**Are Buyout Sponsors Market Timers in RLBOs?**


## Abstract

This paper examines the exit strategy of buyout sponsors in RLBOs (Reverse Leveraged Buyouts). LBO restructuring decision is affected by the market timing of sponsors. LBO duration is negatively related to hot IPO market proxy and industry valuation, suggesting sponsors spend less time in LBOs under favorable external market conditions. RLBOs with shorter LBO duration experience greater deterioration of performance after IPOs. Listing of immature LBOs (quick flip) leads to a high probability of financial distress. Buyout sponsors continue exiting post IPO. They keep shorter post-IPO presence when RLBOs have higher cash flow. Reputable sponsors with greater ownership are more likely to exit via facilitating takeovers.



*Keywords:* Private Equity, RLBO, Market Timing, LBO Duration, Exiting

*JEL Classification:* G24, G32

## 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 IPO process through which buyout sponsors exit LBO investments. For example, in a recent C-suite survey[1] of chief executives, chief financial officers and chief operating officers, the participants were concerned about private equity whether they are "merely financial engineers who go in there, lever debt up, cut costs and pump the thing out (exit) some time later". This paper therefore fills the gap by exploring the rationales of buyout sponsors' RLBO decision and analyzing their subsequent exit patterns.

Kaplan and Stromberg (2008) recently suggest that private equity investors "take advantage of market timing (and market mispricing) between debt and equity market particularly in the public-to-private transactions". This paper essentially studies whether private equity investors take advantage of market timing in RLBO, the private-to-public transactions. Alti (2005) argues that the decision to go public is sensitive to IPO market conditions – high offer price realizations have positive spillover effects and attract more subsequent IPOs. Buyout sponsors, as experienced repeated players, might be able to react to IPO market conditions choosing whether and when to take LBOs public vs. holding them privately.

Cao and Lerner (2007) find that buyout-backed RLBOs outperform other IPOs in the long run, providing evidence of value creations by buyout sponsors. Buyout sponsors often marginally sell their stakes at the IPOs, by less than 7% of shareholdings at an IPO on average. Sponsors seem to continue ownership in the companies several years after their IPOs. Going public is therefore not equivalent to quick exit/cashing out of buyout sponsors. They are likely to play an important role in post IPO presence: as active investors rather than passive shareholders.

[1] A Canadian survey of executives at public companies on issues such as business and economy.

Private equity as an active owner will potentially continue to add value since they are specialized in monitoring and oversight[2].

This paper herein examines two closely related questions regarding sponsors' role as they exit through an IPO route. First, do buyout sponsors opportunistically time operating performance (performance timing hypothesis) or market conditions (market timing hypothesis) when selling LBOs to investors in IPOs? Second, how do buyout sponsors decide on their post IPO presence and through what mechanism do they exit post IPO to cash out?

In performance timing, buyout sponsors essentially take advantage of temporary improvement/positive shock to operating performance of a company for higher equity valuations. The temporary performance improvement right before IPOs is not sustainable, consequently resulting in 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. Chou, Gompora and Liu (2006) find evidence of earnings management in RLBOs around security offerings. To reflect the recent development of the private equity industry, this paper re-examines performance timing with a comprehensive sample of 594 RLBOs from 1981 to 2006. One new finding arises that the performance timing story is not robust in the comprehensive sample except for the quick flips often seen in the early sample period.

In market timing, buyout sponsor makes the decision of RLBO according to IPO market conditions. 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 for further improvement. Sponsors' decision to time market therefore affects LBO duration -- the years of being private between LBO and RLBO. Buyout sponsors shorten the time spent on LBOs when the IPO market is hotter or when industry valuation is higher. LBO duration is a proxy for the efforts by sponsors on improving a portfolio

[2] Gertner and Kaplan (1996) propose that the boards of RLBOs are relatively effective and have strong incentive in maximizing value compared to comparison sample.

company before selling it to the public; market timing behavior might have impact on post IPO performance of RLBOs.

The presence of buyout sponsors in post IPO years can potentially continue to add value if buyout sponsors continue their ownership and monitoring role in RLBO firms. For example, KKR approximately spent just three years holding Safeway as a portfolio company after taking it private, while it took KKR more than 10 years to ultimately exit in Safeway after its IPO. Therefore, RLBO process is not equivalent to sponsor's exit. It is important to understand how buyout sponsors make decisions 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's prediction, I find that the exit choices of sponsors are explained by firm cash flow, sponsor reputation, and ownership structure. For example, buyout sponsors should be more likely to continue post IPO presence (not to exit) in RLBO companies when they can get more cash flow. Consistent with control rights, larger buyout sponsors should be inclined to exit by facilitating a takeover post IPO when their ownership is greater.

Overall, this research contributes to the literature in the following four dimensions. This is the first paper providing a comprehensive and detailed understanding of sponsors' RLBO decision and exit choices. Second, it uses a comprehensive sample of 594 companies from 1981 to 2006 to reexamine the performance timing around IPOs. Expansion of the dataset is important due to structural development[3] 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 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 the post IPO year, providing empirical tests for Zingales (1995) in the context of RLBOs.

[3] 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.

The rest of the paper is organized as follows. Section 2 provides a background description and literature review. 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 concludes the paper.

## 2. Backgrounds and Literature Review

RLBOs are different from other IPOs or IPOs backed by venture capitalists. Sponsored by private equity investors, RLBO companies usually have a highly leveraged capital structure. Furthermore, buyout sponsors have concentrated ownership and play an intensive monitoring role as active owners, sometimes controlling owners. Buyout sponsors typically 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[4]. 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

[4] 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. General partners have incentives to monitor and realize final cash returns after they distribute assets to limited partners.

very short period after their LBO transactions (less than one year[5]). 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 that are not. The median of EBITDA/sales of quick flips increases before the IPOs and decreases in post IPO years. In contrast, other RLBOs do not show decline in EBITDA/sales. This peculiar pattern suggests 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 add any value in quick flips and whether sponsors face perverse incentives to flip certain firms quickly.

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. Approximately 10% of the RLBO sample is delisted after going public. 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 bankruptcy risks.

The interplay among buyout sponsors' incentives and corporate decisions is a critical issue for researchers and investors. There is an on-going debate about the controversial role of buyout sponsors particularly for PE-backed IPOs. The following case illustrates this hotly debated issue. Warner Bros. 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 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, the firms still controlled a

[5] I use other duration measures, such as less than one and a half years or two years. The empirical evidence throughout the paper remains unchanged.

majority stake worth about $2 billion after the offering. In fact, Warner Bros. Music rejected a buyout offer from EMI, another big music publisher, and as a defensive strategy, even made a counterbid. This raises some questions such as why the sponsors of Warner Bros. Music rejected the takeover offer and quick cash. In what sense are buyout sponsors 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 the choice of private firms either going public or selling to a publicly traded buyer. They find that the IPO route is favored over a takeover when the firm size is large and the industry market-to-book ratio is low. Benninga et al (2005) link the decision to go public to the possibility of sequential privatization (buyouts after IPOs). They relate these dynamic decisions to underlying cash flows and suggest that entrepreneurs make tradeoffs between the benefits of control to keep firms private and the 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 that 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, an IPO received LBO financing previously that 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 source 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. I also search databases of LBOs, and seek to identify whether any transactions subsequently went public. The second set of sources includes Dealogic and Capital IQ, both reporting IPOs backed by financial sponsors. Furthermore, I search news stories using Factiva according to the same criteria specified above. These sources generate an additional 297 RLBOs[6]. The final sample includes 594 RLBOs from 1981 to 2006[7].

The IPO underwriter reputation data is obtained from Jay Ritter's website[8]. 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 board information and ownership data are collected from proxy filing statements at the SEC's EDGAR website. In analyzing post IPO sponsor's exit behavior, I require a three-year window to collect data on ownership. The availability of such data reduces sample size. The regressions 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

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

[7] 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 following are excluded companies with: 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 since there are a fair number of them in the sample.

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

the calendar or fiscal year. Return, price and delisting information are obtained from CRSP Monthly Stock database.

Table 1 presents the industry distribution of RLBOs and all other IPOs. Similar to each other, the majorities of both are distributed in the manufacturing industry. Personal business industry accounts for the second and retail the third. Table 2 shows the top 20 active RLBO sponsors, the number of RLBOs, average IPO size, and average underpricing related to each sponsor. Many buyout sponsors are repeated players in IPO markets with KKR on the top of the list, sponsoring 24 RLBOs. On the bottom of the active sponsors is Lehman Brothers with 6 RLBOs. Table 3 summarizes the year distribution of RLBOs, average LBO duration each year, subsequent delisting numbers or post IPO takeover (being acquired) activities. The RLBO distribution is highly correlated with the buyout cycles in a lag fashion. There are a staggering 63 offerings in 1992, as many LBOs acquired in the late 80s started to return to public market. The first LBO wave brought the first wave of RLBOs: years 1986 and 1987 witness 14 and 22 RLBOs respectively. RLBO activities dried up after the collapse of the junk bond/LBO markets, with only 4 RLBOs in 1988 and 3 in 1989.

RLBO companies exhibit great heterogeneity in the private years between LBO and IPO. 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. RLBO firms on average stay private[9] for 3.75 years; the median duration is 2.83 years. 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 taking place in 1987 and the late 90s in hot LBO and IPO period. There are 61 firms delisted in total. Subsequently, 199 firms were acquired after going public, suggesting an active corporate takeover market for RLBOs in general.

*3.2Methodology*

Under the *performance timing hypothesis*, RLBO companies will exhibit drastic performance deterioration after going public. I use EBITDA/sales and ROA (net income/asset),

[9] Stromberg (2008) examines the longevity of all LBOs around the world and finds much longer holding years. His study includes an exit of both RLBOs and trade sale.

measurements used in the previous literature, to analyze firm operating performance. I describe both the general patterns of operating performance of RLBOs around IPOs and in post IPO years. Two benchmarks are employed: industry and industry & performance matched companies.[10] I report the operating performance of both whole sample and sub-samples such as quick flips.

In a multivariate analysis, I run a regression of the change in operating performance on LBO duration and sponsor's reputation variable. The cross-section regression is specified as:

$\Delta Performance = \alpha_0 + \alpha_1\ LBO\ Duration + \alpha_2\ Reputation + \alpha_3\ Controls + \varepsilon$ (1), where the change in operating performance is measured by EBITDA/sales at one/two years after IPO minus EBIDTA/sales at the year of the IPO. The independent variables include logarithm of LBO duration, sponsor's reputation, size, leverage (debt to asset ratio) changes, quick flip dummy, industry performance changes and IPO market condition. The industry operating performance change is used to control the mean reversion in accounting measure, as suggested by Holthausen and Larcker (1998). I proxy IPO market condition with 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). The empirical measures of IPO market conditions are consistent with Alti (2005).

The OLS analysis assumes a decision of IPO is homogeneous across all RLBOs. To control for selection of quick flips, I use Heckman's selection regressions to investigate the likelihood of a quick flip and its effects on the subsequent firm performance. There are two-steps in the estimation procedures:

1st Step: Probit ($Quick\ Flip$) $= \alpha_0 + \alpha_1\ IPO\ condition + \alpha_3 \cdot Controls + \varepsilon$

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

The first-step is the Probit regression. The dependent variable is a dummy equal one when the RLBO is classified as a quick flip (its LBO duration is less than one year[11]). The identifying

[10] Barber and Lyon (1996) propose that an industry and performance benchmark is more robust to accounting measure reversals. Hotchkiss, Guo and Song (2008) find that performance is sensitive to benchmark and recommend industry and performance matched benchmark.

[11] I also use an alternative duration of 2 years in defining quick flips in a robust analysis and the similar results hold.

instruments on the right hand-side include IPO market condition, buyout sponsor reputation[12], the relative size of LBO firms to their buyout sponsors' capital, and RLBO firm's prior operating performance. The relative size is to capture the economic significance of a given RLBO to GP's capital under-management. For example, sponsors may be more likely to flip a relatively smaller firm. In the second-step regression, I include *Lambda,* the inverse Mills Ratio imputed from the first-step Probit regression as an additional control variable for selection. The dependent variable in the second stage uses a long-run performance measure of either EBITDA/Sales or a delisting dummy (measured within three years post IPO).

Under the *market timing hypothesis*, IPO market condition affects LBO duration since buyout sponsors are more likely to quickly take LBOs public (hence RLBO) in more favorable IPO market conditions. There are two empirical predictions. First, there should be a negative relation between LBO duration and IPO market activities. Second, quick flips should be more likely to take place in hotter markets. Buyout sponsor reputation might also matter. For example, the reputation effect may align sponsors' interest with the public, encouraging 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. The OLS regression is specified as:

$Log(LBO\ duration) = \alpha_0 + \alpha_1\ Market\ Conditions + \alpha_2\ Reputation + \alpha_3\ Controls + \varepsilon$ (2), where the dependent variable is the number of years that the firm stays private from LBO to RLBO. The explanatory variables include IPO market condition, industry's Q, the sponsor reputation, firm size, operating performance, leverage, and the company's cash flow. The reputation is measured with the capital historically managed by buyout sponsors and vintage age of sponsors, consistent with Cao and Lerner (2007).

RLBO is not equivalent to a quick and full exit of sponsors, since buyout sponsors can continue ownership and monitoring in post IPO periods. I provide summary a description on the ownership structure and board share of sponsors in RLBOs before and after IPOs. Since I do not observe an exit of sponsors beyond a three-year window post IPO, a Cox Proportional Hazard

[12] 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.

duration approach is used to analyze post IPO presence of buyout sponsors. Giot and Schwienbacher (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:

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

where the dependent variable is a survival (no full exit) dummy for up to three years post IPO. The dummy is set to be zero if the sponsor's ownership is positive in the year $t$ after IPO, set to 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, 1, 2, 3, since the analysis is up to three years post IPO. The explanatory variables include EBITDA/sales, stock monthly excess return over market, Tobin's Q, and sponsor reputation. Tobin's Q measures a firm's growth opportunity as suggested by Kaplan and Zingales (1997). It is the ratio of the market value[13] of assets divided by the book value of assets.

Buyout sponsors can at least choose 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). In analyzing their exit choices, binomial and multinomial regressions are used to study the determinants of each exit choice.

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

where *exit dummy* takes the value of one if sponsor fully exits via takeover within three years after IPO, zero otherwise in the first binomial regression. In the second binomial regression, the exit dummy is set to one if the sponsor fully exits via gradual share distribution (ownership drops to zero) within three years after IPO, zero otherwise. In the multinomial regression the exit dummy is set to one if a full exit takes the form of a takeover (being acquired), to two if a full exit takes the form of a gradual distribution (ownership drops to zero), and zero otherwise. $\Phi$ is a cumulative probability function for normal distribution in a Probit regression. The independent variables include EBITDA/sales, Tobin's Q, Industry Q, ownership structure, LBO duration, and sponsor reputation variable. Control variables include firm size and leverage.

[13] 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).

## 4. Empirical Results on RLBO Decision

### *4.1 Performance timing*

*Performance timing hypothesis* predicts that firms experience performance deterioration after their IPOs. Table 4 summarizes 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. 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 (convertible debt) is either converted into common stock or retired. The unadjusted operating performance in panel A shows no consistent pattern of performance deterioration: net ROA (net income/assets) gradually increases and peaks at IPO+1, while EBITDA/sales remain fairly stable around IPOs. Similar to other IPOs, RLBO firm's sales growth rate reaches its peak level at the first year of the IPO, and it gradually deteriorates afterwards.

I furthermore report the adjusted performance of RLBOs. In panel B, EBITDA/sales and net income/asset are adjusted by industry benchmark. In panel C, both performance measures are adjusted by industry & performance benchmark with matching at the year of IPO-1. Either EBITDA/sales or net income/asset adjusted by benchmark does not exhibit deterioration in performance after IPOs. Not surprisingly, RLBOs have superior operating performance that is persistent in post IPO years: EBITDA or net income/asset outperform the relative benchmarks by a range from 1% to 5%, without obvious pattern of deterioration post IPO. This finding is consistent with Degeorge and Zeckhauser (1993). Such persistence of performance suggests buyout sponsors on average maintain superior operating performance in RLBOs, hence rejecting *performance timing hypothesis*.

In a special sub-sample of RLBOs, quick flips, however, they show 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 not supported by the full sample of RLBOs, only by the sub-sample of quick flips.

Table 5 presents the cross sectional regression results of operating performance (EBITDA/sales) changes from the year of IPO to the year of IPO+1 as well as from the year of IPO to the year of IPO+2. The explanatory variables include LBO duration/quick flip dummy, IPO market condition proxy, sponsor reputation variable and other firm characteristics. LBO duration is positively and significantly associated with performance change. The firm staying private one additional year brings almost 1% improvement in change in EBITDA/sales after IPO. The evidence also suggests more deterioration of performance in firms with shorter duration: quick flip dummy is negatively and significantly associated with change in operating performance after going public.

Overall, the evidence in Table 5 suggests that the LBO duration is a good proxy for sponsors' restructuring efforts in LBOs. Furthermore, the change of performance is negatively related to the IPO market condition (average underpricing of all IPOs in the three months before IPO), indicating performance timing must be specific to market condition: RLBOs issued in more favorable IPO market conditions are more likely to experience greater deterioration in operating performance. The results in table 5 are robust to other measures of performance such as net income/asset.

*4.2 Market timing*

The capital market condition affects the sponsors' decision of RLBO or to keep them private with more restructuring. The *market timing hypothesis* suggests that sponsors will shorten LBO duration and are more likely to bring (immature) LBOs public when they take advantage of a favorable IPO market. Table 6 presents the results of OLS regressions to analyze LBO duration. The dependent variable of LBO duration (logarithm of 1 plus years as private being LBOs) is regressed on IPO market condition proxy, sponsor reputation variable, firm operating performance, firm size (sales) and other characteristics.

LBO duration is positively associated with sales, which suggests that larger LBOs may require more effort and hence more time for improvement. IPO market condition affects LBO duration: the number of years spent on LBOs is decreasing in aggregate IPO under pricing (proxy for IPO market condition) of the past three months. General industry valuation also matters: industry Tobin's Q is negatively associated with LBO duration. Both regression coefficients are significant, with either 5% or 10% level. The evidence is supportive of the market timing hypothesis. Buyout sponsors sell portfolio companies more quickly to public investors when general IPO market condition is more favorable or industry valuation of firm asset is higher.

*4.3 Market timing and performance of quick flips*

The extreme case of shortened duration is quick flip. Quick flip must be a deliberate choice by buyout sponsors who base their decision on the information regarding portfolio characteristics, firm quality, or market conditions. To control sponsor's selection decision of quick flips, I use the Heckman two-step procedure in the multivariate analysis. The first-step Probit regression analyzes quick flip decision (dependent variable is set to one for quick flip, and zero for other RLBOs). The second step regression uses long-run performance (either EBITDA/sales or delisting dummy) of RLBOs as the dependent variable. Heckman's lambda is used as a control. The results are presented in table 7.

RLBO firm's relative size (firm asset relative to sponsor's size, measured by total historical capital under-management) is negatively associated with the likelihood of quick flip. This suggests that relative smaller LBOs are more likely to become quick flips. The aggregate number of IPOs in the past three months is positively associated with the likelihood of quick flip. Quick flip is more likely to occur in "hotter" IPO issuance periods. The coefficient of EBITDA/sales is positive and significant. There are two possibilities: firms having stable operating performance do not necessarily have to stay private for a long time; or sponsors are more likely to flip firms experiencing performance peak (performance timing). The latter possibility is more consistent with previous evidence in Tables 5 and 6 that quick flips experience more deterioration in operating performance. Figure 1 also shows that quick flips show markups in EBIDTA/sales before IPOs and subsequently performance drops.

In the second-stage Heckman analysis, I include the lambda (inversed Mills ratio imputed from the first stage) to control selection of quick flips. The variable of interest is quick flip dummy. The long-run operating performance (average EBITDA/sales of the three years after IPO) is significantly and negatively associated with quick flip dummy. The likelihood of a firm being delisted within 5 years after the IPO is also significantly positively related to quick flip dummy. The evidence reveals that, controlling for the selection bias, long-run performance of quick flips is significantly worse than other RLBOs. This evidence further supports operating performance timing in quick flips that often take place in hotter IPO period. Sponsors' opportunistic timing decision of immature LBOs leads to value destruction: quick flips experience poorer performance in the long run.

## 5. Empirical Results on Exit of Sponsors

### *5.1 Sponsors' Post IPO presence*

Table 8 reports the ownership structure of RLBOs around IPOs and in post IPO years. Buyout sponsors[14] on average hold approximately 60% of equity ownership prior to IPOs, 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. I report in Panels B and C the summary statistics of sponsors' ownership level and percentage of board directors affiliated with buyout groups after IPOs. The evidence suggests buyout sponsors continue to hold significant equity stakes in the long run post IPO. 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.

Since LBO funds have limited life, sponsors have a greater impetus to exit from RLBO companies that have been held for a longer time. To control for this unobserved liquidity demand, I employ Cox Proportional duration analysis with a survival approach to analyze

[14] 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 sponsor has less than $5 million. Vintage age, however, does not distinguish between nonexistent and existent private equity firms.

sponsor's decision on post IPO presence. The Cox proportional hazard regressions are specified in the equation (3), and the regression results are presented in Table 9.

The coefficient of EBITDA/sales is negative and significant while the coefficient of Tobin's Q is significant and positive. This result suggests that buyout sponsor's post IPO presence is increasing in cash flow but decreasing in equity valuations. Buyout sponsors are also more likely to retain stakes in RLBO companies with better stock performance. General market condition such as industry valuation or stock market performance has weak impact 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 but insignificant.

The overall evidence suggests sponsors continue their post IPO presence in firms with more cash flow, while they are more likely to reduce duration or sell stakes when firms have higher stock valuation. The findings provide new empirical evidence for Zingales (1995). Incumbent buyout sponsors continue their presence post IPO to extract cash flow benefits, at the same time, buyout sponsors are more likely to quickly cash out (shorten their duration of post IPO presence) when firms receive higher external valuations.

*5.2 Decision of exit mechanism*

Sponsors might find it easier to exit and cash out when they can sell RLBO companies to a third party through takeovers. The mechanism of exit matters for post IPO duration. There are at least two mechanisms: to exit via facilitating takeovers (being acquired) or gradual distributions of shares (distributing shares to limited partners or public investors in SEOs until ownership drops to zero).

In Table 10 I analyze how buyout sponsors choose alternative mechanisms of exit post IPO and relate exit alternatives to firm fundamentals, market condition and sponsor reputation. Columns 2 and 3 report the Probit analysis of a sponsor's exit via facilitating takeovers post-IPO. The dependent variable uses a dummy that is set to one if RLBO firms are subsequently acquired within three years after going public, zero otherwise. Columns 4 and 5 report the Probit analysis of a sponsor's exit via gradual distributions of shares. The dependent variable is set to one if a

sponsor's ownership drops to zero without takeovers (typically sponsors distribute shares to investors), zero otherwise. In both cases, the sponsor's choice of exit is decreasing in cash flow measures such as EBITDA/sales, suggesting that sponsors keep longer post IPO presence when they can have more cash flow to extract. The probability of an exit via takeover/share distribution is increasing/decreasing in sponsors' ownership. The evidence suggests that sponsors extract more control benefit by facilitating takeover to exit and sponsors are more reluctant to distribute all shares when ownership is highly concentrated.

Columns 6 and 7 present the multinomial Probit analysis of two exit alternatives: exit via takeovers and exit via gradual distributions of shares. The probability of a 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. The coefficient of buyout sponsor's reputation stakes is significant in the choice of sponsor's exit via facilitating takeovers. The evidence suggests that more reputable sponsors are more likely to choose to exit via takeovers than exit via distributions of shares. Sponsors are more likely to choose to exit via takeovers when RLBOs have larger size and longer duration. The overall evidence in Table 10 is consistent with a rational exit choice of buyout sponsors who seek to maximize both benefits of cash flow and control.

*5.3 Operating performance around sponsor's full exit*

If buyout sponsors' presence helps to improve operating performance of RLBO companies, their full exit results in an absence of monitoring. Their exit might be associated with performance deterioration. I therefore empirically examine the operating performance of RLBOs around the year of full exit of sponsors. Table 11 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 a 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 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 taking LBOs public and their subsequent exit decisions post IPO. In 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. One explanation of performance timing is especially common in quick flips that are typically found in the early sample period.

I find evidence that buyout sponsors are capable of taking advantage of market timing. In timing the market for favorable IPO conditions or high industry valuations, buyout sponsors shorten duration and spend less time keeping LBOs private as portfolio companies. RLBOs with shorter duration experience more deterioration in operating performance after going public. Quick flips are likely to be an outcome of sponsor's timing of both operating performance and market conditions, since they are more likely to occur in relatively smaller LBOs with temporary improvement of operating performance in hotter IPO periods. Consequently, quick flip shows poorer operating performance and a greater probability of delisting post-IPO, suggesting that the listing of immature LBOs destroys value for public investors.

Buyout sponsors sell few shares in IPOs and maintain significant post IPO presence in the long run. They choose duration of their post-IPO presence according to companies' fundamentals and market conditions. Sponsors in general choose to maintain a longer presence in firms with higher cash flow. Buyout sponsor's exit choice is consistent with a motive to extract more benefits of cash flow and control rights. They are more likely to exit via facilitating 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 trade sale.

The overall evidence suggests that buyout sponsors buy low and sell high in LBOs in the market timing through RLBO. Sponsors shorten duration of LBOs to take advantage of favorable IPO conditions or industry valuation. Quick flipping or pushing immature LBOs public leads to value destruction. Buyout sponsors maintain an active role post IPO and they optimally choose when and how to exit. The exiting strategy enables buyout sponsors to extract the maximum benefits of cash flow and benefits of control.

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**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 new issues file of SDC. 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 the 20 most active sponsors. The table reports the average first-day return, gross proceeds and money left on the table according to a 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 the 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 (USD Mil) | 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 |
| Total | 594 | 3.75 | 270738.5 | 28 | 70 | 61 | 199 |

**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 2nd and 4th 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 |
|---|---|---|---|---|---|---|
| *Panel A: Key financial statistics* | | | | | | |
| 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 |
| *Panel B: Industry (first 3-SIC digits) benchmark* | | | | | | |
| 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 IPO-1 year) benchmark* | | | | | | |
| 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.

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

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

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 parenthesis. The *, ** and *** indicates respectively the 10%, 5% and 1% significance level.

| | (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/Asset | 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) |
| Average Underpricing | -0.296*** | -0.307** | -0.401** | -0.419** | -0.403** |
| in last 3 months | (2.75) | (2.53) | (2.27) | (2.64) | (2.46) |
| Log(IPO Numbers in | | 0.024 | 0.028 | 0.033 | 0.028 |
| last 3 months) | | (0.49) | (0.53) | (0.64) | (0.51) |
| Log(Buyout Firm's | | | -0.021 | | -0.019 |
| Capital) | | | (0.59) | | (0.75) |
| Log(Buyout Firm's | | | | -0.026 | -0.007 |
| Vintage Age) | | | | (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 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:

First Step: Probit (*Quick Flip*) = $\alpha_0 + \alpha_1 \cdot$ *Control Variables* + $\varepsilon$
Second Step: *Performance* = $\alpha_0 + \alpha_1$ *Quick Flip* + $\alpha_2$ *Control Variables* + $\alpha_3$ *Lambda* + $\varepsilon$.

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 a subsequent delisting dummy. EBITDA/sales are calculated as the average of the following three years: IPO, IPO+1 and IPO+2, measured at the end of the 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 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 | 0.137 |
| | | (1.19) | (0.98) |
| Quick Flip Dummy | | -0.056* | 0.467* |
| | | (1.87) | (1.72) |
| Dummy for IPO Debt Reduction | | 0.023 | 0.192 |
| | | (0.620) | (0.81) |
| Log(Underwriter Rank) | | 0.047 | 0.266 |
| | | (1.07) | (0.20) |
| IPO Underpricing | | -0.063*** | 0.185 |
| | | (3.22) | (0.64) |
| Buyout Sponsor's Ownership before IPO | | -0.021 | -0.081 |
| | | (0.49) | (0.17) |
| Log(Sales) at IPO Year | | -0.012 | -0.032* |
| | | (0.35) | (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*** | -0.611 |
| | | (4.38) | (0.38) |
| $R^2$ | 0.06 | 0.18 | 0.23 |
| Number of 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.

| *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 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 |
| *Panel B: Sub-sample[15] from 1995-2005* | | | | | |
| Buyout Group's 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 |

[15] 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:

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

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*** | -3.662*** | -3.661*** |
| | (2.73) | (2.96) | (2.89) |
| Log(asset) | -0.006 | -0.009 | -0.008 |
| | (0.16) | (0.38) | (0.23) |
| Total Debt/Asset | -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 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 | | 0.021 |
| | (0.39) | | (0.86) |
| Log(1+Buyout Firm's 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 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:

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

In columns 2 and 3, the dependent dummy equals 1 if 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 | -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/Asset 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's 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's 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: 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 in which sponsors have fully exited. 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.

*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 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 |

*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 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 |

**Figure 1**

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 fours years around IPOs: IPO-1, IPO, IPO+1, and IPO+2. The annual accounting data is from COMPUSTAT.