputation<sup>11</sup>, the relative size of LBO firms to their buyout sponsors' capital, RLBO firm's prior operating performance, and IPO market conditions. The sponsor reputation has two measurements: their historical capital under-management and vintage age. The relative size is to capture the economic significance. For example, sponsors may be more

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<sup>11</sup> In the setting of VC-backed IPOs, Gompers (1995) proposes "Grandstanding" Hypothesis, namely young venture capitalists bring very young portfolio companies public to add publicity for next fund raising.

likely to flip smaller firm. The last two variables are to capture the performance timing and market timing. In the second-step regression, I include *Lambda*, the inverse Mills Ratio imputed from the first-step Probit estimates as an additional control variable for selection. The dependent variable in second stage takes either EBITDA/Sales or a delisting dummy in post IPO years.

RLBO is not equivalent to quick and full exit of sponsors, since buyout sponsors can continue ownership and monitoring in post IPO periods. I document the ownership structure and board of RLBOs before and after IPOs. A duration survival analysis is used to examine the staged and complete exit of the buyout sponsors. Giot and Schwiendbacher (2007) adopt the same method in analyzing venture capitalist's exit of VC-backed IPOs. The Cox Proportional Hazard regression for survival analysis is specified as:

$$h(t|x) = h(t) * \exp(\alpha_1 \cdot x_1 + \alpha_2 \cdot x_2 + \dots + \alpha_N \cdot x_N) \quad x = x_1, x_2, \dots, x_N \quad (4),$$

where the dependent variable is a survival (not full exit) dummy for up to three years post-IPO. The dummy equals zero if the sponsor ownership is positive in the year t after IPO, one if the ownership drops to zero in the year t, and no longer observed once the value of one is observed. Parameter t takes the value of 0 to 3. The explanatory variables include operating performance, stock performance, Tobin's Q, cash flows, and sponsor reputation. Tobin's Q measures firm's growth opportunity as suggested by Kaplan and Zingales (1997). It is the ratio of the market value<sup>12</sup> of assets divided by the book value of assets. Cash flows are hypothesized to be positively associated with sponsor's presence after IPOs.

Buyout sponsors use two common mechanisms to exit: seeking takeovers (RLBOs will be acquired by third parties) and gradual distribution of shares (distributing to public investors or limited partners). Both binomial and multinomial analyses are used to examine the determinants of exit choice.

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

where *exit dummy* takes the value of one if the sponsor exit via takeover within three years after IPO, otherwise zero in the first binomial regression, or takes value one if the

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<sup>12</sup> The market value of assets equals the book value of assets 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).

sponsor exit via gradual share distribution within three years after IPO, otherwise zero in the 2<sup>nd</sup> binomial regression, or takes value one if takeover is used and two if gradual distribution is used, otherwise zero in the unordered multinomial regression.  $\Phi$  is a cumulative probability function for normal distribution. The independent variables of interests include cash flow, Tobin's Q, Industry Q, ownership structure, LBO duration, performance at IPO, and sponsor reputation.

#### **4. Empirical results on RLBO decision**

##### *4.1 Performance timing*

Performance timing hypothesis predicts firm performance deterioration after IPOs. Table 4 reports the key financial statistics and operating performance of RLBO firms from year IPO-1 to year IPO+2. Panel A reports the sample mean of key financial measures such as asset, employees, EBITDA/sales, sales grow, debt/asset, long-term debt/total debt and other leverage measures. The RLBO firms' asset and employees increase gradually over time around IPOs. Debt ratio (total debt/book assets) peaks at one year before IPO. The ratio of convertible debt and preferred stock/long-term debt decreases substantially after IPO. These decreases suggest that a large portion of equity-linked debt is either converted into common stock or retired. The unadjusted operating performance in panel A shows no consistent patterns of change: net ROA (net income/assets) gradually increases and peaks at IPO+1. Sales growth reaches its peak level at year of the IPO, and it gradually deteriorates afterwards. EBITDA/sales remain fairly stable around IPOs.

Panels B and C of table 4 report the adjusted performance. In panel B, EBITDA/sales and net income/asset are adjusted by industry benchmark. In panel C, both are adjusted by industry & performance benchmark. Adjusted EBITDA/sales and net income/asset do not exhibit performance deterioration after IPOs. Furthermore, they persistently outperform the benchmarks by 1% ~5%, which is consistent with DeGeorge and Zeckhauser (1993) and Holthausen and Larcker (1996). Given such persistence, the lack of performance deterioration cannot be explained by accounting manipulation.

However, in quick flips, there is a strong pattern of performance deterioration: both EBITDA/sales and net income/asset jump right before IPO and then drastically

decrease after the IPO. The evidence is robust for both mean and median. Therefore, performance timing hypothesis is supported by the full sample of RLBOs, but only the sub-sample of quick flips.

Table 5 presents the cross sectional regression results on performance (EBITDA/sales) changes from the year of IPO to the year of IPO+1 and from the year IPO to the year of IPO+2. Quick Flip dummy is no surprisingly negatively associated with performance deterioration. Decrease of debt and increase of LBO duration contribute to performance improvement significantly. Additional 1% of decrease in debt is associated with 0.1% ~ 0.16% increase in EBITDA/sales after IPO. The firm staying private one additional year brings almost 1% improvement in EBITDA/sales after IPO. These evidence shows that the LBO duration, hence sponsors' restructure efforts, has significant positive impact on operating performance of RLBOs.

More interestingly, the change of performance is negative associated with the average IPO underpricing in the three months before the firm goes IPO. That is, RLBOs issued in hotter IPO market conditions experience greater deterioration in operating performance. This evidence indicates a conditional performance timing behavior. Performance timing is more likely when the IPO market is hot. The results in table 5 are robust to other measures of performance such as ROA and the operating income before depreciation/sales.

#### *4.2 Market timing*

The capital market condition also affects the sponsors' decision to take the LBO firms IPO or exert more restructuring efforts. The market timing hypothesis predicts that the sponsors will shorten LBO duration and bring more immature LBO firms to public when they face more favorable IPO market. Table 6 presents the results of OLS regressions of LBO duration. It is positively associated with sales, since larger LBOs may require more effort for improvement. However, RLBO firms' LBO duration is significantly and negatively associated with the average IPO underpricing in three months before it goes public. So is it with the industry Tobin's Q. The evidence is

consistent with the hypothesis that buyout sponsors sell portfolio companies more quickly to public investors when general market valuations of companies are higher.

The extreme case of shortened duration is quick flip. Quick flip must be a deliberate choice made by buyout sponsors based on their information set regarding economic importance, firm quality, or market conditions. What determines the sponsor to flip certain firms not the others? How this selection may bias the performance after IPOs? Heckman's two-step procedure is used to answer these questions. The results are presented in table 7.

I find that firm assets relative to capital of buyout sponsors are positively associated with the likelihood of quick flip. That is, smaller firms are more likely to be quick-flipped. The aggregate number of IPOs in the past three months is positively associated with the likelihood of quick flip. That is, quick flip is more likely to occur in a "hotter" issue period. The coefficient of EBITDA/sales is positive and significant. This may due to two possibilities: firms with better operating performance need to stay private only shortly; or sponsors are more likely to flip firms with temporary performance peak (performance timing). The latter possibility is also consistent with early finding that performance timing is more likely in the hot IPO markets. To further explore this possibility, I compare the performance of the quick flip sub-sample and other IPOs right before they going public and afterwards. Figure 1 shows that quick flips show more increase in performance right before the IPOs and greater deterioration afterwards. It become obvious that an LBO firm become a natural quick flip candidate if its performance happen to peak at hot IPO periods.

In the second stage of Heckman analysis, I include both the quick flip dummy and the inversed Mills ratio to explain firm performance. The average EBITDA/sales in the three years after the IPO is significantly and negatively associated with both measures. Quick flip dummy also significantly increase the likelihood of firm delisting within 5 years after the IPO, but not the inversed Mill ratio. These evidence reveals that, controlling for the selection bias, performance of quick flipped firms are more likely to deteriorate after IPOs and subsequently be delisted. The link is that sponsors shorten

duration when time the market and shortening of duration leads to deterioration of performance.

## **5. Empirical Results on Exit Choices**

### *5.1 Sponsors' Post-IPO presence*

Table 8 reports the ownership structure of RLBOs around IPOs and in the post IPO years. Buyout sponsors on average hold approximately 60% of equity ownership prior to IPO, and their ownership level decreases to 40% right after IPO. This decrease is partly due to share dilution and partly due to stock sales in IPO. Since, buyout sponsors sell a very small fraction of equity ownership in IPOs, I report in Panels B and C summary statistics of sponsors' ownership level and percentage of board directors affiliated with buyout groups after IPOs. Buyout sponsors continue to hold significant equity stakes in the long run. Their ownership decreases from about 32% to 24% from the year of IPO+1 to the year of IPO+3. Similarly, sponsors hold significant board share, the percentage of buyout affiliated directors decreases from 32% to 25% from the year of IPO+1 to the year of IPO+3.

Capital managed by the sponsors and the vintage years show large cross-sectional variations. The largest buyout sponsor has about \$39 billion of capital raised, while the smallest one has less than \$5 million. Vintage age, however, does not distinguish between nonexistent and existent private equity firms.

In this section I will empirically study the full exit of buyout sponsors from the RLBO companies. Since LBO funds have limited life, sponsors have a greater impetus to exit from RLBO companies that have been held for a longer time, due to liquidity requirements. To control for this unobserved factor, I employ duration analysis with survival approach. The Cox proportional hazard regressions are used, as specified in equation (3). The regression results are presented in Table 8. In a five-year window post-IPO, if sponsors do not completely sell their stakes in a RLBO company, the company stays in the duration analysis.

The duration of post IPO presence is decreasing in cash flow while increasing in Tobin's Q. The coefficient of EBITDA/sales is negative and significant while the coefficient of Q is statistically significant and positive. This evidence indicates that buyout sponsors are more likely to extend post IPO duration in RLBO companies with more operating cash flow while sponsors are more likely to time their exit (reduce duration) when companies have higher valuations. Buyout sponsors are also more likely to retain stakes in RLBO companies with better stock performance, those winning companies. General market conditions have impacts on post IPO duration: the coefficient of industry Q is positive and significant while the coefficient of the market returns (S&P 500) is positive and insignificant. The overall evidence in Table 8 provides new tests for Zingales (1995). The incumbent buyout sponsors continue their presence post-IPO to extract cash flow benefits when firms have more operating cash flow, at the same time, buyout sponsors are more likely to quickly get out (shorten their duration of post IPO presence) when firms face higher external valuations.

### *5.2 exit strategies*

Table 9 provides the evidence that buyout sponsors make exit decisions in a heterogeneous way according to RLBO companies' fundamentals and their reputations. I examine sponsor's exit either via takeovers or via gradual distributions of shares. Buyout sponsors' exit strategy should be consistent with an incentive to maximize benefits of both cash flow rights and control rights. Columns 2 and 3 report the multivariate analysis of sponsor's exit via facilitating takeovers post-IPO. The regressions use Probit approach. The dependent variable uses a dummy that is set to one if RLBO firms are subsequently acquired by a third party within three years after going public, zero otherwise. Columns 4 and 5 report the Probit analysis of sponsor's exit via gradual distributions of shares. The dependent variable uses a dummy that is set to one if sponsor's ownership drops to zero without takeovers (typically sponsors distribute shares to investors), zero otherwise. In both cases, subsequent exit probability decreases with cash flow measures such as EBITDA/sales, suggesting sponsors keep their presence post-IPO for more cash flow rights. The probability of exit via takeover is increasing in sponsors' ownership, while it is decreasing in exit via distributions. The evidence suggests that sponsors extract more

control rights by facilitating takeover to exit and that sponsors are reluctant to distribute all shares when ownership is highly concentrated.

Columns 6 and 7 present the multinomial Probit analysis of two exit alternative choices: exit via takeovers and exit via gradual distributions of shares. The probability of sponsor's exit via distributions is increasing in Tobin's Q while Q is not related to the probability of exit via takeovers. The evidence suggests among various exit choices, sponsors are more likely to choose to exit via distributing shares when companies have higher valuations. Sponsors are more likely to choose to exit via takeovers when RLBOs have larger size and with longer duration. The coefficient of buyout sponsor's reputation stakes is only significant in the choice of exit via takeovers but not distributions of shares. The evidence suggests that more reputable sponsors are more likely to choose to exit via takeovers than exit via distributions of shares.

The overall evidence in Table 9 is consistent with the rational exit choice of buyout sponsors who seek to maximize both benefits of cash flow rights and control rights. Overall, the probability of exit is decreasing in cash flow of RLBO companies. Concentrated ownership structure is likely to be preserved, as buyout sponsors are more likely to choose to exit via facilitating takeovers when their ownership is greater.

### *5.3 Firm performance around sponsor exit*

If buyout sponsors' presence helps to improve operating performance of RLBO companies, their full exit results in an absence of monitoring, which might cause performance deterioration. I therefore empirically examine the operating performance of RLBOs around the year of the full exit. Table 10 reports the performance of RLBO companies adjusted by benchmarks and compares the operating performance between one year before and one year after the year of the exit.

Operating performance measures such as ROA and EBITDA/sales exhibit weak pattern of deterioration after buyout sponsors fully exit from RLBOs post-IPO. The evidence of performance drop is fairly weak since the mean difference is either marginally significant or insignificant. One possibility is a selection issue: buyout

sponsors are more likely to exit quickly if they have with less concentrated ownership. The weak evidence suggests, nevertheless, buyout sponsors' presence helps improve operating efficiency.

## **6. Conclusion**

This paper examines performance timing and market timing of buyout sponsors in RLBO and subsequent exit decisions post IPO. In sharp contrast to the early studies such as DeGeorge and Zeckhauser (1993), this study finds that RLBO companies from 1981 to 2006 do not experience significant deterioration in operating performance in post-IPO years, except for the quick-flips. Buyout sponsors time the market in RLBOs: duration from LBO to RLBO is negatively related to general IPO market conditions and industry valuations. Quick flips are more likely to occur among RLBOs when the firm has smaller size, temporary improvement of operating performance, and in hotter IPO periods. Consequently, quick flip shows poorer operating performance and a greater probability of delisting post-IPO.

Buyout sponsors sell little share in IPO remain presence post IPO in the long run. They choose the duration of their post-IPO presence according to companies' fundamentals and market conditions. Buyout sponsors choose exit alternative choices consistent with a motive to extract more benefits of cash flow right and control rights. Sponsors are more likely to continue their presence in firms with more cash flow, choose to exit via takeovers in RLBOs with greater ownership, but exit via gradual distributions of shareholdings when RLBOs have higher valuation. Finally, more reputable buyout sponsors are more likely to facilitate takeovers in their exit strategies.

In a short conclusion: there is no performance timing in RLBOs. Sponsors keep significant ownership post-IPO and continue an important monitoring role, and the decision of duration for both LBOs and post-IPO presence consistent with a value maximization strategy for more benefits of cash flow and control rights.

## References

- Alti, Aydogan, IPO Market Timing, *Review of Financial Studies* 2005; 18; 1105-1138
- Barber, Brad M., and John D. Lyon, Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 1997; 43; 341-372
- Black, Bernard S., and Ronald J. Gilson, Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets, *Journal of Financial Economics* 1998; 47; 243–277
- Brau, James C., Bill Francis, and Ninon Kohers, the Choice of IPO versus Takeover, *Journal of Business* 2003; 76; 583–612
- Cao, Jerry X., and Joshua Lerner, the Performance of Reverse Leveraged Buyouts, *NBER Working Paper* 2007
- Carter, R., Manaster, S., Initial public offerings and underwriter reputation, *Journal of Finance* 1990; 45; 1045–1067
- Chou, De-Wai, Michael Gombola, and Feng-Ying Liu, Earnings Management and Stock Performance of Reverse Leveraged Buyouts, *Journal of Financial and Quantitative Analysis* 2006; 41; 407-437
- Degeorge, Francois, and Richard Zeckhauser; the Reverse LBO Decision and Firm Performance: Theory and Evidence, *Journal of Finance* 1993; 48; 1323-48
- Demsetz, Harold, and Kenneth Lehn, the Structure of Corporate Ownership: Causes and Consequences, *Journal of Political Economy* 1985; XCIII; 155–77
- Edie Hotchkiss, Shourun Guo and Weihong Song, Do Leveraged Buyouts Create Value? *Boston College working paper* 2008
- Holthausen, Robert W., and David F. Larcker, the Financial Performance of Reverse Leveraged Buyouts, *Journal of Financial Economics* 1996; 42; 293-332.
- Gior, Pierre and Armin Schwienbacher, IPO, Trade Sales and Liquidations: Modeling Venture Capital Exits Using Survival Analysis, *Journal of Bank and Finance* 2007; 31; 679-702.
- Gompers, Paul, and Josh Lerner, Venture Capital Distributions: Short-run and Long-run Reactions, *Journal of Finance* 1998; 53; 2161-2183
- Gompers, Paul, and Josh Lerner, Conflict of Interest in the Issuance of Public Securities: Evidence from Venture Capital, *Journal of Law and Economics* 1999; 42; 1-28

Jensen C. Michael, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, *American Economics Review* 1986; 76; 323-329

Kaplan, Steven N., The Effects of Management Buyouts on Operating Performance and Value, *Journal of Financial Economics* 1989; 24; 217-254

Kaplan, Steven N., and Jeremy C. Stein, the Evolution of Buyout Pricing and Financial Structure in the 1980s, *Quarterly Journal of Economics* 1993; 108; 313-357

Kaplan, Steven N., and Luigi Zingales, Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints, *Quarterly Journal of Economics* 1997; 112; 169-216

Metrik, Andrew and Ayako Yasuda, The Economics of Private Equity, 2007, *Working paper*

Muscarella, Chris J., and Michael R. Vetsuypens, Efficiency and Organizational Structure: A Study of Reverse LBOs, *Journal of Finance* 1990; 45; 1389-1413

Ritter, Jay R. and Ivo Welch, A Review of IPO Activity, Pricing, and Allocations, *Journal of Finance* 2003; 57; 1795-1828

Zingales, Luigi, Insider Ownership and the Decision to Go Public, *Review of Economics Studies* 1995; 62; 425-448

**Table 1: Industry Distribution of RLBOs**

The sample includes 594 RLBOs between 1981 and 2006. This table reports the industry distribution of RLBOs. The IPO data set is from the SDC new issues. IPOs with an offer size below \$5 million, price below \$5.00 per share, unit offers, closed-end funds, ADRs, and IPOs not listed on CRSP within six months of issuing are excluded.

	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%
Tele-Communications	1.28%	1.01%
Other Industry	6.40%	15.74%

**Table 2: Frequency Distribution of RLBOs according to Sponsors**

The sample includes 594 RLBOs between 1981 and 2006. This table reports the distribution of RLBOs for 20 most active sponsors. The table reports the average first-day return, gross proceeds and money left on table according to leading buyout sponsor. The IPO data set is from the SDC new issues. IPOs with an offer size below \$5 million, price below \$5.00 per share, unit offers, closed-end funds, ADRs, and IPOs not listed on CRSP within six months of issuing are excluded.

	Deal Number	Average Gross Proceeds (Million USD)	Money Left on Table (Million 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: Sample Description of RLBOs**

This table reports the year-number distribution of RLBOs, LBO duration (Years Between LBO and RLBO), quick flips, post-IPO delisting and mergers, and the sum of market capitalization (first day or earliest available after IPO) of RLBOs in every year. The sample consists of 594 RLBOs between 1981 and 2006.

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

**Table 4: Performance and Key Financial Measures of RLBOs Around IPOs**

This table reports performance and debt dynamics of RLBOs around IPO years. The sample includes 594 RLBOs between 1981 and 2006. Cross-sectional mean for the years of IPO-1, IPO, IPO+1 and IPO+2 are reported. The performance measures include ROA, EBITDA/sales, sales growth and EBIT/sales. The leverage measures include: total debt/asset, debt equity ratio, current ratio (defined as current asset/current liabilities), interest coverage (defined as EBITDA/interest expense), subordinated debt/long-term debt, convertible debt & preferred stock/long-term debt, debt maturing in 2<sup>nd</sup> and 4<sup>th</sup> year/long-term debt, and the percentage of credit rating as investment grade. Panel B reports the industry adjusted performance for All RLBOs and Quick Flip sub-sample. Panel C reports the performance adjusted by industry and performance matched (at year IPO-1) benchmark. The t-statistics and Wilcoxon z-statistics are used to test the mean and median significance. The \*, \*\*, and \*\*\* indicate respectively the 10%, 5% and 1% significance level.

		IPO-1	IPO	IPO+1	IPO+2	
<i>Panel A: Key financial statistics</i>						
Asset (\$ million)		799.69	835.82	904.66	968.32	
Employee (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/Asset (%)		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 & 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	
<i>Panel B: Industry (first 3-SIC digits) benchmark</i>						
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*
<i>Panel C: Industry (first 2 SIC digits) and performance (matching EBITDA/Sales at IPO-1 year) benchmark</i>						
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

**Table 5: Multivariate Analysis of Operating Performance Change**

This table reports the results of OLS regressions of the changes in EBITDA/sales for RLBO companies. The sample includes 594 RLBOs between 1981 and 2006. The regression is specified as:

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

The dependent variables include the change of EBITDA/sales from IPO to IPO+1 in columns 2 and 3, and the change of EBITDA/sales from IPO to IPO+2 in columns 4 and 5. The independent variables include LBO duration, quick flip dummy, change in debt ratio, firm asset, industry's change of EBITDA, sponsor's capital raised, and average IPO underpricing/aggregate number of new IPOs in the last three months. The regressions also control the year fixed effects. The \*, \*\*, and \*\*\* indicate respectively the 10%, 5% and 1% significance level. The heteroscedastic-robust t-statistics are reported in the parenthesis.

	$\Delta$ EBITDA/Sales from IPO to IPO+1	$\Delta$ EBITDA/Sales from IPO to IPO+1	$\Delta$ EBITDA/Sales from IPO to IPO+2	$\Delta$ EBITDA/Sales from IPO to IPO+2
	1	2	3	4
Constant	-0.098 (1.52)	-0.130 (1.24)	0.056 (0.19)	0.071 (0.28)
Log(LBO Duration)	0.014 (0.81)		0.032* (1.80)	
Quick Flip Dummy	-0.023 (0.95)	-0.024* (1.78)	-0.023 (0.91)	-0.037* (1.98)
$\Delta$ Debt Ratio	-0.102* (1.75)	-0.113* (1.86)	-0.162** (2.60)	-0.131** (2.13)
Log(Asset)	0.009 (1.43)	0.009 (1.40)	-0.003 (0.37)	0.002 (0.64)
Change in industry's EBITDA/sales	0.168 (0.99)	0.182 (0.87)	0.238 (1.47)	0.307 (1.19)
Log(Buyout Sponsor's Capital)	0.001 (0.10)	0.001 (0.09)	0.002 (0.20)	0.004 (0.59)
Average IPO market's underpricing	-0.274* (1.89)		-0.325** (2.21)	
Log(IPO Numbers in last 3 months)		-0.033 (0.65)		-0.042 (0.77)
Year Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.03	0.04	0.04	0.07
Observations	290	290	290	290

**Table 6: Multivariate Analysis of the LBO Duration**

This table presents the results of the OLS regressions of buyout sponsors' LBO Duration on cash flow and other firm characteristics. The sample includes 594 RLBOs between 1981 and 2006. The OLS regressions are specified as:

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

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

	(1)	(2)	(3)	(4)	(5)
Constant	-0.023 (0.78)	-0.31 (0.95)	-0.28 (0.86)	-0.47 (1.12)	-0.51 (1.33)
Log(Sales)	0.073** (2.40)	0.075*** (2.73)	0.077** (2.43)	0.068** (2.26)	0.075** (2.43)
Total Debt/Asset	0.092 (0.77)	-0.053 (0.49)	-0.029 (0.23)	-0.038 (0.32)	-0.031 (0.25)
EBITDA/Sales	0.880*** (2.69)	0.877*** (2.68)	0.688* (1.98)	0.734** (2.06)	0.687* (1.87)
Tobin's Q	-0.023 (0.63)	-0.023 (0.92)	-0.024 (0.94)	-0.025 (0.97)	-0.023 (0.92)
Average Underpricing in last 3 months	-0.296*** (2.75)	-0.307** (2.53)	-0.401** (2.27)	-0.419*** (2.64)	-0.403** (2.46)
Log(IPO Numbers in last 3 months)		0.024 (0.49)	0.028 (0.53)	0.033 (0.64)	0.028 (0.51)
Log(Buyout Firm's Capital)			-0.021 (0.59)		-0.019 (0.75)
Log(Buyout Firm's Vintage age)				-0.026 (0.56)	-0.007 (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 <sup>2</sup>	0.07	0.08	0.07	0.06	0.08
Number of Observations	343	343	290	290	290

**Table 7: Decision of Quick Flips and its Effect on Performance With Selection Approach**

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

$$\begin{aligned} \text{First Step:} \quad & \text{Probit (Quick Flip)} = \alpha_0 + \alpha_1 \cdot \text{Control Variables} + \varepsilon \\ \text{Second Step:} \quad & \text{Performance} = \alpha_0 + \alpha_1 \text{ Quick Flip} + \alpha_2 \text{ Control Variables} + \alpha_3 \text{ Lambda} + \varepsilon. \end{aligned}$$

Column 2 presents the first-step Probit regression results for quick flips; Column 3 presents the second-step OLS regression on EBITDA/sales, and Column 4 the second-step Probit regression on subsequent delisting dummy. EBITDA/sales is calculated as the average of the following three years: IPO, IPO+1 and IPO+2, measured at the end of year and adjusted by industry median. Delisting dummy is set to 1 if a firm is delisted from the market within a 3-year window post-IPO. *Lambda* is the inverse Mills Ratio. The heteroscedastic robust t-statistics are reported in the parenthesis. The \*, \*\* and \*\*\* indicates the 10%, 5% and 1% significance level respectively.

	First-Step Selection	Second-Step Regression	
	Quick Flips	Industry adjusted EBITDA/Sales	Delisting Dummy
	(1)	(2)	(3)
Constant		0.041 (1.19)	0.137 (0.98)
Quick Flip Dummy		-0.056* (1.87)	0.467* (1.72)
Dummy for IPO Debt Reduction		0.023 (0.620)	0.192 (0.81)
Log(Underwriter Rank)		0.047 (1.07)	0.266 (0.20)
IPO Underpricing		-0.063*** (3.22)	0.185 (0.64)
Buyout Sponsor's Ownership before IPO		-0.021 (0.49)	-0.081 (0.17)
Log(Sales) at IPO year		-0.012 (0.35)	-0.032* (1.69)
Firm Asset before IPO/Buyout Sponsor Size	-0.221* (1.61)		
Log(Buyout Sponsor's Capital)	-0.003 (0.97)		
EBITDA/Sales prior to IPO	0.072* (1.73)		
Log(Asset prior to IPO)	-0.004 (0.92)		
Manufacturing Dummy	0.003 (0.09)		
Log(total IPO Numbers in last 3 months)	0.162* (1.55)		
Average Underpricing in last 3 months	0.518 (0.98)		
Lambda		-0.625*** (4.38)	-0.611 (0.38)
R <sup>2</sup>	0.06	0.18	0.23
Observations	272	272	272

**Table 8: Ownership Structure of RLBOs and Sponsors' post-IPO presence**

The sample includes 594 RLBO firms between 1981 and 2006. Panel A reports the summary statistics for the whole sample on the following characteristics: percentage of shares sold by buyout firm at IPO, buyout firm's ownership before IPO and after IPO, insider's (management and directors) ownership before and after IPO, LBO holding years (years after LBO and before RLBO), buyout firm's capital (total capital raised since the inception of buyout firm and before the RLBO year), and buyout firm's vintage age (the difference in years between the founding of buyout firm and RLBO). Panel B reports the ownership and board share of sponsors for a sub-sample of RLBOs between 1995 and 2005.

<i>Panel A: Whole sample</i>					
	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 right following 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's Capital (Mil \$)	4408.12	1794	6937.66	2.8	38990
Buyout Firm's Vintage Years	16.22	15	9.28	0.00	58

  

<i>Panel B: Sub-sample<sup>13</sup> from 1995-2005</i>					
Buyout Group's Ownership					
	Mean	Median	SD	Min	Max
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 (%)					
	Mean	Median	SD	Min	Max
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

<sup>13</sup> The sub-sample is used due to the availability of SEC filing for proxy statement after 1995.

**Table 9: Duration Analysis of Sponsor's Exit Post-IPO**

This table presents the results of the regressions of buyout sponsors' duration post-IPO (from RLBO to final exit) on cash flow and other firm characteristics in IPO year. The sample includes 594 RLBOs between 1981 and 2006. The Cox Proportional Duration regression is specified as:

$$h(t|x) = h(t) \cdot \exp(\alpha_1 \cdot x_1 + \alpha_2 \cdot x_2 + \dots + \alpha_N \cdot x_N) \quad x = x_1, x_2, \dots, x_N$$

where the dependent variable is the survival variable measuring duration of sponsor's presence post-IPO until sponsors fully exit. The independent variables include EBITDA/sales (industry adjusted), logarithm of asset, debt ratio, 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's reputation (capital raised/vintage age). The heteroscedastic robust t-statistics are reported in the parenthesis. The \*, \*\* and \*\*\* indicates the 10%, 5% and 1% significance level respectively.

	1	2	3
Industry-adjusted EBITDA/sales	-3.378*** (2.73)	-3.662*** (2.96)	-3.661*** (2.89)
Log(asset)	-0.006 (0.16)	-0.009 (0.38)	-0.008 (0.23)
Total Debt/Asset	-0.229 (0.34)	-0.292 (0.44)	-0.276 (0.42)
Tobin's Q	0.126*** (6.22)	0.122*** (5.13)	0.117*** (3.68)
Excess Stock Monthly Return over Market	-0.901** (2.27)	-0.105** (2.23)	-0.101* (2.00)
Log(IPO Numbers in last 3 months)	0.382 (0.82)		
Average Underpricing in last 3 months		0.024 (0.44)	
Industry Q			0.058** (2.38)
Market Return (S&P 500)			0.237 (1.24)
Log(Buyout Firm's Capital)	0.019 (0.39)		0.021 (0.86)
Log(1+Buyout Firm's Vintage age)		0.003 (0.61)	0.002 (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 Exit Choices Post-IPO**

This table presents the results of the regressions of buyout sponsors' full exit decision on cash flow and other firm characteristics. The sample includes 594 RLBOs between 1981 and 2006. The probit regressions are specified as:

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

In columns 2 and 3, the dependent dummy equals 1 if exit via takeover post-IPO, 0 otherwise. In columns 4 and 5, it equals 1 if exit via gradual distribution, 0 otherwise. In columns 6 and 7, the analysis uses a multinomial probit regression. The dependent dummy equals 1 if exit via takeover, 2 if exit 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). Control variables include logarithm of asset and total-term debt/asset. The heteroscedastic robust t-statistics are reported in the parenthesis. The \*, \*\* and \*\*\* indicates the 10%, 5% and 1% significance level respectively.

	Probit		Probit		Multinomial	
	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	
	(1)	(2)	(3)	(4)	(5)	
Constant	-2.658 (0.89)	-1.232 (1.92)	-0.952 (0.91)	-0.505 (0.73)	-1.349 (2.38)	-2.928 (2.07)
Log(LBO Holding Years)	-0.444* (1.62)	-0.167 (1.01)	0.776* (1.58)	0.832 (1.54)	-0.412* (2.11)	0.905 (1.37)
EBITDA/Sales at IPO year	-0.713* (1.64)	-1.448** (2.23)	-0.707 (0.40)	-0.709 (0.42)	-0.103* (1.84)	-0.880 (0.62)
Tobin's Q at IPO year	-0.142 (1.33)	-0.029 (1.03)	0.104* (1.69)	0.162* (1.80)	-0.020 (0.26)	0.131* (1.67)
Debt/Asset at IPO year	0.303 (0.72)	0.347 (1.02)	-1.412 (1.07)	-1.552 (0.98)	0.214 (0.50)	-1.587 (1.13)
Log(Sales) at IPO year	0.061 (0.80)	0.072 (1.16)	-0.195 (0.45)	-0.204 (0.65)	0.212** (2.44)	-0.235 (0.45)
Industry Q		-0.033 (0.64)		0.257** (2.09)	-0.017 (0.35)	0.306* (1.99)
Log(Buyout Firm's Capital)	0.256*** (4.35)	0.190*** (3.38)	-0.062 (1.35)	-0.108 (1.25)	0.394*** (4.37)	0.006 (0.26)
Buyout Sponsor's Ownership After IPO		1.212** (2.50)		-0.376** (2.38)		
Pseudo R <sup>2</sup>	0.07	0.09	0.08	0.16		
Number of Observations	272	198	272	198	272	

**Table 11: Univariate Analysis of Operating Performance Change around Exit of Sponsors**

This table reports the summary statistics for operating performance of RLBOs around the year of final exit by sponsor post-IPO. Among the 594 RLBOs between 1981 and 2006, there are 64 RLBOs in which sponsors have fully exit. The cross-sectional mean and median of the operating performance are reported for the following years: 1 year prior to exit, the year of exit and one year following exit. The performance measures include ROA and EBITDA/sales, adjusted by industry benchmarks in Panel A, and by industry and performance benchmarks (matching performance at 2 years before exit) at Panels B. The \*, \*\*, and \*\*\* indicate respectively the 10%, 5% and 1% significance level. The t-statistics and Wilcoxon z-statistics are used to test the mean and median significance.

<i>Panel A: industry (first 3-SIC digits) benchmark</i>								
	1 Year before Exit (64 RLBOs)		Year of Exit (64 RLBOs)		1 Year after Exit (64 RLBOs)		P-Value of the Difference between -1 and +1 of Exit Year	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ROA (Net Income/Asset (%))	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
<i>Panel B: Industry (first 2 SIC digits) and performance (matching EBITDA/Sales at IPO-1 year) benchmark</i>								
	1 Year before Exit (64 RLBOs)		Year of Exit (64 RLBOs)		1 Year after Exit (64 RLBOs)		P-Value of the Difference between -1 and +1 of Exit Year	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ROA (Net Income/Asset (%))	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

## Appendix

This figure presents the operating performance of quick flips and other RLBO companies around IPOs. The sample included 594 RLBOs between 1981 and 2006. Among them, there are 70 quick flips. The figure presents the median value of EBITDA/sales for the following four years around IPOs: IPO-1, IPO, IPO+1, and IPO+2. The annual accounting data is from COMPUSTAT.

