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THE STAYING POWER OF LEVERAGED BUYOUTS

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ABSTRACT

This paper documents the organizational status over time of 183 large leveraged buyouts (LBOs) completed between 1979 and 1986. As of August 1990, 63% of the LBOs are privately owned, 14% are independent public companies, and 23% are owned by other public companies. As time since the LBO increases, the percentage of LBOs that have returned to public ownership increases. The (unconditional) median time LBOs remain private equals 6.70 years. This evidence suggests that the majority of LBO organizations are neither short-lived nor permanent. In addition, the moderate fraction of LBOs assets owned by other (potentially related) companies implies that asset sales play a role in, but are not the primarily force motivating LBO transactions.

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1. Introduction

In the 1980s, an unprecedented number of public corporations and their divisions went private in leveraged buyout transactions (LBOs). LBO activity increased from $1.4 billion in 1979 to $77 billion in 1988.[1] LBOs are typically characterized by debt to total capital ratios exceeding 85%, significant equity ownership by management, and (in the case of public company LBOs) premiums to public shareholders exceeding 40%. In addition to including management, the buyout investor group often is led by a LBO sponsor or promoter that structures the transaction, owns or controls the majority of the company's equity, and controls the board of directors.

In spite of the large transaction volume, LBOs remain poorly understood. In particular, there is a healthy debate concerning the stability of the LBO organization which, in turn, has implications for the possible sources of value in LBO transactions.[2] Jensen (1989) argues that LBO organizations solve the free cash flow problem faced by companies in low growth industries. A large portion of the wealth increases in LBO transactions are directly attributable to the incentives LBOs provide to pay out free cash flow. These incentives include large debt-service payments, large equity stakes for managers, and often the presence of an LBO sponsor -- labelled an active investor by Jensen -- who monitors and controls the management team. Although public companies (and their managers) are capable of obtaining the same benefits, they rarely have the incentive to do so. In low-growth businesses, therefore, Jensen argues the public corporation is inferior as an organizational form to the LBO organization.

Rappaport (1990) disagrees that the LBO organization is superior to the public corporation. He argues that the discipline of debt and concentrated ownership imposes costs of inflexibility to competition and change. As a result, he claims that buyouts are inherently

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[1] See Jensen (1989). Figures are in 1988 dollars.

[2] See Kaplan (1989a and 1989b) for a discussion of and evidence on sources of value in management buyouts of public companies.

transitory organizations. The typical active investor invests funds provided by outside investors who expect to be repaid in five to ten years. Rappaport argues that LBO firm equity will be sold to the public in an initial public offering (IPO), or sold to a public company in a related business to meet this repayment constraint.

In their study of hostile takeovers, Bhagat, Shleifer and Vishny (1990) also question the importance of incentive-intensive organizations. They find that only 20% of the assets involved in hostile takeovers are owned by LBO organizations two to three years later. Alternatively, they find that 72% of the assets end up owned by corporations with similar assets -- related or strategic buyers. They conclude that raiders and LBO promoters serve largely as brokers rather than operators.

Finally, Kaplan (1989a) and Schipper and Smith (1988) consider the importance of taxes as a source of value in management buyouts. The value of tax benefits depends largely on the value of the tax deductibility of debt. This, in turn, depends on the length of time the increased debt is maintained. Tax benefits of debt are more valuable if the debt is permanent than if it is paid off within two or three years of the buyout.

Under Jensen's view that LBO incentives are a critical source of value, LBOs should remain private for an unspecified, but significant period of time. To the extent that LBOs do subsequently go public, Jensen's view suggests that debt levels will remain high and equity will still be largely held by managers and active investors. The maintenance of high debt levels would also be consistent with an important role for tax benefits.

In contrast, Rappaport expects LBOs, needing the flexibility offered by access to public markets, will return to public ownership relatively quickly. The arguments and results of Bhagat et al. suggest that some of these LBOs will return to public ownership as divisions of related or strategic buyers.

In this paper, I consider the evidence for the Jensen and Rappaport views of LBO

organizations. I examine the post-buyout organizational form of 183 large LBOs completed between 1979 and 1986 from the time of their completion through August 1990. As of August 1990, 63% of the LBO companies are privately owned, 14% are publicly owned and still independent, while 23% have been purchased by publicly owned U.S. or foreign companies. The 63% reflects the current organizational status of the LBO company, ignoring the current organizational form of assets sold (and purchased) after the buyout. The percentage of LBO assets privately owned changes only slightly, decreasing to 60%, when assets sold (but not assets purchased) are considered.

The 63% and 60% figures given above are "reduced form" percentages in that they measure the current organizational status of the LBO assets, ignoring the path taken to reach that status. LBOs private as of August 1990 include those that return to private ownership after first having returned to public ownership. Almost 45% of the 162 LBOs whose status can be identified through the entire period return to public ownership at some point after the buyout. The median time -- conditional on returning public -- these companies remain private is only 2.63 years. However, the unconditional estimate of the median time private equals 6.70 years. The likelihood that a LBO returns to public ownership is small in the first year after the LBO and appears to be larger and constant thereafter.

Overall, this evidence suggests that the typical buyout is neither short-lived, nor permanent. Consistent with the Rappaport model, the large fraction of LBOs that return to public ownership suggests that the LBO is often a transitory organizational form, bridging periods of public ownership.

Alternatively, consistent with the Jensen model and the importance of the incentive-intensive organization, a substantial fraction of LBO assets are private and still highly leveraged many years after the LBOs. In addition, many of the independent public companies appear to be hybrid organizations, retaining some of the characteristics of the

LBO organization. Equity ownership by managers and buyout investors exceeds 40% and debt ratios appear higher than pre-buyout levels in the LBOs that are currently independent public companies. These results are also consistent with an important role for tax benefits.

The results also imply a moderate, but not primary role for asset sales to strategic buyers in LBOs. Almost 32% of the original LBO assets are owned by companies with other operating assets. Because some of these buyers might be in unrelated businesses and because asset purchases are not counted, 32% is an upper bound on the percentage of assets that can be owned by strategic buyers. This is a lower percentage than the 72% reported by Bhagat et al. for three years after hostile takeovers, and somewhat lower than the 43% reported for the 7 LBOs in their sample. In contrast to their findings for hostile takeovers, the results for LBOs in this paper are consistent with incentives playing a role in explaining value increases.

The paper proceeds as follows. Section 2 describes the sample and the data collection process. Section 3 presents a detailed analysis of the private / public organizational status of the LBOs over time. Section 4 describes other current characteristics of the LBOs. Section 5 examines the cross-sectional determinants of organizational status and section 6 concludes.

2. Sample and Data.

2.1 Sample.

The sample includes those transactions identified as leveraged buyouts by Securities Data Corporation (SDC) or Morgan Stanley & Company between 1979 and 1986. I exclude transactions completed after 1986 to ensure at least 3.67 years for changes in organizational form to occur. To increase the likelihood of identifying a company's current organizational status, I include only those buyouts with a transaction value greater than $100 million. These criteria generate a sample of 183 companies. Column A of table 1 shows the

number of transactions completed over time.

These sample buyouts were valued at $83.0 billion when they were completed. Over the same period, W.T. Grimm's Mergerstat Review reports $92.2 billion in going private and unit management buyout transactions. This sample, therefore, includes a large fraction of the dollar value of transactions completed between 1979 and 1986.

2.2 Post-Buyout Information.

I obtained post-buyout information on these companies from Lotus' Datext (public and private) databases, Wall Street Journal articles from the year the LBO was completed through August 1990 and, when available, financial reports filed with the SEC. Whenever possible, the corporate treasurer or controller of each sample company was called to confirm the information. The post-buyout information includes and the telephone interviews attempted to confirm the following: 1) the date and dollar value of the original transaction; 2) if any assets had been sold since the LBO and if so the assets sold, their dollar value, the acquirer, and the organizational form of the acquirer; and 3) the current ownership status / organizational form of the company.

3. Post-buyout status - private or public assets?

3.1 Current organizational status -- LBO company.

Table 1 presents the current status of the 183 buyout companies by year of LBO. These companies are classified into one of four basic categories: (1) unidentified; (2) liquidated; (3) still privately owned (including companies in Chapter 11); or (4) publicly owned. Some post-buyout information is available for 171 of the 183 companies. The remaining 12 could not be identified; presumably, they have either changed their names, been sold, or gone bankrupt. At most, therefore, the analysis in the rest of the paper uses these 171 companies. An additional 9 companies were ultimately liquidated or sold off in

more than one piece, and, therefore, have an ambiguous current organizational form. The remaining 162 companies have an August 1990 organizational form that I could identify. At a minimum, the analysis that follows uses these 162 companies.

As of August 1990, 63.0% (or 102) of the 161 LBOs of known status are still privately owned. The remaining 37.0% (or 60) are publicly owned -- 13.6% (or 22) are independent public companies while 23.5% (or 38) are owned by other public companies. The 63.0% result pertains to all of the LBOs in the sample. LBOs completed at the end of 1986 have had as little as 3.67 years to change organizational forms since the buyout compared to over 11 years for LBOs completed in 1979. If LBOs are transitory organizations with uncertain lives, one would expect earlier LBOs to be less likely to be privately owned. The pattern in table 1 is roughly consistent with this. Only 46.3% of LBOs completed by 1983 are still privately owned compared to almost 68.6% of LBOs completed after 1983. However, the pattern is by no means monotonic. Fewer than 31% of the LBOs completed in 1983 are still private compared to almost 55% of those completed in 1981.

3.2 Current organizational status -- all assets.

The previous results reflect the current organizational status of the LBO company. They would be misleading if many of the buyout companies make large divestitures and sell the divested assets to public companies. To address this possibility, I calculate the fraction of a company's assets that are private as of August 1990. For each sample LBO, I determine the current organizational form of all of that company's assets. If no assets have been sold, the fraction of a company's assets that are private is determined by its current organizational status. For LBOs which have sold assets, the fraction of assets still private is calculated as the value weighted average of the organizational forms of the sold and retained assets. In the few cases the LBO company has been liquidated, the sale prices of the different assets are used as weights. In those cases in which some assets are not sold (and, therefore, cannot

be valued), accounting numbers are used as weights. When they can be calculated, the operating income before interest, depreciation, and taxes of the different pieces are used as weights. Book assets are used if operating income is not available, and, finally, sales, if book assets are not available. In all cases, the weights are based on the assets held by the LBO at the time it went private.

Table 2 shows that the adjustment for asset sales decreases the fraction of assets privately owned slightly -- from 63.0% to 60.1%. The pattern over time is similar to that for the current organizational form of the LBOs. The number of LBOs that contribute to this table increases to 166 because the assets of four of the liquidated companies can be traced.

It is worth adding that the 60.1% result should be considered a lower bound on the assets private because it does not adjust for asset purchases by the private companies. If asset sales to public entities are considered public, subsequent asset purchases by the private companies could be considered to be private.

3.3 Organizational status by year after LBO.

Instead of presenting the fraction of LBOs that are private by year of LBO completion, table 3 presents the fraction of LBOs that are private by year after the LBO. This is analogous to considering organizational status in event time. This table uses all 171 of the LBOs for which data are available. The nine companies that are subsequently liquidated are included for years in which their organizational forms are unambiguous.

From year 1 to year 8 after the buyout, the fraction of LBOs that are privately owned decreases monotonically from 97.1% to 52.2%. The fraction increases in years 9 and 10, but those increases are based on a small number of observations.

Tables 1-3 show that LBOs return to public ownership at widely varying times. Almost 25% of the LBOs are publicly owned three years after the buyout, rising to almost

50% by eight years after the buyout. This pattern suggests that the typical buyout is not short-lived nor is it permanent.

3.4 Estimates of time spent private.

The percentages given above are "reduced form" percentages in that they measure the current organizational status of the LBO assets. They do not distinguish between (1) LBOs still private from the original LBO and (2) LBOs that have gone private a second time after returning to public ownership. Table 4 presents the time pattern relative to the year of buyout completion by which LBOs returned to public ownership. Almost 45% -- 72 of 162 -- of the LBOs whose status can be identified through the entire period return to public ownership at some point after the buyout. Forty-one of these companies return public by issuing equity to public shareholders. The remaining thirty-one companies are purchased by publicly owned companies -- both domestic and foreign. The median (average) time -- conditional on returning public -- these companies stayed private is only 2.63 (2.83) years. This is similar to the 2.42 median (2.89 average) time spent under private ownership by the 72 firms in Muscarella and Vetsuypens (1990). The differences between the 45% result in this section and the smaller percentage in the previous ones reflect the fact that 12 of the 72 companies that return to public ownership subsequently go private again. Nine of these 12 are independent public companies that complete a second LBO. The remaining three are owned by other public companies that subsequently go private. The 12 companies remain public a median (average) of 2.46 (2.34) years before going private again.

If all the LBOs in the sample had returned to public ownership at a known time, it would be possible to calculate the unconditional median (and average) time private directly. As table 4 shows, however, the majority of LBOs in this sample are private as of August 1990 and must be considered censored observations. LBOs are censored in year i after the LBO if they are still private as of August 1990, but were completed between i-1 and i years

before August 1990.

It is possible to use the information about returns to public ownership and censored observations to estimate the distribution of times it takes an LBO to return to public ownership. The product limit or Kaplan-Meier estimate of the survivor function is:

$$S(t_j) = \prod_{k=1}^{j} (1 - d_k / n_k)$$

where d_k is the number of LBOs that return public at t_k and n_k is the number of LBOs that have (1) not yet returned public prior to t_k and (2) were completed at least t_k years before. These estimates can be considered maximum likelihood estimates [See chapter 1 of Kalbfleisch and Prentice (1980)]. The cumulative failure rate equals 1 - S(t), where the cumulative failure rate is equivalent to the cumulative distribution function of the probability of returning to public ownership.

Table 4 shows that the median survival time or time to public ownership is between 6 and 7 years after the LBO. The estimated median time is 6.70 years. If the last observation were not censored and the oldest LBO returned public in September 1990, the estimated mean would equal 6.79 years. Because the last observation is censored, this estimated mean is clearly downward biased. The estimated standard error using the 6.79 year mean is 0.37.

The data used to construct table 4 can also be used to estimate the relation between the likelihood of returning public and time. This relation is known as the duration dependence. Duration dependence is positive (negative) if the probability a LBO company returns to public ownership during the i^{th} period, conditional on being private at the beginning of the i^{th} period, increases (decreases) over time.

An examination of duration dependence is interesting because it provides important information on the process by which LBOs return to public ownership. A finding of negative duration dependence would imply that LBOs remaining private for some time

become increasingly likely to remain private in the future. This could result if initial uncertainty about the benefits of private ownership are resolved over time. Companies that find the benefits of private ownership to be large become increasingly less likely to return to public ownership. Negative duration dependence would be consistent with permanence for some LBOs.

Alternatively, negative duration dependence could also reflect the existence of unobserved heterogeneity. For example, if there were two different LBO types -- short-term information-based LBOs and longer-term incentive-based LBOs -- both with constant hazard rates, initially, a random LBO's likelihood of returning public (conditional on being private) will be a weighted average of the number of the two types in the sample. Over time, however, the short-term LBOs will return to public ownership and only long-term LBOs will remain. As a result, estimated duration dependence will be negative. However, the longer-term LBOs will continue to return to public ownership at their same constant rate.

Negative duration dependence, therefore would be consistent with permanence for some LBOs, but could also indicate the presence of unobserved heterogeneity. In contrast, positive and no duration dependence both would imply that LBOs return to public ownership at some constant or increasing rate.[3]

Although more sophisticated methods exist, the simplest way to study duration dependence is to estimate a logit regression model.[4] The hazard rate in this analysis is the probability that a LBO company returns to public ownership in the i^{th} year after the LBO, given that the LBO was still private at the beginning of the i^{th} year. If an LBO has fewer than i complete years of post-LBO operations, that i^{th} company-year is not counted as an observation. Independent variables can be created for each company-year. To examine

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[3] See Kiefer (1988), p.671-2, for a clear discussion of these issues.

[4] See Allison (1984), Kalbfleisch and Prentice (1980), or Kiefer (1988). The results using the logit model are qualitatively identical to those obtained using hazard model estimates.

duration dependence, dummy variables are assigned for each company-year that equal one if the company-year is the i^{th} post-LBO year and zero otherwise. In addition to potential duration effects, year effects can exist. For example, LBOs completed in 1983 may have been different from LBOs completed in 1986. Accordingly, a set of dummy variables are assigned to each company-year based on the year the LBO was completed.[5] The company-years are then pooled and the usual logit regression model is estimated on the resulting sample.

Table 5 presents the logit model estimates. Regression 1 indicates that the estimated probability of returning public (conditional on being private) is lowest in the first post-buyout year -- the coefficients imply the probability is 3.7%. The implied probability peaks in the fourth year at 13.9% and drops slightly thereafter. This suggests positive duration dependence followed by slightly negative duration dependence.

Regression 2 replaces the variables for the 2nd year through the 9th year and after with one variable for the second year and after. The likelihood ratio test statistic of 1.0 is not significant (chi-square distribution with 7 degrees of freedom). The data, therefore, do not reject the hypothesis that after the first year, the LBO companies are equally likely to return to public ownership. The coefficients imply that the probability of returning public in any year after the first year is 11.9% while the probability of returning in the first year is only 3.7%.

Regression 3 retains the 2nd year and after variable, but adds variables indicating the LBO completion year. The completion year variable should be compared to LBOs completed in 1986. Regression 3 indicates that only LBOs completed in 1983 are significantly more likely to return to public ownership in a given year than are LBOs

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[5] The results are similar when the LBO completion year dummies are replaced by dummy variables for each observation year. For example, the dummy variable for 1988 equals one if the company-year ends in 1988, and 0 otherwise. This provides an alternative control for year effects.

completed in other years. Given the data limitations of this sample, it is difficult to know why deals completed in 1983 are different. Regression 3 also shows that controlling for the completion year has only a minor effect on the duration dependence of returning public.

Overall, the results in this section suggest that LBOs return to public ownership at a slow, but steady rate. Because the data do not exhibit negative duration dependence, the results are consistent with one underlying hazard function (for one type of LBO) determining the distribution of time to return to public ownership. Again, this implies that LBO are neither short-lived nor permanent organizational forms.

4. Current LBO characteristics.

The analysis to this point distinguishes between privately and publicly owned assets. It does not describe whether LBO companies and assets are still independently owned or have been purchased by other companies. In addition, the private / public dichotomy does not necessarily imply large differences in post-buyout leverage or equity ownership. This section presents evidence on post-buyout independence, leverage, and equity ownership.

4.1 Independent or strategic assets?

As mentioned earlier, Bhagat, Shleifer and Vishny (1990) question the importance of incentive-intensive organizations in hostile takeovers. They find that only 20% of the assets involved in hostile takeovers are owned by LBO organizations two to three years later. Alternatively, they find that 72% of the assets end up owned by corporations with similar assets -- related or strategic buyers. In their sample, raiders and LBOs serve largely as brokers rather than operators. They conclude that shareholder gains in hostile takeovers may be explained by efficiency gains from joint operations, but also by gains from market

power or from overpayment by the strategic buyers.

Table 6 distinguishes LBO companies in my sample by their current private or public status and by whether they are currently independent or owned by another company. LBO companies which are releveraged by a new LBO investor group are considered to be independently owned. Of the 162 LBOs I can classify, 45 or 27.8% are owned by companies with other operating assets. Because some of the purchasers of the LBOs might be in unrelated businesses, 27.8% is an upper bound on the percentage of LBO companies that can be owned by strategic buyers. The percentage of LBOs owned by other companies is smallest for LBOs completed in 1986. Excluding LBOs completed in 1986, the percentage increases to 35%.

Table 7 presents an analysis similar to that in table 2 by considering the current independent / non-independent status of all LBO company assets, including assets divested by the LBO company. An average of 31.8% of the assets for the 165 LBOs I can classify are owned by companies with other operating assets. Excluding LBOs completed in 1986, the percentage increases to 39%.

These results imply a moderate role for asset sales to strategic buyers in LBOs. Only 31.8% of the original LBO assets and 27.8% of the LBO companies are owned by companies with other operating assets at least 3.67 years after the buyout. The percentages owned by companies in the same industry are undoubtedly smaller. These are lower percentages than the 72% reported by Bhagat et al. for three years after hostile takeovers, and than the 43% reported for the 7 LBOs in their sample.

It is possible that asset sales are more important for LBOs motivated by hostile pressure. Accordingly, I divide the sample into hostile and friendly LBOs. LBOs are considered hostile if: (1) the LBO receives or is a response to a hostile takeover bid; (2) the LBO announcement follows the purchase of at least 5% of the LBO company equity by a hostile party in the prior six months; or (3) the LBO is a division of a company that

satisfies the hostile definitions in (1) and (2). For the 42 LBOs classified as hostile, 31.6% of the assets are owned by companies with other operating assets; the percentage is 31.5% for the 121 LBOs classified as friendly.[6] The extent of asset sales to strategic buyers, therefore, is not related to the actual presence of hostile pressure. (It is possible, but not testable, that this result would change if it were possible to measure unobserved, but perceived hostile pressure.)

In contrast to the results in Bhagat et al. for hostile takeovers, the results for this sample of LBOs are consistent with the view that incentives play a role in explaining the gains in LBOs.

4.2 Is high leverage maintained?

One of the distinguishing characteristics of a LBO is high leverage. Kaplan (1989b) reports a median debt to total capital ratio of 87.8% at buyout completion for management buyouts announced between 1979 and 1985. This contrasts with a debt to total capital ratio of only 18.8% before the buyout. LBOs that remain private need not retain their high leverage. Similarly, LBOs that return to public ownership do not necessarily eliminate their debt. This section considers the post-buyout capital structure, when available, of the sample LBOs at the end of fiscal year 1989 (the last fiscal year end with such data).

I measure post-buyout capital structure or leverage in three ways. The first measure is the book value of total debt (short-term and long-term) as a fraction of the book value of total capital where total capital is the sum of total debt, preferred stock, common equity. The second measure is the book value of total debt as a fraction of the LBO transaction value reported by SDC or Morgan Stanley. The third measure is the ratio of

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[6] The hostile-friendly status of two LBOs is ambiguous.

interest expense to operating income before interest, depreciation, and taxes in fiscal year 1989.

Capital structure data for the 1989 fiscal year are publicly available for 21 of the 22 LBOs that are independent public companies as of August 1990. Such data are available for only 33 of the 95 privately owned LBOs. Although the relatively small fraction of data for privately owned LBOs leaves open the possibility of ex post selection bias, the direction of that bias is not clear.

Panel A of table 8 shows that the 33 privately owned and independent LBOs maintain high levels of debt after the buyout. These companies have a median ratio of total debt to total capital is 0.978 at the end of fiscal year 1989. Total debt for these companies is 91% of the LBO transaction value. These values are similar to those found by Kaplan (1989b) at the time LBOs are completed. The median ratio of interest expense to operating income of 0.719 also seems high. Bernanke, Campbell and Whited (1990) find a median ratio of interest expense to cash flow of 0.219 in 1988 for all COMPUSTAT firms. Kaplan and Stein (1991) find that projected post-buyout interest expense to pre-buyout operating income is 0.833 for 124 larger management buyouts in the 1980s.

The 21 publicly owned and independent LBOs maintain a substantial amount of debt, but less than the privately owned LBOs. The median ratio of total debt to total capital is 0.663, while total debt is 58.8% of the LBO transaction value. The debt levels for the public LBOs are higher than the pre-buyout levels of 18.8% reported by Kaplan (1989b). Interest expense to operating income appears to fall more sharply. The ratio of 0.276 exceeds the median 0.219 found by Bernanke et al., but is much lower than the 0.833 found by Kaplan and Stein.

As the previous section indicates, almost 28% of the LBO companies have been purchased by other companies. Leverage data for the 1989 fiscal year are publicly available for 33 of these companies. Panel B of table 8 shows that the median ratios of debt to total

capital and interest expense to operating income for the four private LBO purchasers are similar to those of the private and independent LBOs. The ratios for the 29 public LBO purchasers are slightly less than, but similar to those for the independent public LBOs.

The results in this section suggest that privately owned LBOs, both independent and purchased. maintain debt levels similar to the levels when the LBO was completed. In contrast, publicly owned LBOs, both independent and purchased, maintain debt levels lower than the initial LBO levels, but higher than pre-buyout levels and median public company levels. These results seem consistent both with the Jensen incentive view and with the tax view.

4.3 Is high equity ownership maintained?

Another distinguishing characteristic of LBOs is concentrated equity ownership. Management and the LBO promoter typically own or control 100% of the post-buyout equity. According to the Jensen view, the concentrated equity ownership provides strong incentives for managers and the LBO promoter to maximize shareholder value. Almost by definition, LBOs which remain privately owned retain their concentrated equity ownership structure. It is an empirical question whether LBOs that return to public ownership, either as independent companies or as purchases of other companies, are still characterize by concentrated equity ownership.

Stock ownership data are available for 17 of the 21 independent public LBOs for fiscal year 1989. As panel A of table 8 indicates, buyout sponsors and management investors hold a median of 40.0% (and an average of 42.6%) of post-IPO equity in these 17 companies. McConnell and Servaes (forthcoming) examine over 1000 non-financial companies tracked by the Value Line Investment Survey in 1986 and find a median insider ownership of 5.0% (and an average of 11.8%). The much larger insider ownership

percentages of post-IPO equity suggest that significant incentives to maximize shareholder value are still present in LBOs that return public, but remain independent.

Stock ownership data are also available for 29 of the public purchasers of LBOs for fiscal year 1989. Insiders own a median of 5.7% (and an average of 16.2%) of the equity in these companies. These ownership percentages are slightly higher than, but not significantly different from the corresponding percentages in McConnell and Servaes. Independent LBO purchasers, therefore, do not appear to be characterized by particularly concentrated equity ownership.

5. Cross-sectional determinants of public / private status.

5.1 The importance of active investors.

Although Jensen's (1989) arguments are relevant for all LBOs, his primary focus is on active investors and LBO Associations. The primary examples of these organizations are LBO partnerships and the merchant banking divisions of investment banks and commercial banks. Accordingly, I classify the sample LBOs as involving one of three types of buyout investors: LBO partnership, merchant bank division, and other. LBO partnerships include Adler Shaykin, Clayton Dubilier, Forstmann Little, Gibbons Green, Hicks & Haas, Kelso, Kohlberg Kravis Roberts, Riordan Freeman, Thomas Lee, Warburg Pincus, and Wesray. Merchant banking divisions include Allen & Company, Bankers Trust, Citicorp, Donaldson Lufkin Jenrette, First Boston, Merrill Lynch, and Morgan Stanley. All other sample LBOs are classified as other. These include LBOs organized entirely by management and by less well-known LBO partnerships. To the extent that some of the LBOs classified as "other" are sponsored by less well-known LBO partnerships, this classification distinguishes between the less well-known and the larger, better-known LBO sponsors.

Panel A of table 9 shows the current private / public status of LBO companies by type of LBO investor. A lower percentage of the LBOs arranged by LBO partnerships,

52.3%, are currently private; the percentage of LBOs arranged by merchant banks that are currently private, 72.7%, is similar to the 65.6% for all others. The 52.3% for the LBO partnerships is different from the 66.9% for the other two groups at the 10% level (chi-square statistic = 2.96 with one degree of freedom). Although not presented, this difference remains in a logit regression that controls for the year of LBO completion. This suggests that LBOs arranged by LBO partnerships are somewhat less likely to be permanent.

5.2 Divisions vs. public companies.

LBOs of divisions may be driven by the same underlying causes as LBOs of public companies. However, there are reasons that divisional LBOs might have different motivations from those for LBOs of public companies. First, it is possible that managers in LBOs of public companies use their private information to purchase the company at a price below its true value. The gains in these LBOs come from information advantages rather than from any superiority of organizational form. The information differences between divisional managers and parent-company managers are arguably smaller than those between public company managers and the stock market. If such differences are important, public companies should return to public ownership more often.

Alternatively, it is possible that divisional buyouts have a greater need for capital. One common reason for divestitures is that the divested division is not part of the parent company's core business.[7] This suggests that the parent may have ignored (or been unhappy with) the division's operations. It seems plausible that these divisions will have valuable investment projects that the parent company previously prevented them from pursuing. Accordingly, divisional LBOs would be more likely return to public ownership than LBOs of

[7] See Kaplan and Weisbach (1990).

public companies.[8]

Panel B of table 9 presents the current private / public status of both divisional and public company LBOs. Almost exactly the same fraction of divisions and public companies, 62.2% and 63.8%, are still privately owned. Again, the result is the same in logit regressions that control for the LBO completion year. This suggests that LBOs, whether of divisions or public companies, are motivated by similar forces.

5.3 The importance of size.

As the market value of equity owned by undiversified LBO equity owners increases, the risk-bearing costs of these holdings also increase. The higher these costs are, the more likely should be the LBO company's return to public ownership. Similarly, a LBO company may require access to public equity markets to finance future investment after desired organizational changes are implemented under the LBO organization. It is probable that risk-bearing costs as well as the need to ultimately access public equity markets increase with the value of the LBO transaction.

Panel C of table 9 compares the current private / public status of LBOs valued at less than $300 million to that of LBOs valued at $300 million or more. Somewhat more of the larger LBOs -- 42.2% -- than the smaller LBOs -- 33.0% -- are currently publicly owned. The difference, however, is not significant at conventional levels (chi-square statistic = 1.48 with one degree of freedom).

In contrast, a logit regression that controls for the year of buyout completion suggests that LBOs valued at more than $300 is approximately 15% more likely (significant at the 5% level) to be publicly owned as of August 1990. If, however, transaction value or its log replaces the $300 million transaction value dummy in the logit regressions, the coefficient

[8] This is not entirely satisfactory because parent companies presumably could have divested the divisions by spinning them off to public shareholders.

becomes insignificant (although it remains negative). These mixed results suggest that risk-bearing costs play a moderate role in determining the public or private status of LBOs.

5.4 Differences in likelihood of returning to public ownership.

The results in the previous subsections show that the current public / private status of divisional LBOs is similar to that for public company and divisional LBOs while LBOs organized by LBO partnerships and larger LBOs are more likely to be publicly owned. Because they are based on the "reduced form" current organizational status, they may not accurately reflect any differences in the timing of returning to public ownership.

Table 10 presents the results of a logit regression identical to regression 3 of table 5 except that it includes LBO partnership, division, and size variables. The estimates confirm that LBOs arranged by LBO partnerships are more likely to return to public ownership (significant at the 5% level). For example, in the second or later year after a larger public company LBO, completed in 1986, the probability the LBO will return to public ownership is 11.4% if an LBO partnership is involved, 7.3% otherwise.

The estimates also suggest that divisional LBOs are more likely to return to public ownership at some point than LBOs of public companies (significant at the 5% level). For example, in the second or later year after a LBO completed in 1986, not involving a LBO partnership, the probability a larger divisional LBO will return to public ownership is 14.7% compared to 7.3% for a public company LBO.

At first glance, it is puzzling that the likelihood of returning to public ownership is greater for divisions than for public companies while the percentage of LBOs that are currently private does not differ for the two groups. Part of this difference occurs because 8 of the 12 LBOs that go private after returning public were divisional LBOs. Part may also be explained by the fact that relatively fewer of the divisional LBOs were completed in the early 1980s.

The finding that divisional LBOs return to public ownership more quickly than public company LBOs is not consistent with public company managers profiting from information advantages. The informational advantage is arguably smaller in divisional LBOs than in public company LBOs. In contrast, the result is consistent with divisional LBOs having a greater need for capital.

Finally, LBOs valued at $300 million or greater at the time of the LBO are significantly more likely to return to public ownership than LBOs valued at less than $300 million. For example, in the second or later year after a public company LBO not involving a LBO partnership, completed in 1986, the probability a larger LBO will return to public ownership is 7.3% compared to 1.9% for a smaller LBO valued at less than $300 million. This is consistent with the costs of risk-bearing and the need to access public equity markets being higher for larger LBOs.

6. Conclusion.

This paper has documented the organizational status over time of large leveraged buyouts (LBOs) completed between 1979 and 1986. Overall, the paper gives some support to both the Rappaport and to the Jensen (and tax) views of leveraged buyouts.

As of August 1990, 63% of the LBOs are privately owned, 14% are independent public companies, and 23% are owned by other public companies. As time since the LBO increases, the (unconditional) percentage of LBOs that have returned to public ownership increases. The hazard or the likelihood of returning to public ownership conditional on being private is small in the first year and appears to be larger and constant thereafter. The (unconditional) median time an LBO remains private equals 6.70 years. Consistent with Rappaport, the LBO appears to be a transitory organizational form. Although they are not permanent, the majority of LBO organizations are not short-lived.

Private ownership is not the only distinguishing characteristic of a LBO

organization. The paper also considers post-buyout independence, leverage, and equity ownership. The results suggest an important, but moderate role for asset sales to strategic buyers in LBOs. Fewer than 32% of the original LBO assets are owned by companies with other operating assets. Because some of these buyers might be in unrelated businesses and because asset purchases are not counted, 32% is an upper bound on the percentage of assets that can be owned by strategic buyers. The actual percentage is undoubtedly lower. This is much lower than the 72% reported by Bhagat et al. for three years after hostile takeovers, and somewhat lower than the 43% reported for the 7 LBOs in their sample. In contrast to those results for hostile takeovers, the results for LBOs are consistent with Jensen's view that incentives play a role in explaining the gains in LBOs.

LBOs that remain privately owned LBOs, both independent and purchased, maintain debt levels similar to the levels when the LBO was completed. In contrast, publicly owned LBOs, both independent and purchased, maintain debt levels lower than the initial LBO levels, but higher than pre-buyout levels and median public company levels. The independent public LBOs also appear to maintain relatively concentrated equity ownership. These results seem broadly consistent with important roles for incentives and tax benefits.

Further evidence is reported on the cross-sectional determinants of the private / public status of LBOs. LBOs arranged by LBO partnerships appear to be less permanent than LBOs arranged by others. The former are somewhat more likely to be publicly owned than the latter group of LBOs. At the same time, larger LBOs and divisional LBOs appear to return to public ownership more quickly than LBOs of public companies. This suggests that LBO partnerships, larger LBOs, and divisional LBOs have a greater need for liquidity and / or access to equity capital.

It is worth noting that this paper describes the experience of LBOs completed before 1987. Most of these LBOs are followed by a growing economy in the first few post-

buyout years. In contrast, many of the LBOs completed after 1986 have to contend with a weakening economy and, possibly less favorable stock and bond markets. At the same time, Kaplan and Stein (1991) present evidence that buyout prices and financial structures are more aggressive in 1986 to 1988 than in earlier years. The effect of the increase in deal aggressiveness and the weakening economy in 1990 on the organizational experience of LBOs is an open and interesting question.

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Table 1

Current ownership status of parent company by year of completion for 183 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986.

Year	Total LBOs[a]	Status Not Known[b]	Liqui-dated	Status Known	Percent Publicly Owned Aug. 1990[c]	Percent Privately Owned Aug. 1990[d]
1979 1980	5	0	0	5	40.0	60.0
1981	11	0	0	11	45.5	54.5
1982	13	1	0	12	50.0	50.0
1983	16	1	2	13	69.2	30.8
1984	37	1	5	31	39.0	71.0
1985	33	3	2	28	39.3	60.7
1986	68	6	0	62	29.0	71.0
1979-1983	45	2	2	41	53.7	46.3
1984-1986	138	10	7	121	31.4	68.6
All Deals	183	12	9	162	37.0	63.0

[a] Sample of leveraged buyouts identified as leveraged buyouts by either Securities Data Corporation or Morgan Stanley.

[b] A buyout's status is not known if we could not contact the company or find any information about the company.

[c] A buyout is considered a public entity if (1) it has issued equity to the public and is still a public company as of Aug. 30, 1990; or (2) a majority of the buyout company assets has been purchased by and is still owned by any public company, both domestic and foreign.

[d] A buyout is considered a private entity if the majority of the assets of the buyout company are still privately owned, either by the buyout company or by a subsequent private buyer.

Table 2

Estimated current ownership status of average company assets by year of completion of 166 leveraged buyouts[a] valued at more than $100 million and completed in the period 1979-1986.

Year	Number LBOs	Percent Assets Publicly Owned Aug. 1990[b]	Percent Assets Privately Owned Aug. 1990[c]
1979 1980	5	40.0	60.0
1981	11	42.7	57.3
1982	12	52.2	47.8
1983	13	75.4	24.6
1984	33	38.4	61.6
1985	30	42.6	57.4
1986	62	29.0	71.0
1979-1983	41	55.2	44.8
1984-1986	125	34.7	65.3
All Deals	166	39.9	60.1

[a] Sample of leveraged buyouts identified as leveraged buyouts by either Securities Data Corporation or Morgan Stanley. Twelve of 183 LBOs are excluded because we could not contact the company or find any information about the company.

[b] Assets of a buyout company are considered public if they are owned by a publicly owned company as of Aug. 30, 1990. This column measures the average fraction of company assets public for all LBOs completed in the given period.

[c] Assets of a buyout company are considered private if they are still privately owned, either by the buyout company or by a subsequent private buyer as of Aug. 30, 1990. This column measures the average fraction of company assets public for all LBOs completed in the given period.

Table 3

Ownership status of parent company by age of leveraged buyout for 171 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986.

Age of LBO	Total LBOs Status Known at Year i[a]	Percent Publicly Owned[b]	Percent Privately Owned[c]
Year 1	171	2.9	97.1
Year 2	169	14.8	85.2
Year 3	168	24.4	75.6
Year 4	135	32.6	67.4
Year 5	90	36.0	64.0
Year 6	63	39.7	60.3
Year 7	38	44.7	55.3
Year 8	23	47.8	52.2
Year 9	7	28.6	71.4
Year 10	4	0.0	100.0

[a] Sample of leveraged buyouts identified as leveraged buyouts by either Securities Data Corporation or Morgan Stanley. Twelve of 183 LBOs are excluded because we could not contact the company or find any information about the company. Year i is the end of year i after the buyout.

[b] A buyout is considered a public entity if (1) it has issued equity to the public and is still a public company; or (2) a majority of the buyout company assets has been purchased by and is still owned by any public company, both domestic and foreign i years after the buyout.

[c] A buyout is considered a private entity if the majority of the assets of the buyout company are still privately owned, either by the buyout company or by a subsequent private buyer i years after the buyout.

Table 4

Percentage of LBOs that return to public ownership by age of leveraged buyout for 162 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986.

Year After LBO	LBOs Private at beginning of Year i[a]	LBOs Returning to Public Ownership[b]	LBOs Censored[c]	Cumulative Survival Rate (LBOs private)[d]	Cumulative Failure Rate (LBOs public)[d]
Year 1	162	6	0	96.3	3.7
Year 2	156	20	0	84.0	16.0
Year 3	136	17	0	73.5	26.5
Year 4	119	16	26	62.8	37.2
Year 5	77	7	25	56.2	43.8
Year 6	45	3	13	52.1	47.9
Year 7	29	1	10	49.3	50.7
Year 8	18	1	6	46.6	53.4
Year 9	11	0	6	46.6	53.4
Year 10	5	0	1	46.6	53.4
Year 11	4	1	3	35.0	65.0

[a] LBOs private at beginning of year i include those LBOs that (1) have not yet returned to some form of public ownership; and (2) were completed more than i-1 years earlier. Includes only those 162 LBOs whose organizational status is known for all post-buyout years.

[b] A buyout is considered a public entity if (1) it has issued equity to the public and is still a public company; or (2) a majority of the buyout company assets has been purchased by and is still owned by any public company, both domestic and foreign i years after the buyout.

[c] LBOs censored are LBOs that (1) were completed between i-1 and i years earlier and (2) are still private as of August 1990.

[d] The cumulative survival rate, S(t), or product limit estimate equals:

$$S(t_j) = \pi_{k=1}^{j} (1 - d_k / n_k)$$

where d_k is the number of LBOs that return public at t_j and n_k is the number of LBOs that have (1) not yet returned public just prior to t_j and (2) were completed at least t_j years before. The cumulative failure rate, $1 - S(t_j)$, is the estimated fraction of LBOs that have returns to public ownership t_j years after completing an LBO.

Table 5

Logit regressions of the probability of returning to public ownership conditional on being privately owned as a function of the time from the LBO and of the LBO completion year for 162 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986. (Asymptotic t-statistics are in parentheses.)

Dependent Variable Equals 1 if LBO company returns to public ownership in given year conditional on being private at beginning of year, 0 otherwise.

	(1)		(2)		(3)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Constant	-3.26[1]	0.42	-3.26[1]	0.42	-3.45[1]	0.47
2nd year[a]	1.28[1]	0.48				
3rd year	1.30[1]	0.49				
4th year	1.44[1]	0.51				
5th year	1.08[10]	0.60				
6th year	1.15[10]	0.67				
7th year	1.01	0.85				
8th year	0.86	1.12				
9th year and later	0.96	1.13				
2nd year and later			1.26[1]	0.44	1.31[1]	0.44
1981 and earlier[b]					-0.22	0.44
1982					0.15	0.47
1983					0.78[10]	0.44
1984					-0.02	0.39
1985					0.59	0.39
N Obs.	688		688		688	
Log Likelihood	-217.9		-218.4		-215.0	

[a] The i^{th} year variables are dummy variables equal to one if the company-year observation is for the i^{th} year after the LBO and equal to zero otherwise. The 9th year and later (2nd year and later) variables equal one if the company-year observation is for the 9th year or later (2nd year or later) after the LBO and equal to zero otherwise.

[b] The variables 1982 to 1985 equal one if the LBO is completed in that year and zero otherwise. The 1981 and earlier variable equals one for LBOs completed 1981 and earlier.

[1] Significant at the 1% level; [5] Significant at the 5% level; [10] Significant at the 10% level.

Table 6

Number and ownership status as of Aug. 1990 of 162 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986.

Year	Total LBOs Status Known[a]	Public Aug. 1990[b]	Inde-pendent Public Co.	Owned by Other Public Co.	Private Aug. 1990[c]	Inde-pendent Private Co.	Owned by Other Private Co.	Percent Owned by Other Co.
1979 1980	5	2	2	0	3	2	1	20.0%
1981	11	5	1	4	6	6	0	36.4%
1982	12	6	2	4	6	5	1	41.7%
1983	13	9	3	6	4	3	1	53.8%
1984	31	9	3	6	22	20	2	25.8%
1985	28	11	3	8	17	15	2	35.7%
1986	62	18	8	10	44	44	0	16.1%
1979-1983	41	22	8	14	19	16	3	41.4%
1984-1986	121	38	14	24	83	79	4	23.1%
All Deals	162	60	22	38	102	95	7	27.8%

[a] Sample of leveraged buyouts identified as leveraged buyouts by either Securities Data Corporation or Morgan Stanley. Includes only those 162 LBOs whose organizational status is known for all post-buyout years.

[b] A buyout is considered a public entity if (1) it has issued equity to the public and is still a public company as of Aug. 30, 1990; or (2) a majority of the buyout company assets has been purchased by and is still owned by any public company, both domestic and foreign.

[c] A buyout is considered a private entity if the majority of the assets of the buyout company are still privately owned, either by the buyout company or by a subsequent private buyer.

[d] A buyout's status is not known if we could not contact the company or find any information about the company.

Table 7

Estimated percentage of company assets owned by independent companies compared to company assets owned by other companies by year of completion of 165 leveraged buyouts[a] valued at more than $100 million and completed in the period 1979-1986.

Year	Number LBOs	Percent Assets Independently Owned Aug. 1990[b]	Percent Assets Owned by Other Companies Aug. 1990[c]
1979 1980	5	80.0	20.0
1981	11	63.6	36.4
1982	12	58.3	41.7
1983	13	40.0	60.0
1984	33	67.7	32.3
1985	30	59.7	40.3
1986	61	80.5	19.5
1980-1983	41	56.6	43.4
1984-1986	124	72.1	27.9
All Deals	165	68.2	31.8

[a] Sample of leveraged buyouts identified as leveraged buyouts by either Securities Data Corporation or Morgan Stanley. Twelve of 183 LBOs are excluded because we could not contact the company or find any information about the company. The current independence of an additional six LBOs could not be determined.

[b] Assets of a buyout company are considered public if they are owned by a publicly owned company as of Aug. 30, 1990. This column measures the average fraction of company assets public for all LBOs completed in the given period.

[c] Assets of a buyout company are considered private if they are still privately owned, either by the buyout company or by a subsequent private buyer as of Aug. 30, 1990. This column measures the average fraction of company assets public for all LBOs completed in the given period.

Table 8

Median debt to total capital, debt to initial transaction value, interest to operating income, and equity ownership by insiders at the end of the 1989 fiscal year by current organizational status for 87 leveraged buyouts[a] valued at more than $100 million and completed in the period 1979-1986.

	Number of LBOs	Total Debt to Total Capital (Book Value)[b]	Total Debt to Initial Deal Value[c]	Interest Expense to Operating Income[d]	Insider Equity Ownership Fraction[e]
A. All Independent LBOs[f]	54	0.928	0.774	0.624	N.A.
LBOs Private	33	0.978	0.910	0.719	N.A.
LBOs Public	21	0.663	0.588	0.276	0.400
B. All Purchased LBOs[f]					
Private LBO Purchasers	4	0.923	N.A.	0.704	N.A.
Public LBO Purchasers	29	0.484	N.A.	0.264	0.057

[a] Sample of leveraged buyouts identified as leveraged buyouts by either Securities Data Corporation (SDC) or Morgan Stanley.

[b] Total debt is the book value of total debt for fiscal year 1989. Total capital (book value) equals the book value of total debt, preferred stock, and common equity for fiscal year 1989.

[c] Initial deal value is the LBO transaction value given by SDC or Morgan Stanley.

[d] Operating income is before interest, depreciation, and taxes.

[e] Insider equity ownership is the fraction of common stock owned by managers, directors, and buyout sponsors of the independent public LBOs and by managers and directors of the public LBO purchasers. Shares of different classes of common stock are treated equally regardless of voting rights.

[f] LBOs are independent if they have not been purchased by another company with operating assets. Assets of a buyout company are considered public (private) if they are owned by a publicly-owned (privately-owned) company as of Aug. 30, 1990.

Table 9

Public or private status of (1) buyouts arranged by LBO specialists, investment banks, and all others: (2) divisional and public company buyouts ; and (3) larger and smaller buyouts as of Aug. 1990 for 183 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986.

	Total	Status Unknown or liquidated as of Aug. 1990	Status Known as of Aug. 1990	Percent Publicly Owned as of Aug. 1990	Percent Privately Owned as of Aug. 1990
Panel A:					
LBO Partnership[a]	50	6	44	47.7	52.3
Merchant Bank[b]	24	2	22	27.3	72.7
All others	109	13	96	34.4	65.6
Panel B:					
Division	95	13	82	37.8	62.2
Public Company	88	8	80	36.2	63.8
Panel C:					
Under $300 M	103	12	91	33.0	67.0
At least $300 M	80	9	71	42.2	57.8
All Buyouts	183	21	162	37.0	63.0

[a] LBO partnerships LBOs are LBOs arranged by Adler Shaykin, Clayton Dubilier, Forstmann Little, Gibbons Green, Hicks & Haas, Kelso, Kohlberg Kravis Roberts, Riordan Freeman, Thomas Lee, Warburg Pincus, and Wesray.

[b] Merchant Bank LBOs are LBOs arranged by Allen & Company, Bankers Trust, Citicorp, Donaldson Lufkin Jenrette, First Boston, Merrill Lynch, and Morgan Stanley.

Table 10

Logit regressions of the probability of returning to public ownership conditional on being privately owned as a function of division or public company status, presence of LBO partnership, LBO size, time from the LBO and year of LBO completion for 162 leveraged buyouts valued at more than $100 million and completed in the period 1979-1986. (Asymptotic t-statistics are in parentheses.)

Dependent variable equals 1 if LBO company returns to public ownership in given year conditional on being private at beginning of year, 0 otherwise.

	(1)	
	Coeff.	S.E.
Constant	-4.44[1]	0.58
LBO Partnership[a]	0.49[10]	0.30
Division[b]	0.78[5]	0.31
At least $300 M[c]	1.40[1]	0.45
2nd year and later[d]	0.50[10]	0.30
1981 and earlier[e]	-0.32	0.46
1982	0.72	0.53
1983	1.15[5]	0.47
1984	0.17	0.41
1985	0.64	0.40
N Obs.	688	
Log Likelihood	-212.9	

[a] The LBO partnership variable equals one if the LBO is arranged by an LBO partnership and zero otherwise.

[b] The division variable equals one if the LBO company is a division of another company and zero if it is a public company before the LBO.

[c] The at least $300 M variable equals one if the LBO transaction value is at least $300 million.

[d] The 2nd year and later variable equals one if the company-year observation is for the 2nd year or later after the LBO and equal to zero otherwise.

[e] The variables 1982 to 1985 equal one if the LBO is completed in that year and zero otherwise. The 1981 and earlier variable equals one for LBOs completed 1981 and earlier.

[1] Significant at the 1% level; [5] Significant at the 5% level; [10] Significant at the 10% level.