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What Happens During the Private Period?: Evidence from Public-to-Private Reverse LBOs

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During the past four decades, reverse leveraged buyouts (RLBOs)—IPOs of companies that were previously acquired in leveraged buyouts—have become increasingly common. In fact, reverse LBOs have accounted for some 20% of all U.S. IPOs since the year 2000.¹ But to date, there is very little evidence on the restructuring activities that take place during the “private period” of such transactions.

In this article, we summarize the findings of our recent study of RLBOs that focuses exclusively on one kind of RLBO—namely, buyouts of entire public companies that reemerge as public entities through an IPO (or, more precisely, a re-IPO). By focusing on public-to-private buyouts, this study offers new insights on these deals by examining the valuation, financial performance, and restructuring activities from the LBO to exit at the RLBO. Because such firms have previous financial histories as publicly traded firms, our approach allows us to analyze efficiencies and productivity gains during the private period and their impact on valuation following the RLBO.

More specifically, we examine changes in profitability, valuation, financial structure, operating structure, and cost structure from pre-buyout to post-exit. We address the types of restructuring activities, in terms of changes in operating, financial, and cost structures, that typically take place prior to a re-IPO. Unlike previous research, which commingles division-to-private, private-to-private, and public-to-private deals, our research design allows us to discern changes in valuation as well as restructuring actions taken in the interval leading up to the public offering as we track the same firms across different parts of their journey.

Our analysis contributes to our understanding of RLBOs in several ways. First, using an exhaustive sample of buyouts between 1978 and 2004, with re-IPO occurring no later than 2006, our study shows that, in the five years leading up to the LBO, our sample firms operated with significantly higher

leverage than comparable companies in the same industry. Moreover, we find that the profitability of RLBO firms, using return on assets, was substantially higher than that of their industry rivals, thus casting doubt on the popular perception of LBO targets as “underperformers.”² And consistent with this last finding, our analysis also suggests that the equity of RLBO firms may have been “undervalued” at the time of the LBO, and that such undervaluation may have been a major motivating factor for these transactions.

Second, we find that, during their private periods, RLBO companies go through significant downsizings, on average, while increasing their gross margins, reducing their cash holdings and working capital, and increasing the productivity of their employees—both in an absolute sense, and relative to comparable companies. The resulting efficiency gains, combined with the increase of the debt tax shield, lead to significant increases in after-tax returns and market values. Further, to address the widely held view that only the “best” of the LBO firms eventually reemerge through another IPO, we compare firm fundamentals and valuation of our RLBO sample firms with those of other public-to-private buyouts that did not reemerge through an IPO.³ This analysis indicates that the “non-RLBO firms” are no less profitable than the RLBO firms.

Third, unlike prior studies that obtain conflicting results, we document that public-to-private RLBO firms outperform their rivals for five consecutive years after exiting the private period.⁴ In addition, even though deleveraging and reductions in ownership concentration take place after the IPOs, both leverage and insider ownership remain above industry norms post-RLBO. Finally, we show that private-period restructuring improves efficiencies and reduces cost structure, leading to higher valuation.

Overall, then, our findings contribute to our knowledge of how LBOs create value through various types of restructuring activities during the private period. But, as already

* This article summarizes the findings of our article forthcoming in *Financial Management* titled “Lifting the Veil on Reverse Leveraged Buyouts: What Happens During the Private Period?” We are grateful to Josh Lerner (Harvard) and Raghu Rau (Cambridge) for their valuable suggestions. We are also grateful to Jerry Cao (SMU) and Josh Lerner for sharing their sample, which was included as part of our comprehensive sample.

1. See Cao and Lerner (2009) for details. Full citations of all articles can be found in the References at the end.

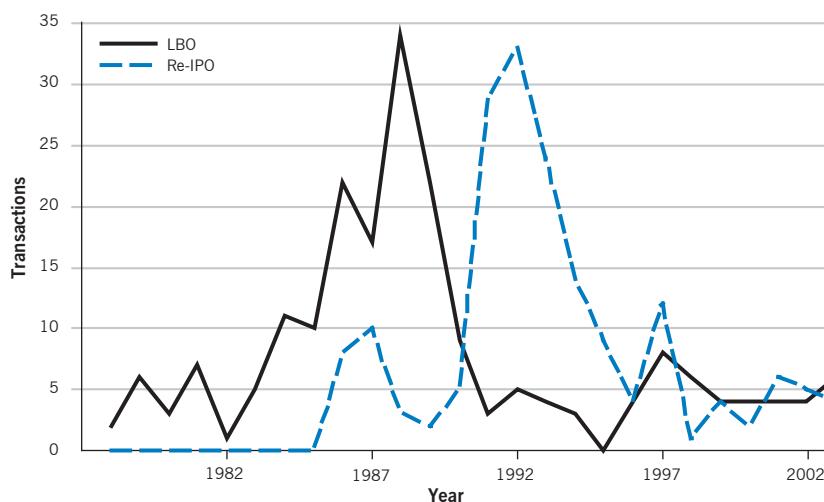
2. In unreported results, we also examined operating cash flow to sales as another profitability metric with corroborating results.

3. The SDC data used to form our sample of RLBOs enables us to identify other leveraged buyouts. We verify that once these firms go private that they are not publicly listed at a future date.

4. See studies by DeGeorge and Zeckhauser (1993) and Holthausen and Larcker (1996) that report conflicting results. While DeGeorge and Zeckhauser find disappointing results after the re-IPO, Holthausen and Larcker report above-industry performance for four years after the RLBO.

Figure 1 Transaction Counts by Year

Figure 1 plots leveraged buyouts (LBOs) and re-initial public offerings (re-IPOs) by year from 1978 through 2006.



noted, our analysis also suggests that some degree of pre-LBO undervaluation is likely to have played an important role in motivating these transactions.

The Sample

In conducting our study, we started by compiling a comprehensive list of public-to-private RLBOs, a process that involved “hand-collecting” data from multiple sources (since there is no one definitive database for such transactions). Our final sample consisted of 208 *exclusively* public-to-private RLBOs that spanned the period 1978 to 2006, with the original buyouts stretching from 1978 to 2004, and the re-IPOs from 1986 to 2006.

To test our hypotheses, we also constructed control groups for our 208 companies using two approaches. First, we “industry-adjusted” our variables by using the median values for publicly traded companies with the same 3-digit SIC code to distinguish RLBOs from their industry peers, especially at the time of the LBO. Second, we selected control firms based on “propensity scores” calculated at the time of the LBO.⁵ The propensity score matching technique uses information from a pool of companies with important shared characteristics that did not go through a leveraged transaction. (For a list of selected characteristics of a small sample of RLBOs, see Appendix A.)

As can be seen in Figure 1, which plots sample transactions by year for both LBO and RLBO transactions, there was a wave of LBOs during the years 1984 to 1989, reflecting

the activity of Drexel Burnham Lambert in financing LBOs with junk bonds. This LBO wave was followed by a wave of RLBOs over the years 1991 to 1997. A second surge in RLBO activity took place after 2003.

In examining the duration of these public-to-private deals, we found that approximately 60% of our sample of RLBOs went public again in less than five years, with a median time as private companies of 4.4 years (and an average of 5.4 years). The length of the private period is a subject of some controversy, with the financial press having coined the phrase “quick flip” to describe re-IPOs that take place relatively soon (generally two years or less) after going private. But contrary to the popular view, our analysis shows that only about a quarter of the buyouts in our sample re-emerged as public companies within two years of going private, with a large proportion (over 61%) of such flips occurring between 1986 and 1990.

How long do RLBOs remain independent public companies after their re-IPOs? Although previous studies of RLBOs have reported “attrition” rates of at least 40% in the first three to four years after the offering,⁶ for our sample of deals, 144 (or almost 70%) of the 208 companies were still publicly traded five years later. As for the other 64 firms, 52 (or 25% of our total sample) had been delisted because of mergers and acquisitions, which is substantially lower than the “delisting” rates reported by other studies. And the remaining 12 firms (and thus only about 5%) experienced financial distress, a lower rate than reported by studies of LBOs in general.⁷

5. For a discussion of this technique, see Villalonga (2004).

6. See the studies by Mian and Rosenfeld (1993), Kaplan (1991), and Holthausen and Larcker (1996).

7. Kaplan and Stromberg (2009).

Table 1 **Financial Characteristics of RLBO Firms Surrounding the Private Period**

This table reports financial characteristics at the LBO and RLBO. The sample data includes all public-to-private RLBOs from 1986 to 2006. Panel A summarizes results for raw variables with a paired median of differences test. Panel B documents industry-adjusted variables (based on 3-digit SIC median). Panel C reports differences in medians between RLBOs and control firms matched on propensity score quintiles. Panel D (which relates to Panel C) reports difference-in-differences estimator of the change over the private period. LBO-0 is the value immediately preceding the LBO. Values after the RLBO are designated by RLBO+0. RLBO-LBO is the difference before (after) the LBO (RLBO).

Variable	Panel A			Panel B			Panel C		Panel D
	Financial Characteristics			Industry-adjusted Financial Characteristics			Difference in Medians of Propensity Score Selected Firms		Diff.-in-Diff. Estimator
	LBO-0	RLBO+0	RLBO-LBO	LBO-0	RLBO+0	RLBO-LBO	LBO-0	RLBO+0	RLBO-LBO
Profitability & Valuation									
ROA	0.077	0.077	0.001	0.014***	0.018***	0.006	0.005	0.017***	0.035***
Tobin's Q	1.254	1.488	0.246***	0.026	0.085**	0.102**	0.053	0.212***	0.228***
P/Sales	0.448	0.671	0.087***	-0.017	-0.029	-0.035	-0.168***	0.032	0.191**
Financial Restructuring									
Leverage	0.227	0.418	0.150***	0.051***	0.192***	0.147***	0.000	0.190***	0.159***
Tax Rate	0.328	0.181	-0.133***	0.091***	-0.004	-0.078***	0.040***	-0.076***	-0.061
Cash/TA	0.048	0.031	-0.005*	-0.004	-0.019***	-0.013**	0.003	-0.020***	-0.021**
Div/TA	0.010	0.000	-0.003***	0.007***	0.000***	-0.003***	0.010***	0.000	-0.001
Shares/Owner (000)	3.020	47.666	37.622***	-0.477	35.255***	30.693***	-1.250*	41.378***	80.440***
Operating Restructuring									
Assets	463.895	493.278	20.850	317.705***	278.759***	11.584	372.131***	268.800***	-674.704***
Employees	6.462	3.590	-0.312***	4.205***	1.664***	-0.717***	5.099***	1.793***	-3.323***
Sales/Employee	97.042	131.686	33.583***	-0.767	11.955***	8.547***	-13.224**	-9.647	29.167**
PPE/TA	0.300	0.244	-0.042***	0.014***	-0.013	-0.032***	0.033*	-0.005	-0.036***
Capex/Sales	0.041	0.032	-0.008***	-0.001	-0.006	-0.006***	0.003	-0.004	-0.004
R&D/Sales	0.000	0.000	0.000	0.000	-0.000*	-0.000	0.000	0.000	-0.002
Cost Structure									
COGS/Sales	0.708	0.687	-0.019***	-0.005	-0.010**	-0.011**	0.020	-0.005	-0.022**
SG&A/Sales	0.182	0.179	-0.005	-0.031***	-0.040***	-0.003	-0.023**	-0.037***	-0.010
Observations	208			208			12,448		

*** Significant at the 0.01 level.

** Significant at the 0.05 level.

* Significant at the 0.10 level.

These findings suggest that public-to-private transactions involve relatively robust firms that, for the most part, have been strengthened by their experience as private companies.

Our analysis also indicates that a company's post-RLBO status was related to the length of time it remained private. Companies that delisted due to mergers or acquisitions had a median period of 3.4 years under private ownership, as compared to 4.7 years for those that remain publicly traded after five years (a difference that is significant at the 5% level). One possible explanation for this finding is that companies that were delisted because of acquisitions remained undervalued in the post-RLBO period and so became attractive acquisition targets. On the other hand, the fact that the average private period was 5.5 years for companies that

eventually succumbed to financial distress in the post-RLBO period means that such restructurings aren't without risk and thus don't offer complete assurance of eventual success.

Empirical Findings: What Happens During the Private Period (and After)?

In Table 1, we summarize the findings of our examination of firm profitability, valuation, financial restructuring, operational restructuring, and cost structure from their pre-LBO (LBO-0) existence through a period that extends several years after the LBO (RLBO+0). We compared a number of firm fundamentals in the year of the LBO to those at the time of the RLBO. To examine changes surrounding both the LBO and RLBO, we analyze available private-period data. This

Table 2 **Financial Characteristics Surrounding the LBO and RLBO**

This table reports variables that proxy for control-adjusted financial characteristics before and after the LBO and RLBO. The sample data includes all public-to-private RLBOs from 1978 to 2006. Panel A summarizes results for the time surrounding the buyout, while Panel B documents variables surrounding exit. Control firms are selected based on propensity score quintiles. LBO-0 is the median value immediately preceding the LBO. Firm fundamentals after the LBO are designated as LBO+1. Pre-RLBO variables are reported under RLBO-1. Values after the RLBO are designated by RLBO+0. Differences in medians are reported at LBO-1, LBO+1, RLBO-1, and RLBO+0. A difference-in-differences estimator is calculated for LBO-0 to LBO+1 and RLBO-1 to RLBO+0.

Variable	Panel A: Before and After the LBO			Panel B: Before and After the RLBO		
	LBO-0	LBO+1	Diff.-in-Diff. Estimator LBO+1 – LBO-0	RLBO-1	RLBO+0	Diff.-in-Diff. Estimator RLBO+0 – RLBO-1
Profitability						
ROA	0.007	-0.011	-0.009	0.014***	0.016***	0.005
Financial Restructuring						
Leverage	0.072***	0.417***	0.196***	0.334***	0.182***	-0.128***
Tax Rate	0.026	-0.151***	-0.097**	-0.119***	-0.068***	0.030
Cash/TA	-0.012	-0.026***	-0.026***	-0.028***	-0.020***	0.017**
Div/TA	0.008***	0.002	-0.004***	0.000	0.001	0.001
Shares/Owner (000)	-0.764	2.829	26.081***	35.578***	41.109***	-8.812
Operating Restructuring						
Assets	412.549***	560.533***	49.283	280.108***	321.579***	-36.542
Employees	5.358***	5.221***	-0.210	1.977***	1.984***	0.074
Sales/Employee	-7.429	-3.238	7.961	-6.293	-1.901	21.876***
PPE/TA	0.062**	0.011	-0.046***	0.017	0.002	-0.007
Capex/Sales	0.000	-0.004	-0.009	-0.001***	-0.005	0.003***
R&D/Sales	0.000*	0.000**	0.002	0.000	0.000	0.001
Cost Structure						
COGS/Sales	0.010	0.020	0.011	0.011	0.000	-0.007
SG&A/Sales	-0.010**	-0.013**	0.004	-0.026*	-0.042***	-0.012***
Observations	14,984			14,281		

*** Significant at the 0.01 level.
 ** Significant at the 0.05 level.
 * Significant at the 0.10 level.

approach provides information about the kinds of restructurings that took place during the private period.

Whereas Panel A of Table 1 reports findings using unadjusted (raw) financial variables, Panel B presents industry-adjusted variables based on industry median value for each 3-digit SIC code. The industry-adjusted financial information allows us to compare RLBOs directly to their peers before restructuring. Panel C tests for differences in medians at LBO-0 and RLBO+0 using the propensity score control firms. Panel D shows the results of tests whether there was a change in these variables during private period.

Table 2 reports tests for changes surrounding the LBO and the RLBO for firms with available private-period data. Specifically, Panel A measures control-adjusted changes from LBO to one year later (LBO+1), while a similar analysis of changes from pre-RLBO (RLBO-1) to the RLBO year (RLBO+0) is included in Panel B of Table 2. We discuss these two tables jointly because the results are interrelated.

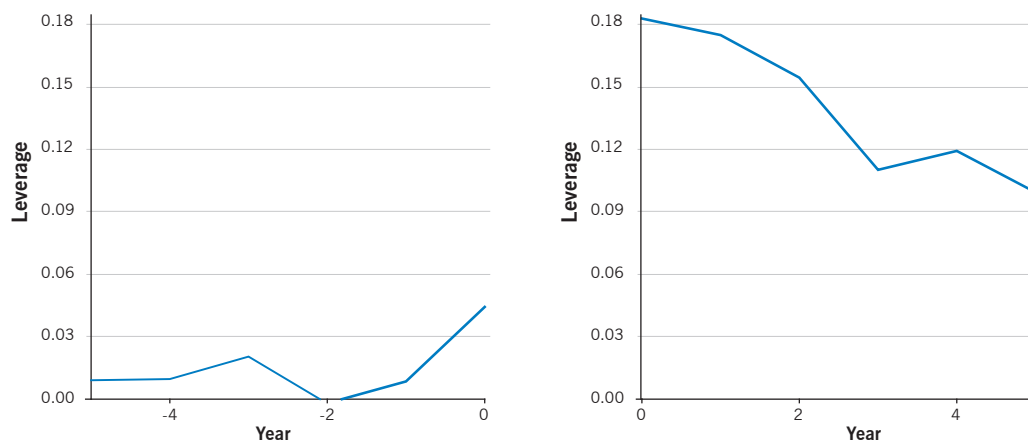
Changes in Profitability and Valuation

We started by investigating whether the pattern of firm profitability changes not only during the private period but also for five years before the LBO and five years after the re-IPO. As reported in Panel B of Table 1, our analysis shows that the industry-adjusted return on assets (ROA) of our sample of RLBOs was significantly higher than that of their peers *before* the buyout. But, as reported in Panels C and D of Table 1, the restructuring undertaken while such firms were operated as private companies led to even higher asset returns relative to their peers. Statistically speaking, both the ROA of our sample in the year of the LBO, and the increase in ROA over the private period, were highly significant, compared to those of the control firms.

These results, along with the fact that our sample firms significantly outperform their industry rivals in terms of ROA over the five years prior to going private, suggest that the public companies that undergo public-to-private transactions

Figure 2 **Leverage**

Figure 2 plots long-term debt to assets (*Leverage*) from five years before buyout and year of LBO (graph on left) to year of IPO and following five years (graph on right). *Leverage* is industry-adjusted by the 3-digit SIC code median value.



are not necessarily underperforming firms. And this analysis raises the possibility that undervaluation could be an important factor for these leveraged going-private transactions.⁸

Also reported in Panels B and C of Table 1, our analysis of Tobin's Q ratios shows that while RLBOs have *enterprise* valuations that are comparable to their peers' at the time of their LBOs, their valuations are significantly higher at the time of their (re-)IPOs. This seems to be clear evidence that our sample companies experienced substantial increases in firm value over the private period. And using another valuation metric, the price-to-sales ratio (reflecting *equity* valuation), our analysis also shows that both unadjusted and control-adjusted price-to-sales ratios increase substantially after the private period (see Panels A and D of Table 1).

At the same time, the fact that the profitability measures of RLBOs before the buyouts are better than both those of the industry and the control firms—while the valuation measures before the buyout are at par or lower than the valuations of the control firms—suggests that undervaluation could also have played a major role in these going-private deals.⁹

Financial Restructuring

As expected, we find significant changes in capital structure at the time of the LBO. But, in contrast to the findings of prior research, our sample companies had greater leverage than the control firms and industry rivals *prior* to the LBO. Table 1 shows that unadjusted leverage levels more than doubled from pre-LBO to post-RLBO. And as can be seen in Figure

2, which shows the trend in industry-adjusted leverage over a ten-year period surrounding the going-private and exit transactions, RLBOs operate with even more industry-adjusted leverage after returning to public ownership than before going private. This set of findings suggests that, although leverage plays some role in the success of RLBOs, the primary motive for the LBO deals was not the systematic failure of the companies to take advantage of unused debt capacity before the buyout.

But even so, there is a large drop in leverage following the re-IPO, suggesting that a portion of the proceeds from the offering is used to reduce debt, which is, of course, typical in such highly leveraged transactions. Moreover, the continuing trend toward lower leverage after the initial reduction accomplished by the re-IPO suggests that the companies are still in the process of shifting toward more manageable, stable, and optimal debt levels over the following five years.

We also find significant increases in interest expense, as a percentage of total assets, at the time of the LBO (which are then reversed after the re-IPO). And most likely because of such elevated debt tax shields, the effective tax rate of almost 33% facing the average RLBO company before the buyout drops by almost half (to around 18%) when companies emerge from the private-period restructuring. (And in Panel A of Table 2, we report that the control-adjusted tax rate declines significantly one year into the private period.) Also telling, at the time of the LBO, the buyout companies' tax rates significantly exceeded those of industry rivals. Thus,

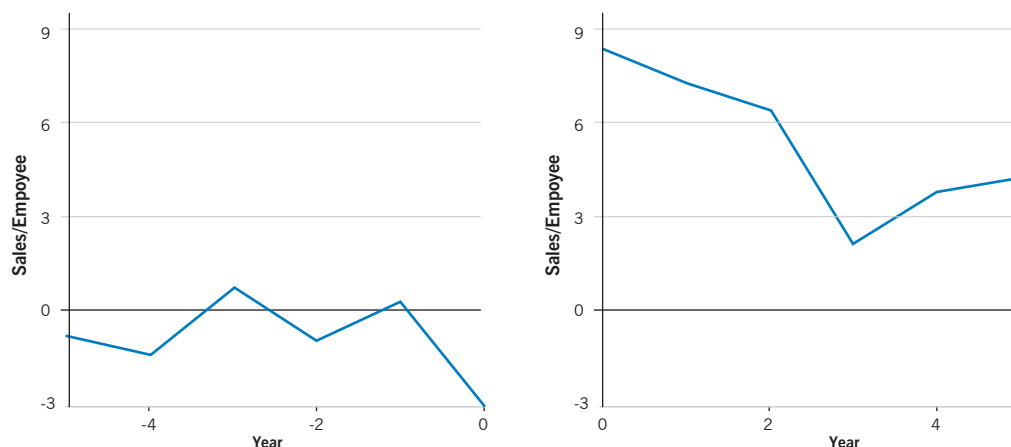
8. Because buyout firms are likely to have written up their assets (when the buyout price exceeds book value of assets), industry- and control-adjusted performance metrics deflated by total assets will be biased toward finding poorer performance by LBO firms.

9. The possibility that firms are taken private in part because they are undervalued is echoed in the following article in the *Wall Street Journal*, which states, "Standard &

Poor's has come up with a list of 10 publicly traded companies that could be LBO targets, based on current market trends... they picked companies trading at less than their respective industry's coming year-end price-to-earnings, which would indicate that the market currently undervalues them." *Wall Street Journal* 7/22/2010 article "S&P's List of LBO Candidates: Kodak, Oshkosh and GameStop" by Anupreeta Das.

Figure 3 Sales per Employee

Figure 3 plots sales per employee ($Sales/Employee$) from five years before buyout and year of LBO (graph on left) to year of IPO plus five years after exit (graph on right). $Sales/Employee$ is industry-adjusted by the 3-digit SIC code.



our results provide strong support for the argument offered by the earliest proponents of LBOs that RLBOs create value through tax benefits.¹⁰

When examining changes in the management of cash and working capital during the private period, we find that while pre-LBO cash holdings are comparable to those of the industry and control firms, they decline significantly during the private period, on both an absolute and a relative basis. Table 2 indicates that the reduction in cash to total assets occurs immediately after the LBO, but is partially reversed after exit. This change in cash holdings reflects a more stringent liquidity policy during the private period—one that, although relaxed somewhat, is largely maintained when the firm re-emerges as a public company.

Our results also show that public-to-private RLBOs pay dividends well above their peers' before going private. The results reported in Table 2 suggest that dividends (as a percentage of total assets) decline right after the buyout, while there is no change surrounding the RLBO. Since the observed decline in dividends-to-total assets in the year after the LBO may be attributable to asset write-ups, we compare dividend payouts and find no change from pre-buyout to post-buyout payouts. It is also noteworthy that the dividend-to-total assets ratios of RLBO firms are substantially higher than the industry and controls at the time of their LBO (see Table 1, Panels B & C).

The commitment of our sample RLBO firms to pay

higher dividends and service higher debt levels combined with their greater profitability prior to the buyout can be interpreted in one of two ways. On the one hand, it may suggest that such companies have found effective ways to pay out their “free cash flow” (and thus do not have a major “free cash flow problem”).¹¹ On the other hand, it may suggest considerable amounts of untapped borrowing capacity, the use of which may well prove to be an even more effective way to add value by reducing corporate income taxes and enabling the concentration of ownership that takes place in an LBO.

And as can be seen in Panels A, B, and C in Table 2, the increase in the ownership concentration of our sample of RLBOs during the private period is substantial. Prior to their LBOs, these firms have limited insider ownership, like their peers. And after the private period and the re-IPO, the control-adjusted ownership concentration declines but remains well above the corresponding industry norm during the five years after the re-IPO.

Operations Restructuring and Changes in Cost Structure

We also examine the operational and cost structure changes during the private period. Our sample of RLBOs undergo substantial downsizing, as reflected in reductions of the real book value of assets (see Panel D in Table 1), during the private period.¹² This is accompanied by significant reduc-

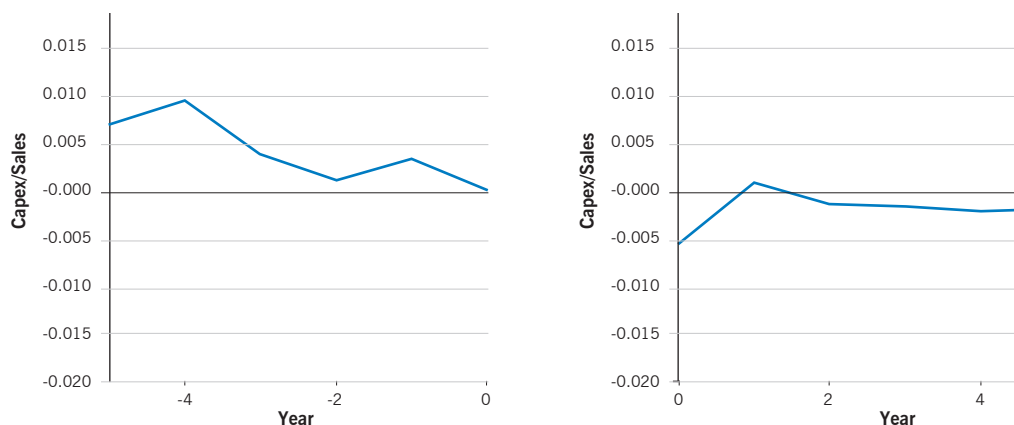
10. See Steve Kaplan's (1989) article.

11. As defined by Michael Jensen, free cash flow is excess cash that cannot be profitably reinvested in the business and that, according to Jensen, must be paid out for the company to maximize value.

12. We adjust book value of assets and net sales to the base year 2000 using the consumer price index (CPI) obtained from the Bureau of Labor Statistics website www.bls.gov.

Figure 4 Capital Expenditures

Figure 4 plots capital expenditures to sales ($Capex/Sales$) from five years before buyout and year of LBO (graph on left) to year of IPO plus five years after exit (graph on right). $Capex/Sales$ is industry-adjusted by the 3-digit SIC code.



tions in sales relative to control firms,¹³ a decline that began immediately after the LBO (see Panel A of Table 2).

Another indication that our firms engage in restructuring to improve efficiency and productivity is the significant decline in personnel on both an absolute basis and relative to industry peers and controls (see Table 1). Further, we find that operational restructuring leads to efficiency gains in employee productivity on both an absolute basis as well as relative to control sample, as evidenced by a significant increase in sales per employee. As shown in Figure 3, the significant improvement in this variable during the private period continues after the re-IPO.

Because asset write-ups at the time of the buyout can obscure changes in some of our variables, we also investigate the restructuring of tangible assets, as captured by property, plant, and equipment (PPE) as a percentage of total assets. This variable declines significantly, on an absolute basis and relative to control firms, within the first year of going private and this process is completed in the year prior to the re-IPO.

We also find no evidence of overinvestment by our sample firms in the year preceding the LBO in terms of their capital expenditures and R&D as a percentage of sales, as compared to those of their industry peers. On the other hand, restructuring during the private period appears to lead to closer monitoring of investment policy, since capital expenditures are significantly lower than control firms prior to exiting through IPO (see Panel B of Table 2). But then, in the first year after the re-IPO, capital

spending (as can be seen in Figure 4) returns to a level that is comparable to that of the control firms. At the same time, we find no changes in R&D investment decisions relative to those of industry peers and the control group when examining changes from pre-LBO to post-RLBO (Table 1) or around the LBO and RLBO events (Table 2). This finding, combined with the fact that R&D spending is actually significantly *higher* for RLBOs than control firms *in the first year following LBO* (Table 2), suggests that the private-period managers of our sample firms take a long-term view and do not reduce expenditures that provide the firm's future opportunities.

When examining the cost structure, we find that the ratio of cost of goods sold to sales decreases markedly from LBO to RLBO, and on an absolute basis as well as relative to industry and control firms (see Table 1). This decline implies a corresponding increase in gross margin. We also find that the change around the time of the buyout is insignificant, suggesting that longer private periods are required to effect margin improvements.

Our sample firms are also characterized by lower selling, general, and administrative expenses to sales (see Panels B and C of Table 1) than the industry and control firms at both the LBO and RLBO. Perhaps, this is due to economies of scale given that our sample firms tend to be larger than the industry norm. Although the changes in SG&A to sales during the private period are insignificant (since they are already below the industry and control firms prior to going private), we

13. The Compustat Segment files are also examined for changes in firm structure, where firms without data are assumed to have one segment. We find no evidence of decline in the number of business segments over the private period with the mean number of segments at the LBO virtually similar to that at the RLBO (1.43 vs. 1.45).

Table 3 **Regressions Explaining the Change in Valuation**

This table summarizes the results of OLS regressions, where the dependent variable is $\Delta P/\text{Sales}$ in Models 1-2 and Tobin's Q in Models 3-4. Independent variables include firm fundamentals over the same time period. The sample consists of exited buyouts in 1986-2006 period and control firms selected on propensity score quintiles over matching time periods. P-values are reported in parentheses.

Dependent Variable	$\Delta P/\text{Sales}$		$\Delta \text{Tobin's Q}$	
	Model 1	Model 2	Model 3	Model 4
<i>Intercept</i>	-0.071*** (0.00)	-0.082*** (0.00)	0.005 (0.66)	0.017* (0.06)
<i>Propensity Score</i>	10.011*** (0.00)	10.543*** (0.00)	8.935*** (0.00)	7.896*** (0.00)
$\Delta \text{Industry ROA}$	0.080 (0.56)	0.106 (0.44)	0.087 (0.50)	0.011 (0.93)
$\Delta \text{Industry Price/Sales}$	0.023*** (0.00)	0.024*** (0.00)		
$\Delta \text{Industry Tobin's Q}$			0.120*** (0.00)	0.121*** (0.00)
ΔAssets	0.026 (0.12)	0.031* (0.06)	-0.186*** (0.00)	-0.169*** (0.00)
$\Delta \text{Leverage}$	-0.875*** (0.00)	-0.873*** (0.00)	-0.222*** (0.00)	-0.151*** (0.01)
ΔROA	0.497*** (0.00)	0.902*** (0.00)		0.697*** (0.00)
$\Delta \text{COGS/Sales}$	-1.529*** (0.00)		-1.280*** (0.00)	
$\Delta \text{SG\&A/Sales}$			-1.241*** (0.00)	
$\Delta \text{Capex/Sales}$				0.192*** (0.00)
$\Delta \text{R\&D/Sales}$		4.116*** (0.00)		
<i>RLBO Dummy</i>	0.202** (0.05)	0.220** (0.04)	0.124* (0.08)	0.115* (0.07)
$\Delta \text{Leverage}^*$	0.631** (0.03)	0.685** (0.02)	0.823*** (0.00)	0.763*** (0.00)
<i>Adjusted R²</i>	8.01	5.52	6.29	6.79
<i>Observations</i>	12,438	12,438	10,544	12,428

*** Significant at the 0.01 level.
 ** Significant at the 0.05 level.
 * Significant at the 0.10 level.

find a significant decrease surrounding the RLBO (see Panel B in Table 2).

In summary, we find that during the private period our sample firms conduct significant downsizing in total assets, fixed assets (PPE), and employees, which results in improved productivity. The substantial reduction in PPE is consistent with the disciplining effect of leverage.¹⁴ At the same time, the investment decisions for our sample firms, as reflected in their capital and R&D expenditures, remain similar to those of the control firms over the various stages from pre-LBO to post-

RLBO. Further, our sample firms enjoy lower SG&A/Sales relative to the matched control firms both prior to the LBO and after exit while managing to reduce COGS/Sales significantly over the private period. These restructuring measures undertaken during the private period lead to superior firm performance and higher valuation upon exit.¹⁵

Valuation at the RLBO

While restructuring may enhance value, our results also suggest that RLBO firms are undervalued at the time of the

14. One plausible explanation of this result lies in previous literature that finds that dramatic increases in leverage leads to less competition, and thus higher margins and profitability (See Chevalier (1995) and Kovenock and Phillips (1997)).

15. To ensure that our results are not due to a sample of "better" buyout firms, we compare our RLBOs with other public companies firms that underwent an LBO but did not yet re-emerge as a public entity. Comparing our firms with a sample of 570 non-

RLBO firms, our analysis finds both samples are very similar in terms of industry-adjusted profitability, leverage, capital expenditures, research and development, gross margin, tangible assets, sales per employee, and ownership concentration. The non-RLBO firms were also undervalued while outperforming industry rivals and carrying higher leverage and dividend payout than the industry norms. In sum, our results suggest that RLBOs are no better than other public-to-private LBOs that did not re-emerge as a public entity.

The Case of Safeway Stores

When it was taken private in an LBO by KKR in 1986, Safeway was the largest grocery chain in the U.S., with revenue of \$20 billion. By 1990, Safeway had partly returned to public ownership and become the third largest, but the most profitable chain in the country.

Peter Magowan, the CEO of Safeway under public as well as private ownership, offered the following explanation in this discussion with **Bennett Stewart**:¹⁶

Stewart: But what if you grow profits simply by investing lots of capital, including retained earnings, while failing to earn an adequate return on all that invested capital?

Magowan: *That* in fact was *our* problem when Safeway was a public company. Our profits grew at 20% per year for five years in a row, from 1981 to 1985. But we were still subjected to a hostile takeover—and deservedly so. We were not earning adequate rates of return on the capital we were investing to achieve that 20% growth. We were not realizing the values that were there for someone else to realize for our shareholders. And the interesting thing is that we *thought* all the while that we were doing quite well. Our stock tripled during that period of time, we raised the dividend four years in a row, and 20% earnings growth seemed pretty darn good.

Stewart: What was your P/E ratio?

Magowan: Our P/E at that time was around 14. It was below that of the best companies in the industry; and, by really every financial measurement, we were in the middle of the pack. For this reason, and with hindsight, it now seems clear why outsiders could come in and see a way of buying that company for \$4.2 billion—way above its then current market value—and improving it so it was worth \$5.2 billion a few years later. And I think that's an important lesson for corporate America.

Stewart: In order for Safeway to create this kind of value, you had to sell a lot of stores and lose a lot of employees. What do you say to critics of these decisions?

Magowan: When we went through our leveraged buyout at Safeway, critics said what we were doing was not in the best interests of the employees—especially those that disappeared when we sold off many of our stores. But I would argue that, for most of those employees that we lost, our sale of the stores in fact served their best interests as well as the interests of our stockholders. Most of those employees didn't lose their jobs, they went with the buyer of those assets. And, it's important to keep in mind that we sold only those stores that we felt we could not operate successfully.

By contrast, the new buyers of those assets were buying them precisely because they expected to be more successful than we were. The employees of those stores benefited from the fact that the new buyers bought those stores with the intention of putting more capital into those businesses than we could. And for most employees, that new capital means more job security. At the same time, by selling off our less successful stores, we were able to put more capital into and thus grow the stores that we retained. In this sense, the lot of our existing employees was also improved. Our employees today thus have greater job security and more chance for promotion because we are investing capital in the business again.

Our customers have also benefitted from the LBO because our prices are more competitive than they used to be. Our customer service has also been improved. We have 23% more help in our stores, on average, than we had four years ago, which represents quite a significant investment.

Stewart: At a lower employee cost or a higher cost?

Magowan: At a higher cost, on an overall basis.

Stewart: So does that mean you're now providing a lower return for the owners of the business?

Magowan: Not at all. The stock's gone from \$2 to \$18 in four years.

Stewart: Is that primarily because the entire market has gone up, or because the company's real cash flow returns have improved?

* The discussion took place on March 15, 1991.

16. This exchange was taken from "Continental Bank Roundtable on Corporate Performance and Management Incentives," *Journal of Applied Corporate Finance*, Vol. 4 No. 3 (Fall 1991). >>

The Case of Safeway Stores continues

Magowan: The real cash flow returns are a lot higher. In 1990, we had \$130 million more operating profit than we had four years ago in 1986 (the last year prior to our LBO). And, remarkably enough, we achieved that increase in spite of large asset sales and a \$5 billion reduction in sales since 1986.

Stewart: So you must have reduced some other part of your cost structure, if total employment costs are up?

Magowan: No, employment costs represent the major part of the cost structure; and total costs per employee have

gone up. At the same time, though, our sales and gross profits have gone up much faster than our employment costs, thus raising operating earnings.

Stewart: So, you've sold more of your product per store and per employee?

Magowan: That's right. Our sales per store and per employee have both gone up sharply.

LBO compared to control firms. In the final part of our study, we attempted to determine the extent to which their increases in valuation were attributable entirely to restructuring gains, or partly the result of undervaluation at the LBO. To do so, we used regression analysis to test whether the change in RLBO sample firms' valuation exceeds that of control firms after controlling for the effects of the private-period restructuring.

The key variable in our tests was an RLBO "dummy variable," for which a positive and significant coefficient would imply that some of the improvement in valuation is due to undervaluation at the time of the buyout. We used two valuation metrics that are used by investment bankers to value firms: (1) the price-to-sales ratio was our relative equity valuation metric and (2) Tobin's Q was used to proxy for firm (or enterprise) valuation. For our sample RLBO firms, restructuring changes were measured during the private period and compared to changes at control firms during a matching time period.

In Table 3, we report regression estimates for four different models. The first two (Models 1-2) attempt to explain changes in price-to-sales ratios; and the second two (Models 3-4), changes in Tobin's Q. The focus of our models is on key variables capturing changes in profitability (ROA), cost structure (COGS/Sales and SG&A/Sales), investments (R&D/Sales and Capex/Sales) and financial structure (Leverage). Our main control variables include changes in assets, in industry ROA, in industry price-to-sales and Tobin's Q ratios, and in "propensity" (or the predicted probability of an RLBO at the time of the LBO) during the same period.

As expected, our Models 1 and 3 provided clear evidence that increasing equity and firm valuations are inversely related to changes in cost structure (COGS/Sales and SG&A/Sales), and that changes in ROA are consistently and positively related to improved firm valuation. The coefficients on each of these variables imply that capital markets value restructur-

ing improvements in cost structure and profitability. At the same time, Models 2 and 4 suggest that increases in R&D/Sales and Capex/Sales are positively associated (and significantly so) with increase in value, which suggests that the capital investment policies of RLBOs are implemented with a long-term perspective in mind, and that the market values such restructuring decisions.

But more important for our purposes, our focus variable, "RLBO Dummy," is consistently positive and significant in all four models. This implies that the changes in equity and enterprise value for our sample firms during the private period exceed that of the control firms, after controlling for both the restructuring activity and changes in the industry. These findings provide suggestive evidence that our sample firms were undervalued at the time of the LBO, and that investors in buyouts are able to capture value. More specifically, the average coefficient on the *RLBO Dummy* implies that RLBOs increase equity valuation by approximately 50%, while enterprise value rises by about 10% above levels that would have been expected from restructuring gains alone. Needless to say, these findings are economically (as opposed to just statistically) meaningful.

In addition, we find that, over the private period, changes in leverage are negatively related to changes in our two proxies for valuation, the P/Sales (equity valuation) and Tobin's Q (enterprise valuation) ratios. The same relationship holds for the matching control firms. However, when we allow our variable for changes in leverage to "interact with" our RLBO dummy for undervaluation, we obtain a positive and highly significant coefficient. And these two findings together would appear to imply that the greater the increase in leverage used to effect the LBO, the lower the value—and perhaps the greater the undervaluation—of the firm prior to the LBO.

In the case of *equity* valuation (using the price-to-sales ratio), the size of the positive coefficients for the interaction term is similar to that of the estimated negative coefficient

for the “unconditional” leverage term. In contrast, the “cross-product” positive coefficient is significantly larger than the negative coefficients on the leverage term for enterprise value.¹⁷ These results suggest that leverage is *enterprise* value-enhancing for RLBO firms (but not for control firms), and that the capital structure resulting from the LBO appears to have a beneficial effect on corporate operating decisions and efficiency.

Conclusions

Using a sample of “pure” RLBOs—that is, public-to-private transactions that return to public ownership through an IPO—during the period 1986-2006, we examine the restructuring activities undertaken during the private period and the resulting changes in the values of these companies. We show that these firms are more profitable than their peers before they go private. Further, our sample firms hold significantly more debt than industry competitors in the pre-buyout period. Moreover, the fact that their capital investments in the pre-buyout period do not translate into lower profitability, combined with their commitment to service higher debt levels and pay higher dividends, appears to contradict the conventional notion that these firms are poorly run. But in spite of their superior performance, our sample firms also appear to command lower valuations at the buyout, which leads us to suggest undervaluation (or “value capture”) as one of the primary motives for the buyout transactions.

During their time as private companies—on average, about five years—our sample firms increase productivity by downsizing assets and employees and achieving efficien-

cies by reducing cost of goods sold. And by the time of the return to public ownership, the profitability of our sample of RLBOs relative to that of control firms has improved significantly since the pre-buyout period. After their re-IPOs, moreover, their performance exceeds that of their industry peers for at least the next five years. And even though post-IPO deleveraging occurs along with reductions in ownership concentration, both these metrics continue to remain at elevated levels and far exceed industry norms. And employee productivity gains are documented for the year of the exit and the following year.

In sum, the private-period restructuring of these previously public entities yields significant efficiency gains and increases in value—increases that continue after IPO and return to public ownership. At the same time, however, our results imply that undervaluation at the time of the LBO may well account for a significant portion of the improved valuation at exit.

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17. We also find that growth in sales has a value-enhancing effect on the firm. In addition, when we employ an interaction term between sales growth and the RLBO dummy variable, we find that valuation is higher for RLBO firms, which suggests that restructuring activity employed by RLBO firms during the private period to increase sales is more value enhancing than that undertaken by control firms.

Appendix A

Selected Characteristics of Some Representative RLBOs

Firm	Before the LBO					After the RLBO			
	Private Period	Sales*	Assets*	Tobin's Q	P/Sales	Sales*	Assets*	Tobin's Q	P/Sales
<i>Alliance Imaging</i>	3.58	92.77	207.75	1.65	0.95	364.89	640.11	2.00	1.54
<i>Amer. Classic Voyages</i>	5.76	51.45	60.19	1.06	0.34	75.70	86.73	2.81	2.61
<i>AMF Corp.</i>	12.02	1,815.95	1,557.59	0.96	0.35	765.62	1,965.42	1.46	2.09
<i>Homedco Group</i>	6.06	538.02	417.07	1.50	0.82	280.79	129.69	2.97	1.07
<i>Bucyrus International</i>	6.81	289.55	189.78	1.32	0.35	414.05	358.10	2.65	1.79
<i>Calton Inc.</i>	0.57	156.71	192.91	1.09	0.29	238.90	285.87	1.20	0.60
<i>York International</i>	2.87	1,798.66	1,479.13	1.02	0.01	2,089.13	1,524.18	1.41	0.45
<i>Morton's Restaurants</i>	3.53	230.59	131.01	1.36	0.20	275.01	249.12	1.47	0.87
<i>Tiffany & Co.</i>	8.02	158.98	113.90	1.02	0.48	336.67	184.81	2.04	0.88
<i>Topps Co.</i>	3.24	120.53	69.90	1.78	0.69	248.75	170.84	3.80	1.40
<i>Unitog Co.</i>	5.05	119.48	70.81	0.87	0.28	168.72	104.67	1.47	0.50
<i>Vail Associates</i>	11.01	125.18	181.24	1.09	0.57	354.58	918.26	1.57	2.70
<i>Scholastic Corp.</i>	4.61	312.31	153.80	1.48	0.44	600.53	277.40	1.97	0.68

* Adjusted to the year 2000 with the Consumer Price Index

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