

Lender Control and the Role of Private Equity Group Reputation in Buyout Financing

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Abstract

In this paper, we examine whether the reputation of the acquiring private equity group (PEG) is related to the financing structure, loan contract terms, and valuation of LBOs. Using a sample of 181 public-to-private leveraged buyouts (LBOs) completed during the January 1, 1997 to August 15, 2007 period, we find that buyouts sponsored by high reputation funds pay narrower loan spreads, have fewer and less restrictive financial loan covenants, use less traditional bank debt, and borrow more and at a lower cost from institutional loan markets. In addition, PEG reputation is positively related to the amount of leverage used to finance the buyout. While we find that reputation is related to the amount of leverage used, and leverage is significantly related to buyout pricing, we do not find any direct effect of reputation on buyout valuations. We also find that deals sponsored by high reputation PEGs are less likely to experience financial distress or bankruptcy ex-post. The evidence is consistent with the hypothesis that deals involving reputable PEGs are perceived as less risky by creditors because reputable PEGs are more skillful in selecting and monitoring investments or because reputation serves to mitigate the agency costs of debt and thus lowers the need for bank monitoring and control. We also find that macroeconomic conditions (e.g. credit risk spreads), growth prospects, ex-ante risk, and deal size also impact buyout financing terms and valuations. Overall, our results suggest that the increase in leverage and the decline in both the proportion of bank debt financing and the restrictiveness of covenants in recent deals reflect in part the involvement of experienced PEGs in recent buyouts.

I. Introduction

In this paper we examine how private equity group (PEG) participation affects the structure of leverage buyout (LBO) financing and whether PEG reputation serves as a substitute for bank monitoring and control. Our primary objective is to investigate whether the increase in leverage and valuations and the decline in both the proportion of bank debt financing and the restrictiveness of covenants in recent buyouts are due simply to “overheating” in the buyout market or whether those changes can be explained, at least in part, by changes in the “fundamentals” that affect the benefits of bank monitoring and control.¹

Commercial banks have traditionally played an important role in LBO financing. For example, Kaplan and Stein (1993) find that, during the 1980s, banks provided the majority of LBO financing, typically in the form of short-term and covenant-heavy term loans and revolving lines of credit. There are several reasons to expect buyouts to rely heavily on this type of debt. First, concentrated ownership makes bank loans easier to renegotiate than diffusely held public or private debt (Berlin and Mester (1992), Smith and Warner (1979)).² The ease of renegotiation may, in turn, lower financial distress costs (Gilson, John and Lang (1990)) and, more importantly, enables bank loans to contain tighter and more restrictive covenants. Tighter covenants not only serve to limit moral hazard problems directly (Jensen and Meckling (1976), Smith and Warner (1979)) but also provide banks with state contingent control rights that can further reduce risk shifting (see Chava and Roberts (2007) and Nini, Smith, and Sufi (2007)).

Second, banks are generally thought to have a comparative advantage in monitoring (Diamond (1984), (1991), Fama (1985) and Rajan (1992)). Monitoring deters moral hazard because it enables lenders to detect risk shifting behavior and, given the control rights provided by covenants, to punish borrowers either by forcing liquidation or, more commonly, by changing the availability of credit or the terms of lending.³ Third, when LBOs are financed with more short-term senior bank debt, the incentive effects of debt described by Jensen (1986) are likely to be stronger. In particular, a shorter maturity increases required debt service payments thus increasing the incentives for managers to work harder to generate cash and avoid wasting resources in the earlier stages of the LBO. Finally, Cotter and Peck (2001) argue that, in the case of management buyouts (MBOs), the absence of active third party

¹ For a description of the recent trends in credit and buyout markets, practitioners’ views on the determinants of these trends, and how PEG reputation might be related to deal terms, see Lender Roundtable: Outlook on Debt Markets, at <http://knowledge.wharton.upenn.edu/article.cfm?articleid=1725>

² As Smith and Warner (1979) explain, bank loans are not subject to the restrictions of the Federal Trust Indenture Act of 1939 which requires unanimous consent of all bondholders to change the key provisions (e.g. interest, principal, maturity etc.) of a publicly traded bond.

³ Park (2000) and Diamond (1993) argue that the secured status of banks in highly levered transactions enhances the incentives to monitor when the borrower has subordinated debt outstanding. The basic idea is that senior status of bank loans allows the banks to capture the full return from monitoring, thus increasing the incentives to monitor.

monitoring by buyout specialists makes bank and other creditor monitoring and control particularly beneficial.

Consistent with the importance of bank monitoring and control in highly leveraged transactions, previous empirical studies of LBOs find that financing structure and the amount of senior bank debt are significantly related to post-LBO performance. For example, Kaplan and Stein (1993) examine the performance of a sample of MBOs during the 1980s and find that ex-ante differences in the structure of buyouts are related to the likelihood of post-buyout financial distress. More specifically, the authors find that buyouts in the second half of the 1980s that used substantially more leverage, more subordinated junk debt with easier terms (e.g. fewer covenants, interest deferral options etc), and less covenant-heavy bank debt than the MBOs in the early 1980s. In addition, they find that the later LBOs experienced a greater frequency of financial distress. Kaplan and Stein (1993) argue that these patterns are consistent with “overheating” in the buyout market in the second half of the 1980s.⁴ In a more recent study, Guo, Hotchkiss and Song (2007) examine the relationship between LBO financing and performance, using 176 LBOs between 1990 and 2006. They find evidence that post-buyout performance is positively related to the amount of bank financing.⁵

Given this evidence and the reasons why lender monitoring and control might be particularly important in highly levered transactions, the declining importance of financial covenants, the substitution of “traditional” bank loans with institutional loans, and the growing importance of deferred interest securities in recent LBOs appear puzzling and perhaps troubling. For example, according to S&P, the volume of covenant-lite loans (term loans with *no* financial maintenance covenants such as maximum leverage or minimum fixed charge coverage) used in LBO financing increased from \$0 in 2000 to over \$93 billion involving 203 facilities in the first half of 2007.⁶

During this same time period, the frequency and volume of term B and C loans (term loans placed with institutional investors such as hedge funds and insurance companies) used in LBO financing also grew significantly. For example, the Loan Pricing Corporation (LPC) reported that the percentage of LBOs with term B and C loans increased from 44 percent in 1997 to approximately 80 percent at the end

⁴ In a similar study examining the “overheating” phenomenon, Gompers and Lerner (2000) find that inflows of capital into venture funds increase the valuation of the funds’ investments. The authors find that the relationship between capital inflows and valuations is driven by demand pressures rather than improvements in investment prospects.

⁵ Most of the transactions in their sample are from the 1990s and the early 2000s. Also, the authors do not distinguish between term loans held by banks vs. institutional loan investors.

⁶ See Bavaria and Lai (2007). Instead of maintenance covenants, covenant lite loans sometimes have so-called incurrence covenants. The restrictions set by incurrence covenants do not have to be met on an ongoing basis as do maintenance covenants. Rather, incurrence covenants come into play only if the borrower takes or attempts to take certain actions such as issuing additional debt or making an acquisition.

of 2006. Consistent with this, according to Deutsche Bank, between 2003 and 2006, the majority of leveraged loans were funded by institutional investors rather than commercial banks.⁷ In addition, the volume of second lien term loans (loans that are secured by a claim that is junior to first lien term loans) held by institutional loan investors increased from \$140 million in 5 loans during 2000 to over \$28 billion in 196 loans during 2006. Finally, beginning with the buyout of Neiman Marcus led by Texas Pacific Group in May of 2005, private debt with so-called PIK toggle features began to appear. A payment-in-kind (PIK) toggle feature provides the borrower with the choice of paying interest either in cash or in-kind through the issuance of additional debt.⁸

While practitioners attribute these trends to “investors’ continuing willingness to take on greater risk in pursuit of yield” and the growing importance of collateralized loan obligations (CLOs) as a financing vehicle as well as hedge fund investing, there has been little academic research on the determinants of the financial structure of recent LBOs.⁹ One notable exception is a recent paper by Axelson, Jenkinson, Stromberg, and Weisbach (2007). They examine a sample of 153 private and public U.S. and foreign LBOs sponsored by the largest private equity houses during the 1985 to 2006 period and find that economy-wide leveraged loan spreads drive both buyout leverage and pricing. The authors interpret this finding as evidence that the availability of cheap debt financing contributes to “booms” (i.e. overheating) in buyout markets.

In this paper, we investigate ex-ante determinants of buyout financing and valuations. In particular, using a sample of 181 public-to-private domestic LBOs completed during the January 1, 1997 to August 15, 2007 period, we examine whether ex-ante risk measures, industry characteristics, credit market conditions, participation of a private equity group (PEG) in the transaction, and the reputation of the participating PEG are related to cross-sectional and time-series changes in buyout financing and valuations. Given that most of the transactions in our sample are completed during the last few years and most private companies do not report financial statements, we do not have a lot of information on the post-buyout performance of the firms in our sample. However, we also present some suggestive evidence on the relationship between buyout financing structure and post-buyout performance using a small sample of buyouts with available post- buyout data.

Our analysis focuses on how PEG participation in a deal is related to the structure and cost of financing. There are several reasons to expect that PEG participation in a transaction and more

⁷ See Private Equity and the Capital Markets at <http://www.frbsf.org/csip/>

⁸ Neiman Marcus was granted \$700 million in PIK Toggles, the interest payments of which could be switched off at Neiman's option to reduce the debt burden on the company in a time of difficulty. The interest would accrue at a higher rate (9.75% vs. 9.00%) when the instruments mature in 2015.

⁹ See Altman (2007) and Bavaria and Lai (2007).

importantly the reputation of the PEG will be related to the terms of LBO financing and the need for covenant-heavy lending. First, Cotter and Peck (2001) argue that buyout specialists actively monitor the managers of their portfolio companies, potentially lowering the benefits of monitoring by creditors.¹⁰ Consistent with this argument, the authors find that less senior bank debt is used in PEG-led transactions versus MBOs. Second, there is an extensive theoretical literature that stresses the importance of borrower reputation and suggests that reputation and monitoring by intermediaries are substitute mechanisms for limiting moral hazard. For example, Diamond (1989) argues that the present value of rents from a good credit market reputation is significantly higher for firms with successful track records, which deters these firms from selecting risky projects. He adds that: “A reputation that takes time to begin to work implies that new borrowers (with short track records) will face more severe incentive problems and would be the ones most likely to utilize costly technologies for dealing with such problems, such as restrictive covenants in bond indentures (see Smith and Warner 1979) and additional monitoring by a financial intermediary...”¹¹ Diamond’s model suggests that PEGs with established track records will find it more costly to engage in risk shifting to the detriment of lenders, reducing the need of bank monitoring and restrictive covenants.¹²

Better investment performance of high reputation PEGs and persistence in PEG performance over time provides a third potential reason why PEG reputation may be related to the structure of LBO financing. For example, Kaplan and Schoar (2005) find that PEG performance persists over time. They also find that larger and more experienced funds perform better than new funds. Similarly, Phalippou and Zollo (2006) find that small and inexperienced funds have significantly lower performance, after controlling for risk factors and business cycle variables.¹³ As a result, a PEG’s reputation may not only affect the general partner’s (GP) incentives to engage in risk shifting, but it may also be an indicator of the GP’s talent or skill in selecting, monitoring, and restructuring target companies.¹⁴ If this is the case,

¹⁰ Consistent with this monitoring story, a recent report from Moody’s (2007) says: “Boards of private equity owned companies, which are comprised mainly of representatives of the owner, are arguably the most engaged boards... Ultimately, bondholders benefit when an engaged, knowledgeable board of directors oversees management.” The report also argues that the governance at companies owned by PEGs can be at least as good as at public companies.

¹¹ See Diamond (1989), page 829. See also John and Nachman (1985).

¹² Previous empirical tests of Diamond’s (1989) reputation model use reputation proxies such as borrower size and age that are correlated with the credit risk characteristics of the borrower. In this paper, we examine the reputation of the PEG which is exogenous to the characteristics of the target firm and thus present a cleaner test of Diamond’s model.

¹³ Gompers and Lerner (1999) examine the compensation structure for a sample of 419 private venture funds and find that the compensation at older and larger (two proxies for reputation) funds are more sensitive to performance. However, the authors do not find a relationship between ex-ante compensation structure and ex-post performance.

¹⁴ For example, PEG involvement may lead to more rapid management turnover following poor operating performance. See Wall Street Journal (November 20, 2007).

borrowing by the portfolio companies of more reputable PEGs may rationally be viewed by lenders as less risky, resulting in better lending terms.

Finally, the compensation structure at more established PEGs may provide incentives to the GPs to select more conservative investments, which, in turn, will affect the terms and structure of LBO financing. For example, Axelson, Stromberg, and Weisbach (2007) argue that the general partners of a PEG have carried interests that have option like pay-off characteristics, which creates incentives for high amounts of debt financing and risk shifting. However, the authors argue, because carried interest of the general partners is based on aggregate profits from all investments, more established funds with successful investment records may be less prone to risk shifting and may have incentives to pursue more conservative investment strategies.

Overall, we find significant declines, after 2002, in the proportion of traditional bank loans and the number and tightness of financial covenants associated with leveraged loans used in buyout financing. These trends suggest a decline in the intensity and importance of bank monitoring. We also find that debt relative to EBITDA (i.e. leverage) and deal prices relative to EBITDA increased during the 2002 to 2007 period. In addition, consistent with the findings of Axelson, Jenkinson, Stromberg, and Weisbach (2007), we find that economy wide credit market conditions as measured by credit risk spreads (the spread between BB and AAA bond yields) are significantly related to the amount of leverage and deal pricing. Not surprisingly, we also find that the cost of borrowing as well as the number and restrictiveness of loan covenants are positively related to the credit risk spread. While these trends may be explained by a decline in the likelihood or cost of financial distress, we cannot rule out that some of the changes in deal structure is the result of an overheating in the buyout market in recent years (similar to what Kaplan and Stein (1993) find for the late 1980s).

We find that the structure of LBO financing (the amount of leverage and proportion of bank debt) as well as the cost of bank borrowing are significantly related fundamentals such as borrower risk (as measured by the volatility of the borrower's underlying operating margins) and the target firm's growth prospects (as measured by the industry median enterprise value relative to EBITDA and the management's projections of three-year average post-LBO EBITDA growth). Thus, at least part of cross-sectional variation in deal structure is related to the fundamentals of the target companies.

We also find significant increases in the proportion of PEG-sponsored transactions in recent years. For example, about half of the LBOs in our sample during the 1997 and 2003 period were MBOs. In contrast, MBOs comprise only 13 percent of the deals in our sample during the period from 2004 through the first half of 2007.

In terms of PEG reputation, we find that buyouts sponsored by high reputation funds pay narrower loan spreads, have fewer and less restrictive financial loan covenants, use less traditional bank debt, and borrow more and at a lower cost from institutional loan markets. Also, while we find that PEG reputation is related to the amount of leverage used, and leverage is significantly related to buyout pricing, we do not find any direct effect of reputation on buyout valuations, suggesting that more reputable PEGs are able to capture at least a portion of the value of lower financing costs. These relationships persist after we control for the underlying risk of the transaction, the size of the deal, and credit market conditions. Overall, these findings are consistent with the hypothesis that the reputation of the PEG affects lenders' perceptions of the underlying risk of the transaction. These findings are also consistent with the hypothesis that PEG reputation serves as a substitute for bank monitoring and control.

Finally, using a sub-sample of transactions, we find that buyouts sponsored by high reputation PEGs or financed by loans with more financial covenants are less likely to experience financial distress during the three years after the transaction. These results are consistent with third party monitoring and control playing an important role in influencing the performance of LBO firms.

The rest of this paper is organized as follows. In Section II we describe the data. Summary statistics of the variables used in the empirical analysis are presented in Section III. We examine the time-series and cross-sectional variations in buyout financing in Section IV. Buyout valuations and leverage are examined in Section V. We provide preliminary evidence on the relationship between buyout financing and post buyout performance in Section VI. Section VII presents our conclusions.

II. Data Description

A. Buyout Sample

Our sample of leveraged buyouts is constructed from the Securities Data Company's (SDC) U.S. Mergers and Acquisitions Database. The preliminary sample meets the following criteria:

1. The transaction is completed between January 1, 1997 and August 15, 2007;
2. The acquirer controls less than 50% of the shares of the target at the announcement date and obtains 100% of the target shares;
3. The transaction value is greater than \$10 million;
4. Pre-LBO annual financials of the target are available from Compustat;
5. Pre-LBO target share prices are available from CRSP.

Since the main purpose of this paper is to examine leveraged buyout financing, we include only transactions for which we can find reliable financing information. (A more detailed description of the hand-collected buyout financing data is provided below.)

Our final sample consists of 181 LBOs completed between 1997 and 2007. The total value of these 181 transactions exceeds \$290 billion. Over the same period, the aggregate enterprise value of all domestic going private transactions listed in SDC is \$358 billion. Our sample, therefore, represents approximately 81 percent of the dollar volume of going private transactions during this period.

B. Sources and Uses of Funds

We measure the enterprise value of the target firm (“total capital”) in the same way as Kaplan and Stein (1993). Specifically, total capital equals the sum of (1) cash paid to acquire the target firm’s equity (including options, warrants, and preferred stock), (2) market value of rollover (e.g. retained) target firm equity, (3) market value of retired debt, (4) book value of retained pre-LBO debt, (5) fees and expenses of the transaction, less (6) cash and marketable securities outstanding before the LBO. Information on total capital and securities (e.g. new debt, new equity, cash-on-hand, existing debt etc.) used to finance the buyout (i.e. sources of funds) is collected from proxy, 10-K, 8-K, 13-E, and 14-D statements, and from Factiva.¹⁵ We supplement the information on debt securities used to fund the deal as follows:

1. We use the Securities Data Company’s (SDC) new issues database to obtain information on amount, seniority, interest, maturity, and credit rating of “arms length” debt used in the transaction (e.g. junk bond vs. private placement). We track Edgar filings of the buyout firm in the months following the effective date of the transaction for the presence of an exchange offer that converts privately placed debt to public debt.
2. We use the Loan Pricing Corporation’s (LPC) Dealscan database and loanconnector.com to gather information on loan type, interest, fees, maturity, repayment schedule, security, covenant structure, and credit rating.
3. We use a dataset provided to us by S&P to identify covenant-lite and second-lien loans.¹⁶
4. When security and covenant structure of bank debt is unavailable from any of the sources mentioned above, we search the Edgar filings of the buyout firm (via Lexis-Nexis) to find the loan contract and obtain the data directly from the contract.

¹⁵ Funds raised during an LBO may exceed the funds required to complete the transaction (i.e. uses of funds = cash spent on acquiring target firm’s equity (including common and preferred stocks, warrants, options, and convertible securities) + fees and expenses of the transaction + cost of refinancing (some) of the outstanding indebtedness). This is because a portion of new revolving lines is often used to finance post-LBO working capital. In many cases, the proxy statement or subsequent Edgar filings provide uses/sources statements which document how the buyout is financed. When this information is unavailable, we assume that the outstanding balance of the revolving line at LBO completion equals total available amount *less* the difference between sources and uses of funds.

¹⁶ S&P defines covenant lite as a loan with no financial maintenance covenants (see Bavaria and Lai (2007))

C. Buyout Investors

We use the deal synopsis in SDC to classify the buyout as: management buyout (MBO), private equity buyout, or corporation buyout. SDC's classification is based on the type of investor that leads the deal and *not* on the amount of equity participation by each investor type. We also collect information on the pre- and post-buyout beneficial ownership fraction of pre-buyout managers from the proxy statement and post-LBO 10-Ks (when available).

For each LBO with a private equity investor, we create a PEG reputation score by counting the number of all SDC-recorded public-to-private and private-to-private buyout transactions that the PEG invested in during the prior three years.¹⁷ It is important to note that the reputation score is calculated by using all buyouts in SDC rather than the 181 deals in our sample. If there are multiple PEGs investing in our sample LBO, then we use the reputation score of the fund with the highest reputation. The reputation score equals zero if there are no private equity investors in the buyout group (i.e. the deal is a management buyout or a corporate deal). The PEGs with the highest reputation scores in various years are Chase Capital Group (prior to 2001), Carlyle Group, Blackstone Group, Kohlberg Kravis Roberts, Goldman Sachs Capital Partners, and Texas Pacific Group. According to Private Equity International (a buyout magazine), these high reputation PEGs, except for Chase Capital Group that is no longer active, were the top 5 global PEGs based on the amount of capital raised during the 2002 and 2006 period, which suggests that our reputation score is positively correlated with PEG size.¹⁸

D. Other Financial Data

The target firm's pre-buyout stock prices are from CRSP. Financials of the target firms and their industry peers are obtained from Compustat. We compute industry median financial ratios by using the annual data of non-LBO firms that are in the same industry (based on 4-digit SIC code) as the LBO firms in our sample.¹⁹ We obtain monthly bond yields from Bloomberg and define credit spread as the difference between the yields of BB versus AAA rated bonds. Finally, a monthly time series of annual operating earnings per share of the S&P 500 firms is also obtained from Bloomberg.

¹⁷ Our results are not sensitive to using a broader time window (e.g. 5 years) when defining PEG reputation. It is important to note that we use the number of transactions rather than aggregate transaction values because SDC does not report the transaction values of most private-to-private deals. Also, in club deals in which multiple PEGs participate, the amount of each PEG's participation cannot be obtained from SDC.

¹⁸ See Private Equity International's PEG rankings at <http://www.peimedia.com/pei50/>. Gompers and Lerner (1999) define a reputation score for a group of private venture funds using fund size and age. Similarly, Kaplan and Schoar (2005) use a fund's size and age to measure its experience and reputation. Both studies use unique fund level datasets that are unavailable to us.

¹⁹ If there are less than five firms in the LBO firm's industry (excluding the LBO firm), we define industry by using 3-digit (or 2-digit, if necessary) SIC code.

III. Summary Statistics

Table I presents median and aggregate capital, the frequency of LBOs by investor type, median PEG reputation, and the median pre- and post-buyout management ownership fraction by calendar year of the effective deal date. The bottom panel of the table also presents the signs of nonparametric rank test statistics that we use to examine time trends in three distinct time periods: 1997 to 2000, 2001 to 2003, and 2004 to 2007.

As seen in Column (2), the total capital of the median buyout is \$417.5 million. There is a significant increase in the size of buyouts after 2002. The biggest LBO in our sample is the \$33 billion November 2006 buyout of HCA Inc by an investor group that includes Kohlberg Kravis Roberts, Bain Capital, and Merrill Lynch. The smallest deal is the \$18 million MBO of Eagle Point Software Corp in March 2001. As shown in Table 1, the median size of LBOs is higher in years when the fraction of PEG-led deals is higher.

Two-thirds of the deals in our sample are PEG-led buyouts. The most frequent PEGs in our sample are Texas Pacific Group (13 deals), Blackstone Group (10 deals), Kohlberg Kravis Roberts (10 deals), and Apollo Advisors (8 deals). Table I indicates a trend towards greater PEG involvement in the buyout market in recent years. In particular, the fraction of PEG-led deals, median PEG reputation, and the median buyout size significantly increased after 2003; especially in the 2006 and 2007 period. It is notable that the number of LBOs in the first eight months of 2007 exceeds the number of deals in each of the prior 10 full years, which suggests that the buyout market was “hot” in that period before the 2007 credit crunch resulted in a drop in activity after our sample period ends.

About half of the LBOs in our sample during the 1997 and 2003 period were MBOs. In contrast, MBOs comprise only 13 percent of the deals in our sample during the period from 2004 through the first half of 2007. Finally, Table I shows that corporate LBOs are relatively uncommon; there are only six such deals over the last 11 years.

IV. LBO financing structures

IV.A. Trends in LBO financing structures

In this section, we describe significant trends in buyout financing. In section IV.B we provide a discussion and interpretation of the trends. In section IV.C we examine the cross-sectional determinants of buyout financing and the role of PEG reputation.

Figure I provides a description of the capital structure of LBOs in the first half of our sample period (2004 and before) versus LBOs in later part of our sample. As shown, in recent years, the

importance of “traditional” bank loans declined in favor of Term B loans and second-lien loans held by institutional loan investors.

Table II provides a more detailed description of the capital structure of the buyout firms in our sample by year of deal completion. As shown, the median amount of equity relative to total capital was around 30-35 percent throughout our sample period. The median amount of “arms length” debt (i.e. bonds, private placements, mezzanine debt) also exhibits no trend over time. However, as Column (4) shows, the median amount of traditional bank loans (i.e. revolvers and Term A loans) as a percentage of total buyout capital decreased significantly from 63 percent in 2001 to 16 percent in 2007.²⁰ Virtually all (93.4 percent) buyouts in our sample have a revolving bank line of credit in their financing structure; however, the median amount of revolvers relative to total capital has declined from 28 percent in 1997 to 8.5 percent in 2007 (also see Figure II). In addition, during the 2005-2007 period, the median buyout firm does not have a Term A loan although in earlier years these loans comprised about 15 to 20 percent of buyout capital. Overall, the results in Table II indicate a trend towards less reliance on traditional bank loans in buyout financing.

As shown in Table II, the importance of traditional bank loans in buyout financing has recently diminished in favor of Term B loans sold to institutional investors (e.g., hedge funds, CLOs etc.) in the secondary loan markets. For example, the median amount of institutional Term B loans to total capital increased from 0 percent in the 2001 to 2004 period to 35 percent in 2007. Also, in the first half of 2007, 67 percent of bank loans used in buyout financing were Term B. Institutional term loans were also popular in 1999 and 2000, but their proportion relative to total buyout debt was lower relative to the post-2004 era, and they temporarily fell out of favor from 2000 through 2005.

Another notable trend in buyout financing is the increasing popularity of second lien term loans. Second lien loans give creditors a junior claim (i.e. second priority) on the buyout firm’s collateral.²² While none of our sample LBOs is financed with a second-lien term loan prior to 2005, between 2005 and 2007, 24 buyout firms (32 percent) took out a second-lien term loan. The average amount of second lien loans relative to total buyout capital is approximately 5 percent in the 2005 to 2007 period.

²⁰ Miller (2006) provides a review of the syndication process and features of the contracts in the syndicated loan market. According to him, revolving credits and Term A loans, which are called “pro rata debt”, are sold to retail commercial banks while Term B, C, and D loans, which are called “institutional debt”, are structured to be sold to institutional loan investors.

²² According to a Latham & Watkins presentation dated May 19, 2004 and titled, “Everything You Always Wanted to Know about Second Lien Financings,” second lien loan investors are typical Term B loan purchasers such as hedge funds. Also, second lien loans often have longer maturities and fewer and less restrictive covenants than first lien loans.

Table III reports, for each year in our sample period, the average all-in-drawn spread and the average maturity separately for revolvers, Term A and Term B loans, and second-lien term loans for buyouts with non-missing spread and maturity data.²³ All-in-drawn spreads are from Dealscan and include both the interest cost and fees associated with borrowing. As shown in Table III, loan spreads exhibit an inverse U-shape over the sample period similar (although less pronounced) to the pattern in the spread between BB and AAA corporate bonds yields. Thus, in contrast to the findings of Kaplan and Stein (1993), we find significant time-series variation in loans spreads, suggesting that loan spreads are positively correlated with the credit risk spreads of public bonds.

As shown in columns (4) and (6) of Table III, Term B loan spreads are higher than Term A loan spreads and they appear to be more volatile and more sensitive to variations in the credit risk spread.²⁴ Consistent with their more junior status, second lien loans have significantly higher yields than other term loans. For example, the difference in the spread of first and second lien loans for the average buyout firm that issued both instruments is approximately 350 basis points (not shown).

Finally, as shown in column (5) of Table III, the maturity of institutional term loans decreases throughout our sample period. As we discuss later, the decline in maturity may be a way for lenders to offset the loss in control due to declining number of covenants.

We also examine time-series changes in the covenant structures of LBO firms. To determine whether changes in covenant structure are related to economy-wide changes in loan terms or unique to the LBO market, we compare the average number of covenants in loans to LBO firms to the number of covenants in loans to “B” rated non-LBO firms. The primary source of covenant information is LPC’s (Loan Pricing Corporation) Dealscan database. We supplement the covenant data of LBO loans with information from loanconnector.com and the Edgar filings of the buyout firm. If the covenant data is missing for LBO or non-LBO loans, we search the list of covenant-lite loans provided to us by S&P; if the loan is listed as covenant-lite we set the number of financial covenants to zero, otherwise we delete the loan from the analysis. The analysis is at the deal level and thus we use the number of financial covenants in the most covenant-heavy loan in a deal package. The LBO sample consists of 122 transactions with non-missing covenant information. The senior debt ratings of non-LBO firms are from Compustat and based on S&P ratings at the end of the fiscal year prior to loan inception. As seen in

²³ We focus on the interest cost associated with senior bank borrowing because the coupon rate on subordinated junior debt is not likely to give an accurate picture of the expected return associated with very risky junior debt (Kaplan and Stein (1993) make a similar argument).

²⁴ Miller (2006) argues that institutional term loans are typically priced higher than amortizing Term A loans because they have higher maturities and back-end-loaded repayment schedules. However, he argues that the spread difference between traditional bank loans and institutional loans narrows when the institutional demand for leveraged loans is high.

Figure III, after 2002, the number of covenants in LBO firm loans dropped sharply from 4.36 to 0.83. In the same period, the number of covenants in non-LBO loans decreased only slightly from 3.35 to 2.45. This evidence suggests that financial covenants became much less important for loans to buyout firms than for other firms. Thus, the decline in the importance of covenants in loans to LBO firms only partly reflects an overall trend in credit market conditions. In the next section, we explore potential explanations for the trends in covenant structures documented here.

Table IV provides additional information on the covenant structures of loans used in buyout financing. Consistent with the evidence shown in Figure III, column (4) shows that none of the LBO firms had covenant-lite loans (i.e. loans with *no* financial maintenance covenants) in the pre-2004 period while 57 percent of LBO firms have covenant lite loans during the first eight months of 2007.²⁵ To examine changes in covenant tightness, we computed the average debt to EBITDA covenant threshold.²⁶ As shown in Column (7) of Table IV, the average debt to EBITDA covenant threshold by year. The evidence in column (7) suggests that debt to EBITDA covenants are set at higher thresholds in the post 2004 period. However, this is partly mechanical because the deals in the same time period also have greater post buyout debt to EBITDA.

Another way to measure covenant structure is by covenant intensity, defined by Bradley and Roberts (2004) as the sum of six covenant indicators (collateral, dividend restriction, more than 2 financial covenants, asset sales sweep, equity issuance sweep, and debt issuance sweep). As shown in columns (1) and (3) of Table IV, covenant intensity as well as the frequency of dividend restrictions significantly declined in recent years. Finally, virtually all (98.8 percent) LBO firm loans are secured and 92.9 percent include at least one prepayment requirement (so called sweeps that mandate that a portion of the loan be repaid out of excess cash flows, debt and equity financings, or asset sales proceeds). Overall, the evidence suggests that the number and restrictiveness of financial covenants in loans used to finance LBOs substantially decreased in the post-2003 period.

In recent years the frequency of deferred interest securities such as PIK toggles used in LBO financing also increased. PIK toggles give the borrowers the option to pay interest "in kind" by simply adding it to the principal amount or by issuing new debt instruments having a principal amount equal to the interest and thus provide relief at times of financial distress. Only 5 LBO firms issued PIK toggle debt

²⁵ Out of 22 buyout firms that have a covenant lite term loan contract, 16 have at least one financial covenant in their revolving line of credit. In other words, the entire loan package (term loan and revolver) is covenant-lite in only 6 deals.

²⁶ We focus particularly on this covenant because debt to EBITDA is the most commonly used financial covenant in LBO firm loan contracts.

during the eight years from 1997 to 2004 (not shown). During the 32 months after 2004, twice as many LBO firms issued such instruments. In 2007, 20 percent of buyout firms took out PIK toggle debt.

IV.B. Interpretation of trends in LBO financing structures

One explanation for the decline in the importance of covenants and the proportion of traditional bank loans is the increase in the frequency of loans arranged by non-depository financial institutions (e.g. investment banks) and placed with institutional investors such as hedge funds or packaged into CLOs (Altman (2007)). The basic idea is that loans started to increasingly exhibit bond-like covenant structures because non-bank investors play a more passive role; similar to bond investors. However, these changes appear puzzling given the academic literature that emphasizes the important disciplinary role that bank monitoring and control plays in highly leveraged transactions. Moreover, consistent with the importance of bank monitoring, Carey and Gordy (2007) find that the recovery rate at the emergence from bankruptcy on all of the firm's debt is positively correlated with the pre bankruptcy share of senior bank debt in the firm's capital structure. They argue that that covenant-heavy senior bank leverage leads to banker oversight and early intervention before the asset value of the firm falls below insolvency value, lowering financial distress costs. Indeed, S&P expressed similar concerns stating that the declining importance of traditional bank loans and the declining importance covenant protection are indicators that the buyout market has become overheated as it did in the late 1980's (see Kaplan and Stein (1993)).

There are several potential explanations for the decline in the importance of financial covenants and the use of senior bank debt. First, some practitioners argue that the LBO market in the 2005-2007 period "overheated" as investors chased yields. Second, high yield default rates were at historical lows during the 2005 to spring 2007 period, suggesting a decrease in the risk associated with highly leveraged transactions (See Altman (2007)). Third, most (but not all) loan packages with covenant lite term loans also include a revolving tranche with maintenance covenants. Such mixed covenant structures may help lower coordination and renegotiation costs upon technical defaults as the borrower needs only to negotiate with the bankers who provide the revolver, avoiding negotiations with creditors of covenant-lite tranches (that typically are institutional investors not experienced in these negotiations). At the same time, cross-acceleration clauses protect the seniority of the creditors of covenant-lite tranches in case negotiating creditors decide not to waive technical defaults and call back their loans.²⁷

²⁷ Most leveraged loans do not contain cross-default clauses but instead contain cross-acceleration clauses which are designed to preserve the priority and maturity structure of the firm's debt in the event of a default. With a cross-acceleration clause a technical default on the covenanted loan will not trigger a default on other debt unless the covenanted lenders decide to accelerate their claims. Note that with cross-acceleration clauses the cost of a technical

Another explanation for the change in the structure of buyout borrowing is that high reputation PEGs need less bank monitoring since their incentives are aligned with the interests of creditors. Time series evidence suggest that buyout deals are more aggressively structured, include less bank debt, and fewer covenants in years when PEGs do most of the buyouts and median PEG reputation is high. We investigate this argument in more detail in the cross-sectional regressions presented below.

To sum up, without the benefit of hindsight, it is difficult to determine whether the structural changes in the syndicated loan markets are due to a temporary credit market “overheating” or permanent and rational changes. The default rates of recently structured buyouts in the years to come will shed light on this issue.

IV.C. Cross-sectional determinants of LBO financing structures

In this section, we investigate the determinants of bank loan spreads, number and tightness of financial covenants, and the amount of “traditional” bank debt relative to total debt. In particular, we examine how loan structure is related to a set of exogenous factors including PEG reputation, the ex-ante risk of the target firm, industry characteristics, and credit market conditions. If buyouts sponsored by high reputation PEGs are perceived by creditors as less risky due to GPs’ incentives to choose safer projects and their skill in selecting, monitoring, and restructuring target companies, then deals sponsored by high reputation PEGs should have lower loan spreads. In addition, if PEG reputation serves as a substitute for bank monitoring and control, then loans sponsored by high reputation PEGs should have fewer and less restrictive financial covenants and less traditional bank financing to total debt financing.

IV.C.1. Determinants of loan spreads

Regressions (1)-(4) in Table V examine the determinants of the all-in-drawn spread over LIBOR in traditional bank loans, using 155 LBOs with non-missing data on loan spreads. If a buyout firm has more than one loan contract we use value-weighted spread as the dependent variable where the weight is the value of each loan relative to the value of the entire loan package. The unit of observation in the regressions is a buyout firm, not a loan. In regression (1), the baseline specification, we include a set of exogenous explanatory variables including: credit risk spread defined as the difference between the yields of BB versus AAA rated bonds during the month when deal terms are set, volatility of fractional change in EBITDA/Sales during the ten years prior to the buyout, and PEG reputation.

default to the borrower is likely to be lower since any default triggered changes in the cost of borrowing apply only to the covenanted loan.

As shown in column (1), we find that loan spreads are positively related to the credit risk spread and the volatility of buyout firm's operating margins, which suggests that both credit market conditions and firm specific risk influence borrowing costs. Also, we find that one standard deviation increase in PEG reputation lowers the borrowing cost by 13.826 ($=14.631 \times 0.945$) basis points, which suggests that the buyouts of high reputation PEG are perceived by creditors as less risky.

If high reputation PEGs invest in targets with relatively higher cash flow growth, then the reputation effect documented in regression (1) may simply be explained by relatively low default risk of deals sponsored by reputable PEGs. In regression (2), we test this explanation by including three year average post buyout EBITDA growth projection of management (as reported in the proxy statement) as an explanatory variable. Projected growth is available only for 79 of the 155 LBOs and therefore we estimate regression (2) using a sub-sample of buyouts. We find a negative relationship between projected EBITDA growth and loan spread, but the relationship is not statistically significant at conventional levels. The sign and significance of the reputation variable and all other variables remain the same when we include projected EBITDA growth.²⁸ The evidence suggests that the negative relationship between loan spread and PEG reputation may not be explained by differences in expected growth prospects.

In regression (3) we include two additional firm-level credit risk proxies: post-buyout debt to capital and the natural log of pre-buyout assets. Although the ratio of post-buyout debt to capital is endogenous, we include it as an explanatory variable to measure the post-buyout credit risk. We find a negative and significant coefficient on post-buyout debt to capital, which implies that the amount of buyout debt relative to capital increases as the cost of bank loans decreases.²⁹ Also, the coefficient on pre buyout assets is negative but not significant. The sign and significance of the reputation variable and all other variables remain the same when we include the two credit risk proxies. Overall, the evidence suggests that the negative relationship between loan spread and PEG reputation may not be explained by buyout size or leverage.

We try several alternative specifications to investigate whether the negative relationship between loan spread and PEG reputation is robust (not shown for brevity). First, we estimate regressions (1)-(3) using only PEG-led buyouts (i.e. excluding MBOs and corporation-led buyouts) in order to examine whether the coefficient on PEG reputation simply picks up differences in loan spreads of various types of buyout investors (i.e. PEGs, management, corporations). Second, we estimate the regressions using only

²⁸ We also use as proxies for growth prospects the pre-buyout market to book ratio and the median market to book for industry peers. The results using these proxies are similar to those reported in Table V.

²⁹ We get very similar results when we use the amount of bank debt, rather than total debt, to capital. Also, it is important to note that the coefficients on our post-buyout leverage proxies should be interpreted with caution as leverage and loan spreads are endogenous.

deals where pre-deal assets of the buyout firm are less than a billion dollars to examine whether reputation effect documented in regression (1)-(3) is due to differences in the size of deals sponsored by high versus low reputation PEGs. Third, we estimate all of the regressions by excluding deals completed during 2006-2007 to examine whether the coefficient on reputation simply due to recent hot LBO market.³⁰ Finally, we re-estimate all regressions including the natural log of industry median enterprise value to EBITDA to control for growth prospects and cost of capital in the buyout firm's industry. All of the findings discussed above remain essentially the same when these alternative specifications are used. Overall, the evidence suggests that the buyouts of high reputation PEGs are perceived by creditors as less risky and thus result in lower loan spreads.

One potential criticism for the analysis above is that all-in-drawn spread, the dependent variable in regressions (1)-(3), might be measured with error. In particular, the investment bankers arranging the loans may also provide merger advisory and placement services to the buyout firm and do repeat deals with PEGs and consequently bundle fees from various services. Thus, the lower all-in-drawn spread associated with buyouts sponsored by reputable PEGs may simply reflect the fact that the lead lender is compensated in form of other acquisition related fees as opposed to interest payments. Moreover getting up-front fees may increase the lead banks willingness to arrange riskier deals (i.e. they essentially take the money and run). One way to address this issue is to examine the difference between Term B versus Term A loan spread of each buyout firm. This difference is presumably independent of bank fees. If the negative relationship between Term A spreads and PEG reputation results from the payment of unobserved upfront fees to the lead lender and not because of lower perceived credit risk then we would expect to observe higher spreads between term A and term B loans in deals where reputable PEGs are involved. In contrasts, if lenders view PEG lead deals as less risky then we would expect Term B and Term A spreads to be narrower when reputable PEGs are involved.

In our sample, there are 52 buyouts financed with both Term A and Term B loans. The average (median) spread difference equals 45 (50) basis points, consistent with the numbers reported in Nandy and Shao (2007). Regressions (4) and (5) in Table V examine whether PEG reputation is related to the spread gap between traditional Term A loans held by banks and Term B loans sold to institutional loan investors. We find that the spread gap is significantly lower for buyouts sponsored by high reputation PEGs. One standard deviation increase in PEG reputation lowers the gap approximately 10 basis points

³⁰ We also split the sample into the pre 2004 and post 2003 time periods. The coefficient on reputation is negative in both time periods. While the coefficient estimate for reputation is larger in absolute value for the later time period, the difference between the coefficient estimates in the two periods are not statistically significant.

(22 percent when evaluated at the mean). We also find that the gap is larger when the credit risk spread is higher and when the maturity gap between institutional and traditional term loan is longer.

Overall, the evidence in Table V indicates that borrowing costs are lower for buyouts sponsored by high reputation PEGs, consistent with the hypothesis that the reputation of the PEG affects lenders' perceptions of the underlying risk of the transaction.

IV.C.2. Determinants of number and tightness of financial covenants and proportion of bank debt

As we discussed earlier, if PEG reputation serves as a substitute for creditor monitoring and control we would expect that deals involving more reputable PEGs to be financed with bank debt involving fewer and less restrictive covenants and less traditional bank financing.

In regressions (1)-(3) in Table VI we examine the determinants of number of financial covenants in the bank loan contracts of buyout firms. We use the number of covenants in the most covenant-heavy bank loan contract of the buyout firm as the dependent variable. For example, if the buyout firm has no covenants in its term loans but has a leverage covenant in its revolving credit then the dependent variable equals 1. We run Poisson regressions because the dependent variable is a count variable. The sample consists of 122 buyouts with information available on covenant structure.

In regression (1), the baseline specification, we model number of financial covenants as a function of the credit risk spread, cash flow volatility, and PEG reputation. As shown, target firm loans include fewer financial covenants when credit market conditions are more favorable and the cash flows of the buyout firm are less volatile. The positive relationship between the credit risk spread and number of financial covenants suggest that in periods when default rates and losses are lower (i.e., when credit spreads are lower) banks are more willing to offer loans with fewer covenants. We also find, consistent with PEG reputation serving as a substitute for bank monitoring and control, that number of covenants and PEG reputation are significantly negatively correlated. When marginal effects from the Poisson regression are considered, one standard deviation increase in PEG reputation lowers the number of financial covenants by 0.45 (16 percent when evaluated at the mean).

Also, as shown in columns (2) and (3) of Table VI, PEG reputation is negatively related to number of financial covenants after controlling for growth prospects, size, and post-buyout leverage. Regression (2) also suggests that loans to buyout firms include more financial covenants when management projects the cash flows to grow faster. This is consistent with Demiroglu and James (2007) argument that covenants are less costly for borrowers expecting significant improvements in operating performance. Finally, regression (3) shows that larger buyouts that are often viewed as less risky than

smaller ones have fewer financial covenants although another risk proxy, post buyout leverage, is unrelated to the number of covenants.

In regressions (4)-(6) in Table VI we examine the determinants of debt to EBITDA covenant threshold. The analysis is limited to 49 buyouts with data on debt to EBITDA covenant threshold and thus the evidence from this analysis is only suggestive. Debt to EBITDA covenants typically have thresholds that get tighter (i.e. decrease) over time. We use the effective threshold at loan inception in our regression analysis. In regression (5), the baseline specification, we find that debt to EBITDA covenant threshold is negatively related to the credit risk spread and positively related to the volatility of buyout firm's cash flows. The evidence suggests that banks are more likely to offer loans with less restrictive covenants when perceived default risk of high yield loans is lower (i.e. the credit risk spread is lower). Also, the negative relationship between volatility and covenant tightness is consistent with the evidence in Demiroglu and James (2007) and implies that borrowers with volatile cash flows choose more flexible covenants to avoid costly covenant defaults and renegotiations.

Regression (4) also shows that there is a negative and significant relationship between PEG reputation and the tightness of debt to EBITDA covenant. One standard deviation increase in PEG reputation increases debt to EBITDA covenant threshold by 10 percent at the mean. Obviously, this number is conditional on the existence of a debt to EBITDA covenant in the loan contract. Since buyouts of high reputation PEGs on average have fewer financial covenants, the unconditional impact of PEG reputation on covenant tightness is likely to be much higher.

Regressions (5)-(6) show that the positive coefficient on the reputation variable loses statistical significance when we control for other factors that might affect covenant tightness.³¹ In particular, regressions (5) and (6) show that the covenant threshold is set at higher levels when the buyout firm is larger and has greater amounts of debt relative to EBITDA (or capital). The latter relationship is mechanical because the covenant threshold should be set above the debt to EBITDA of the buyout firm at loan inception in order to avoid immediate technical default.

The final set of regressions in Table VI, regressions (7)-(9), examines the relationship between the amount of traditional bank debt relative to total buyout debt financing and PEG reputation. In regression (9), the baseline specification, we use the credit risk spread, cash flow risk of the buyout firm, and PEG reputation as explanatory variables. Consistent with the notion that the disciplinary role of intermediated debt is less important when reputation concerns provides adequate incentives to maximize performance, we find that high reputation funds use less traditional bank debt (see also Cotter and Peck

³¹ This may partly be due to small sample size.

(2001)). One standard deviation increase in PEG reputation lowers the amount of traditional bank debt to total buyout debt by 6.50 percent (16.25 percent when evaluated at the mean). Credit market conditions do not seem to influence how much bank debt buyout firms use. Cash flow volatility is positively related to the amount of traditional bank debt, but the relationship between the two variables is not significant at conventional levels. Regression (8) indicates that the amount of bank debt is unrelated to the growth prospects of the buyout firm. Finally, according to regression (9), larger firms use less bank debt, which might suggest that larger firms have better access to alternative “arms length” debt financing than smaller firms.

We try several alternative specifications to investigate the robustness of the results discussed above (not shown for brevity). First, we estimate all regressions in Table VI using only PEG sponsored buyouts. Second, we estimate the regressions using only deals where pre-deal assets of the buyout firm are less than a billion dollars. Third, we estimate the regressions (1)-(9) excluding deals completed during 2007. Fourth, we include a dummy variable for post 2003 deals. We get qualitatively similar results when the alternative specifications are used.

Overall, the evidence in Table VI indicates the buyouts led by high reputation PEGs are financed with less bank debt and loans that include fewer and less restrictive financial covenants. This evidence is consistent with the hypothesis that PEG reputation serves as a substitute for bank monitoring and control.

V. Are buyout leverage and prices related to PEG reputation?

In this section, we investigate whether buyout leverage and valuations are related to PEG reputation, the characteristics of the target firm, and credit market conditions. In a recent working paper, Axelson, Jenkinson, Stromberg, and Weisbach (2007) examine the determinants of buyout leverage and valuations, using a sample of 75 U.S. and 78 non-U.S. buyouts sponsored by the top 5 global private equity houses during the 1985 and 2006 period. They find that there are significant increases in buyout leverage and valuations in recent years. They also find that economy-wide borrowing costs drive both buyout leverage and pricing. The authors interpret this finding as evidence that the availability of financing contributes to booms and busts in buyout markets.

We extend the analysis of Axelson, Jenkinson, Stromberg, and Weisbach (2007) in two important ways. First, we focus on a much larger sample of public-to-private buyouts and include more recent deals when overheating is thought to be particularly acute.³² For example, our sample includes 56 buyouts from

³² For example, more than half of their sample LBOs consists of non-U.S. deals and only 25 of the buyouts in their entire sample are public-to-private transactions. The remaining transactions in their sample are buyouts of private firms such as family firms, corporate divisions, and companies already owned by other PEGs.

the 2006 and 2007 period.³³ Second, we include PEGs with varying degrees of experience, and do not focus only on buyouts led by the most experienced buyout firms. This enables us to examine specifically the relationship between PEG reputation and buyout leverage and pricing.

V.A. Trends in Buyout Valuations

Table VII presents time trends in buyout prices. One measure of buyout prices is the premiums paid to the stockholders of the LBO firm. Stock price premium equals the percentage difference between the final buyout offer price and the stock price of the target firm two months before the announcement date of the deal. As shown in column (2) of Table VII, the median buyout premium equals 25 percent in the 1997-1998 and 2004-2007 periods, and 50 percent between 1999 and 2003. One interpretation of this pattern is that in the 1999-2003 period investors paid higher prices to buyout companies. An alternative interpretation, however, is that buyout premiums are lower when the LBO market is “hot” as investors push up the share prices of potential buyout targets in hopes of capturing a transaction premium. These conflicting interpretations make it difficult to draw conclusions about time trends in buyout prices by examining stock premiums.

Given these concerns, we follow Kaplan and Stein (1993) and examine valuation multiples of buyout firms relative to fundamentals using two distinct cash flow multiples: EBITDA (earnings before interest, depreciation, amortization, and taxes) to capital and net cash flow, which equals EBITDA less capital expenditures, to capital. The former is chosen for its popularity among practitioners and the latter is chosen because its numerator is the appropriate cash flow measure when using a discounted cash flow (DCF) valuation method.³⁴ We calculate the cash flow multiples by using the most recent annual earnings numbers available to investors when the final offer price is set.

Columns (3) and (4) show the median net cash flow and EBITDA, respectively, to total capital by the calendar year of the buyout. Both valuation multiples exhibit a downward trend after 2003, which indicates that buyout prices are higher relative to fundamentals in this period versus the earlier years. Over the entire sample period buyout prices exhibit a U-shaped pattern. The prices are high in the bull market of late 1990s, relatively lower in the post-bubble era, and higher again subsequent to 2003. The market-adjusted measures of buyout prices reported in Columns (7) and (8) exhibit trends similar to the ones reported in Columns (3) and (4). In fact, median market adjusted EBITDA multiples in Column (8) suggest that in 2007 buyout investors paid almost 7 times more per dollar of operating income relative to

³³ A recent paper by Guo, Hotchkiss and Song (2007) use a sample of 176 domestic LBOs between 1990 and 2006. However, the main focus of the paper is the determinants of post-buyout performance and how recent LBOs perform relative to buyouts in 1980s.

³⁴ Because net cash flow multiples are very noisy we mainly focus on EBITDA multiples in the discussion below.

2001. Market adjusted buyout prices are also significantly higher in the 1996-1999 period than in the 2000-2003 period but they are significantly lower than the post-2004 levels.

The operating earnings to price ratio of the firms in the S&P 500 index exhibits a *reverse-U* shaped pattern (see column (6)). This suggests that, during our sample period, buyout prices are higher (lower) when stock market valuations are lower (higher). This is in contrast to Kaplan and Stein (1993) that shows that buyout and stock market prices followed the same trend in 1980s. One explanation for the divergence in LBO and stock market valuations is “overheating” in the buyout market.

Another possible explanation for the trends in buyout prices is that the composition of buyout firms changed over time. To examine whether buyout prices are due to changing industry composition, we compare the valuation multiples of buyout firms and their industry peers. As shown in columns (9) and (10) of Table VII, buyout prices continue to exhibit a U-shaped pattern over our sample period after controlling for industry valuation multiples, however, the difference between pre-2001 and post-2003 industry adjusted buyout prices is not statistically significant. Thus, we conclude that part of the increase in buyout valuations in recent years is attributable to increases in industry valuations.

Taken together with the evidence in Table I, the numbers in Table VII also suggest that buyout prices are positively correlated with the number of buyouts, the fraction of PEG-led buyouts in the total buyout activity, and median PEG reputation. Also, the strong positive correlation between the credit risk spread and buyout prices suggest that the trends in buyout prices might also be driven by declines in the credit risk spread that allows buyout firms to use more leverage. We will discuss this issue in the next section.

V.B. Buyout leverage and trends in LBO prices

One explanation for the time-series variation in buyout prices is that the amount of buyout leverage impacts prices that investors are willing to pay to buyout a target company (see Axelson, Jenkinson, Stromberg, and Weisbach (2007)). Figure IV shows that buyout leverage and buyout prices are indeed closely related; buyout prices are significantly higher when post buyout debt to EBITDA is higher.³⁵ This suggests that it is important to examine the drivers of buyout leverage in order to understand the trends in buyout prices. In this section, we provide time-series evidence on buyout leverage. Cross sectional determinants of buyout leverage are presented in Section V.C.

Axelson, Jenkinson, Stromberg, and Weisbach (2007) find that an important determinant of buyout leverage is the availability of financing in the market for high yield corporate debt. The evidence

³⁵ We measure leverage by Debt/EBITDA because this is the preferred buyout firm leverage measure among practitioners (see Axelson, Jenkinson, Stromberg, and Weisbach (2007)).

in Figure V supports their finding: buyout leverage is higher when credit spreads are lower. The correlation between the two variables is -0.31 which is significant at the 1 percent level.

Taken together with the evidence in Table I, the evidence in Figure V also suggests that buyout leverage is high in years when the fraction of PEG-led deals and median PEG reputation are high. This seems to be consistent with the idea that buyouts sponsored by high reputation PEGs are viewed by creditors as less risky and that PEG reputation aligns the incentives of the PEG with the interests of the creditors and thus lowers the agency cost of debt. An alternative interpretation, however, is that the deals of high reputation PEGs may have higher leverage simply because these deals are clustered at periods when the credit risk spread is lower. We test this conjecture and other cross sectional determinants of buyout leverage using a regression analysis presented in the next section.

V.C. Cross-sectional determinants of buyout leverage and prices

Axelsson, Jenkinson, Stromberg, and Weisbach (2007) argue that, as corporate finance specialists, PEGs choose the optimal capital structure that maximizes firm value. Thus, they argue, buyout leverage and the leverage of similar public firms should be positively correlated if public firms also make optimal capital structure decisions. However, in their empirical analysis the authors do not find a significant relationship between buyout firm leverage and the leverage of firms in the same industry as the buyout firm. The evidence in Figure VI confirms their findings: Pre-LBO leverage of LBO firms and their industry peers are very similar but post-LBO leverage ratios are not. There are two potential explanations for this finding. First, leverage at buyout completion is not permanent but rather a transitory leverage which declines to its long-term equilibrium level in a few years. Second, buyout firms are a select group of firms that suffer from free cash flow problems and/or operational inefficiencies. Therefore, the disciplinary role of debt is arguably more important for buyout firms and hence their capital structure decisions might differ from their industry peers (see Jensen (1986)).³⁶

In order to better understand the dynamics of buyout firm capital structure, the relationship between leverage and buyout prices, and whether the aggregate patterns mentioned above hold cross-sectionally, we examine the relationship between post-LBO leverage and LBO prices. We run instrumental variables regressions because leverage and buyout prices are jointly determined. Also, by using predicted leverage from the first stage regressions in the second stage pricing regressions, we take care of the measurement error problem arising from scaling total buyout debt with EBITDA. This

³⁶ Debt forces management to disgorge free cash flow and cure operational inefficiencies. Also, through banker oversight and early intervention, higher amount of bank debt lowers the cost of financial distress.

methodology is the same as used by Axelson, Jenkinson, Stromberg, and Weisbach (2007). The results from the regression analysis are presented in Table VIII.

We present three different specifications in Table VIII. In specification (1) the dependent variable of the first-stage regression, post buyout debt to EBITDA (i.e. leverage), is modeled as a function of logged industry median Debt/EBITDA, the credit risk spread, cash flow volatility of the buyout firm, and PEG reputation. We also include logged industry median enterprise value to EBITDA in the first stage as a proxy for growth prospects and cost of capital in buyout firm's industry. Industry leverage and credit spread are exogenous variables that may indirectly affect buyout pricing through their direct affect on the amount of debt used to finance the deal.³⁷

We first examine the relationship between PEG reputation and leverage. Consistent with the hypothesis that the reputation of the PEG lowers the GPs incentives for risk-shifting and thus affects lenders' perceptions of the underlying risk of the transaction, the evidence in Table VIII indicates that lead fund reputation is significantly and positively related to buyout leverage. We find that one standard deviation increase in PEG reputation increases buyout leverage by 0.80 (approximately 10 percent when evaluated at the mean). The relationship is similar when we run the first specification using only buyouts led by PEGs.

Also, consistent with the evidence presented in Figure VI, we find at best a weak positive relationship between industry leverage and post buyout leverage. Furthermore, consistent with Figure V and the evidence in Axelson, Jenkinson, Stromberg, and Weisbach (2007), buyouts are more heavily debt financed when the credit risk spread is lower. Cash flow volatility is negatively related to buyout leverage, which suggests that firms that are prone to operating performance shocks (riskier firms) have less debt capacity. We also find a significant positive correlation between median industry enterprise value to EBITDA and buyout leverage. One interpretation of this finding is that higher industry multiples translate into higher growth rates and/or lower cost of capital, which indicate higher debt capacity. Consistent with this interpretation, when we include three-year average projected growth of EBITDA in the first stage regression in specification (2), the coefficient on the industry multiple becomes smaller and less significant. Also, R-squared of the first stage regression increases from 0.23 to 0.36. This evidence is consistent with buyout firms choosing leverage based on their projected cash flows.

The dependent variable in the second stage regressions is the natural log of Capital/EBITDA. Buyout leverage, industry valuation, and projected growth rates are all positively and significantly related to buyout pricing. The coefficient on leverage remains significant even after controlling for projected

³⁷ According to Table VI, the declines in credit spreads do not seem to increase non-LBO public firm valuation multiples (e.g., operating EPS of the S&P firms). See also Axelson, Jenkinson, Stromberg, and Weisbach (2007).

growth, which suggests that leverage is not merely a proxy for expected growth in cash flows. The evidence suggests that buyout prices are significantly higher when the cost of debt is lower thus allowing buyout investors to take on more debt. Finally, while we find that reputation is related to the amount of leverage used, and leverage is significantly related to buyout pricing, we do not find any direct effect of reputation on buyout valuations.

VI. Likelihood of Post Buyout Financial Distress

If PEG reputation serves as a substitute for bank monitoring and control then we would expect that reputation will be related not only to ex-ante financial structure but also ex-post performance. In other words, if deals involving more reputable PEGs are viewed by lenders as less risky and lender perceptions are accurate, we would expect that ex-post deals involving reputable PEGs not to experience financial distress.

To examine the existence and extent of post buyout financial distress, we search the names of our sample firms in Factiva in the three years following the LBO for news articles reporting covenant default, payment default, and bankruptcy.³⁸ In the post-2000 period, we find no evidence of financial distress for any of our sample firms, except for two firms from the 2005 cohort that experienced technical defaults. In the earlier period, 10 buyout firms filed for bankruptcy, two firms experienced payment defaults but did not file for bankruptcy, and three firms violated financial covenants but later received waivers.

In order to investigate the cross-sectional determinants of the likelihood of post-buyout distress we conduct a probit analysis. The dependent variable, distress, equals 1 if the buyout firm files for bankruptcy or experiences a payment default in the three years following the LBO; 0 otherwise. We do not include technical default in our distress definition because technical default is likely to be mechanically related to deal structure variables that we use as explanatory variables (e.g. number of financial covenants). Because distress equals zero for buyouts during the 2001 to 2007 period, the coefficients on our explanatory variables may pick up time trends if we include those years in our analysis. Therefore, we only use buyouts during the 1997 to 2000 period.⁴⁰ Table IX presents the marginal effects from the probit analysis. It is important to note that the results from this analysis are suggestive as they are based on a small sample of buyouts.

³⁸ Post-buyout financial statements are available from Compustat for only 30 (16.6 percent) buyout firms and thus we do not examine the relationship between deal structure and accounting based performance measures.

⁴⁰ It is important to note that excluding post-2000 buyouts creates a look-ahead bias. To address this concern, we re-estimate the regressions in Table IX using all buyouts with three years of post-buyout history (i.e. buyouts between 1997 and 2003). All of our results remain essentially unchanged.

In regression (1), we model distress as a function of PEG reputation, the credit risk spread, and deal size. We find a significant negative relationship between PEG reputation and likelihood of distress. This finding supports the idea that the present value of future rents from a good credit market reputation provides high reputation funds adequate incentives to preserve their reputation by honoring their debt obligations or that buyouts of reputable PEGs are less risky due to better investment selection and monitoring abilities of the GPs of these funds. We also find that buyouts completed when the credit risk spread is high are less likely to become distressed, which is probably due to more conservative deal structure (e.g. lower leverage and valuations) of such deals. Finally, the evidence suggests that bigger firms are more likely to experience distress.

In regression (2), we replace PEG reputation with number of financial covenants in order to examine whether banker monitoring and control is related to the likelihood of default. We find that number of financial covenants is negatively and significantly related to likelihood of financial distress, which suggests that financial covenants lead to banker oversight and early intervention, lowering the likelihood of bankruptcy.⁴¹

Finally, in regression (3), we include traditional bank debt to total debt as a proxy for bank monitoring and control. One potential problem with using this variable is that, bankers have greater incentives to take the firm to bankruptcy after moderate deteriorations in performance when they have a bigger stake in the firm's total capital (see Carey and Gordy (2007)). Consistent with this conjecture, the coefficient on traditional bank debt to total debt is positive but not statistically significant.

Overall, we find that buyouts sponsored by high reputation PEGs or financed by loans with more financial covenants are less likely to experience financial distress during the three years after the transaction, which shows the crucial role third party monitoring and control plays in improving the performance of highly leveraged transactions.

VII. Conclusion

This paper examines the role of private equity group (PEG) reputation in explaining the time-series and cross-sectional variations in buyout financing and valuations. We examine whether the PEG's reputation serves to reduce agency costs of debt and provides information about the investment selection and monitoring skills of the general partners (GPs) of the PEG. Consistent with the hypothesis that the reputation of the PEG affects lenders' perceptions of the underlying risk of the transaction, we find that borrowing costs are lower for buyouts sponsored by high reputation PEGs. Specifically, we find that

⁴¹ We do not examine the relationship between debt to EBITDA covenant threshold and likelihood of post-buyout distress as the threshold is only available for a small sub-sample of firms.

buyouts sponsored by high reputation funds have narrower bank loan spreads and borrow more and at a lower cost from institutional loan markets. In addition, consistent with the hypothesis that PEG reputation serves as a substitute for bank monitoring and control, we find that buyouts of high reputation PEGs are financed with less bank debt and loans that include fewer and less restrictive financial covenants.

While we find that reputation is related to the amount of leverage used, and leverage is significantly related to buyout pricing, we do not find any direct effect of reputation on buyout valuations. We also find that macroeconomic conditions (e.g. the credit risk spread), growth prospects, ex-ante risk, and deal size also impact buyout financing terms and valuations. Finally, we present suggestive evidence that, in the 1997 and 2000 period, buyouts sponsored by high reputation PEGs or financed by loans with more financial covenants are less likely to experience financial distress during the three years after the transaction. Overall, our results suggest that while the increase in leverage and reduction in both the proportion of bank debt financing and the restrictiveness of covenants in recent deals may reflect an "overheating" in the buyout market, these changes are also related to greater involvement by more experienced PEGs in recent buyouts.

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Table I
Summary Statistics

The table presents the summary statistics of LBOs by year. The sample includes 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007. Information on the capital structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. Capital equals the sum of (1) cash paid to acquire the target firm's equity (including options, warrants, and preferred stock), (2) market value of rollover (e.g. retained) target firm equity, (3) market value of retired debt, (4) book value of retained pre-LBO debt, (5) fees and expenses of the transaction, less (6) cash and marketable securities outstanding before the LBO. Classification of LBOs as private equity group (PEG) led, management led, and corporation led is based on the deal synopsis in SDC. Lead fund reputation is defined as the number of all SDC-recorded public-to-private and private-to-private buyout transactions that the fund invested in during the prior three years. The bottom panel of the table presents nonparametric rank tests we use to compare the values of the variables in three distinct time periods. (+) and (-) signs indicate the direction of the time trend. ***, **, and * indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Year	(1) Number of LBOs	(2) Aggregate Capital (\$ millions)	(3) Median Capital (\$ millions)	(4) Number of private equity led LBOs	(5) Median private equity group reputation	(6) Number of corporation led LBOs	(7) Number of LBOs with management participation	(8) Number of management led LBOs	(9) Median pre management equity (as %)	(10) Median post management equity (as %)
1997	9	4,253.5	407.0	7	6.0	0	2	2	27.9	4.10
1998	14	6,152.1	198.9	7	4.0	0	7	7	23.5	5.11
1999	17	4,715.0	113.2	8	2.0	1	8	8	14.0	13.10
2000	27	14,210.1	329.0	17	2.0	1	12	9	12.0	10.12
2001	12	5,924.7	230.4	2	2.0	1	9	9	27.3	78.50
2002	5	932.8	93.9	3	2.0	0	2	2	28.0	12.44
2003	12	5,795.0	235.5	2	0.5	1	10	9	34.6	16.84
2004	9	13,590.6	752.0	8	2.0	0	2	1	11.6	8.50
2005	20	61,316.2	773.3	18	4.0	1	3	1	18.0	0.00
2006	25	85,225.3	1108.5	22	13.0	0	6	3	8.5	0.00
2007	31	88,576.3	1598.3	25	9.5	0	7	6	8.8	0.00
Time trend:										
1997-2000 vs. 2001-2003		n.m.	(-)*	n.m.	(-)***	n.m.	n.m.	n.m.	(+)***	(+)***
1997-2000 vs. 2004-2007		n.m.	(+)***	n.m.	(+)***	n.m.	n.m.	n.m.	(-)***	(-)***
2001-2003 vs. 2004-2007		n.m.	(+)***	n.m.	(+)***	n.m.	n.m.	n.m.	(-)***	(-)***

Table II
Buyout Capital Structure

The table presents the buyout capital structure by year for a sample 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007. Information on capital structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. Capital equals the sum of (1) cash paid to acquire the target firm's equity (including options, warrants, and preferred stock), (2) market value of rollover (e.g. retained) target firm equity, (3) market value of retired debt, (4) book value of retained pre-LBO debt, (5) fees and expenses of the transaction, less (6) cash and marketable securities outstanding before the LBO. "Arm's length" debt includes private placements, bonds, and mezzanine debt. Total bank debt includes traditional bank debt (i.e. revolvers and Term A loans), institutional loans (i.e. Term B and C loans, and second-lien loans) arranged by banks, and bridge loans. The bottom panel of the table presents nonparametric rank tests we use to compare the values of the variables in three distinct time periods. (+) and (-) signs indicate the direction of the time trend. ***, **, and * indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Year	(1) Median equity to capital (as %)	(2) Median "arm's length" debt to capital (as %)	(3) Median total bank debt to capital (as %)	(4) Median traditional bank debt to capital (as %)	(5) Median revolver to capital (as %)	(6) Median Term A loan to capital (as %)	(7) Median Term B loan to capital (as %)	(8) Average second-lien loan to capital (as %)
1997	34.0	31.2	43.7	39.1	27.8	0.0	0.0	0.0
1998	25.0	15.6	56.3	31.1	13.5	9.9	0.0	0.0
1999	32.0	11.9	75.3	39.3	16.8	13.6	22.4	0.0
2000	31.5	15.9	57.0	33.1	13.4	19.8	22.8	0.0
2001	38.5	20.6	59.8	45.6	13.1	14.3	0.0	0.0
2002	30.9	35.3	31.6	16.0	1.2	16.0	0.0	0.0
2003	41.7	8.2	39.4	27.8	8.6	0.0	0.0	0.0
2004	35.8	27.3	36.1	21.9	9.7	12.2	0.0	0.0
2005	31.3	15.7	69.6	27.0	12.4	0.0	26.8	4.7
2006	33.7	22.6	54.2	15.0	9.8	0.0	31.0	6.1
2007	29.3	23.7	60.4	13.7	8.5	0.0	35.2	5.2
Time trend:								
1997-2000 vs. 2001-2003	(+)**	(+)	(-)***	(-)*	(-)**	(-)*	(-)**	n.m.
1997-2000 vs. 2004-2007	(+)	(+)	(-)	(-)***	(-)***	(-)***	(+)***	n.m.
2001-2003 vs. 2004-2007	(-)**	(-)	(+)***	(-)**	(+)	(-)**	(+)***	n.m.

Table III
Loan Spreads and Maturity

The table presents the average all-in-drawn interest spread over 6-month LIBOR and the average maturity (in months) of loans used in financing LBOs. The sample includes 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007, but the summary statistics are based on buyouts with non-missing data. The numbers in the second rows represent the number of observations used to compute each summary statistic. The list of LBOs is obtained from the SDC Mergers & Acquisitions database. The primary source of loan information is LPC's (Loan Pricing Corporation) Dealscan database. We supplement LPC data with information from loanconnector.com and Edgar filings of the buyout firm. We obtained monthly bond yields from Bloomberg and defined credit spread as the difference between the yields of AAA vs. BB rated bonds. We identified second lien loans by using a list of second lien loans provided to us by S&P and loan Tearsheets. The bottom panel of the table presents nonparametric rank tests we use to compare the values of the variables in three distinct time periods. (+) and (-) signs indicate the direction of the time trend. ***, **, and * indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Year	(1) Maturity first-lien revolvers (months)	(2) Spread first-lien revolvers (bps)	(3) Maturity first-lien Term A (months)	(4) Spread first-lien Term A (bps)	(5) Maturity first-lien Term B (months)	(6) Spread first-lien Term B (bps)	(7) Maturity second-lien loans (months)	(8) Spread second-lien loans (bps)	(9) Credit spread - AAA minus BB (bps)
1997	58.0	222.2	78.0	256.5	90.8	264.1	n.a.	n.a.	133.4
	9	9	4	4	4	4	0	0	9
1998	64.1	197.3	71.0	291.7	90.2	277.2	n.a.	n.a.	216.1
	12	12	10	9	6	6	0	0	14
1999	67.7	308.1	67.6	320.4	90.3	355.7	n.a.	n.a.	219.5
	15	16	15	16	11	11	0	0	17
2000	65.7	305.5	66.7	306.5	84.6	371.3	n.a.	n.a.	304.7
	25	25	23	23	19	19	0	0	27
2001	65.9	294.8	72.5	300.5	86.4	335.0	n.a.	n.a.	398.5
	11	11	10	10	5	5	0	0	12
2002	43.7	320.0	44.3	351.7	72.0	400.0	n.a.	n.a.	409.4
	3	3	3	3	2	2	0	0	5
2003	60.0	341.7	63.0	362.5	70.5	431.3	n.a.	n.a.	242.4
	6	6	4	4	4	4	0	0	12
2004	55.6	271.9	67.2	310.0	76.0	300.0	n.a.	n.a.	213.7
	8	8	5	5	3	3	0	0	9
2005	61.9	264.7	59.9	344.8	74.1	295.1	80.6	589.3	227.0
	18	17	7	6	11	11	7	7	21
2006	65.7	215.9	60.0	281.3	79.3	259.8	81.9	583.3	190.7
	23	23	2	4	18	18	8	6	25
2007	72.6	246.8	75.0	269.6	76.6	237.5	81.8	518.8	159.7
	28	28	10	11	20	20	8	8	35
Time trend:									
1997-2000 vs. 2001-2003	(-)*	(+)**	(-)	(+)**	(-)**	(+)**	n.m.	n.m.	(+)**
1997-2000 vs. 2004-2007	(+)	(-)**	(+)	(-)	(-)**	(-)**	n.m.	n.m.	(-)**
2001-2003 vs. 2004-2007	(+)**	(-)**	(+)	(-)**	(+)	(-)**	n.m.	n.m.	(-)**

Table IV
Covenant Structure

The table presents the covenant structure of loans used in LBO financing. The sample includes 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007, but the summary statistics are based on buyouts with non-missing data. The numbers in the second rows represent the number of observations used to compute each summary statistic. The primary source of covenant information is LPC's (Loan Pricing Corporation) Dealscan database. We supplement covenant data with information from loanconnector.com, Edgar filings of the buyout firm, and the list of covenant-lite loans from S&P. Covenant intensity index equals the sum of six covenant indicators (collateral, dividend restriction, more than 2 financial covenants, asset sales sweep, equity issuance sweep, and debt issuance sweep). Sweep covenants are prepayment requirements that mandate that a portion of the loan be repaid out of excess cash flows, debt and equity financings, or asset sales proceeds. Column (7) presents the average of effective debt to EBITDA covenant threshold at loan inception. The summary statistics are at the buyout level (not loan level) and we use the loan with the most restrictive covenants to compute the summary statistics. The bottom panel of the table presents t-tests we use to compare the values of the variables in three distinct time periods. (+) and (-) signs indicate the direction of the time trend. ***, **, and * indicate that the t-statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Year	(1) Covenant intensity index	(2) Fraction secured (as %)	(3) Fraction with a dividend restriction (as %)	(4) Fraction with a sweep covenant (as %)	(5) Fraction covenant-lite (as %)	(6) Number of financial covenants	(7) Debt/EBITDA covenant threshold
1997	4.43 7	100.00 9	100.00 8	50.00 8	0.00 7	3.00 7	5.80 7
1998	5.45 11	92.86 14	100.00 11	100.00 11	0.00 11	3.36 11	5.48 8
1999	5.71 14	100.00 15	100.00 14	100.00 14	0.00 15	3.36 14	5.39 8
2000	5.79 14	100.00 26	100.00 15	100.00 14	0.00 20	4.18 17	4.75 10
2001	5.00 10	100.00 12	100.00 10	80.00 10	0.00 11	4.36 11	4.06 6
2002	5.67 3	100.00 4	100.00 3	100.00 3	0.00 4	4.33 3	3.23 3
2003	5.67 3	88.89 9	100.00 4	100.00 3	0.00 6	3.83 6	4.85 3
2004	4.67 6	100.00 8	83.33 6	100.00 6	0.00 6	3.50 6	5.57 3
2005	5.30 10	100.00 20	100.00 11	100.00 11	7.14 14	2.31 13	6.81 8
2006	4.00 8	100.00 23	90.00 10	90.00 10	23.81 21	1.53 15	7.62 3
2007	4.20 5	100.00 31	77.78 9	100.00 7	57.14 28	0.83 23	7.31 2
Time trend: 1997-2000 vs. 2001-2003	(-)	(-)	n.m.	(-)	n.m.	(+)**	(-)***
1997-2000 vs. 2004-2007	(-)***	(+)	(-)**	(+)	(+)***	(-)***	(+)***
2001-2003 vs. 2004-2007	(-)**	(+)	(-)**	(+)	(+)***	(-)***	(+)***

Table V
Cross-Sectional Determinants of LBO Loan Spreads

The table presents the cross-sectional determinants of the all-in-drawn spread of loans used in financing LBOs. The sample includes 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. For example, regressions (1)-(3) use 155 LBOs with non-missing data on bank loan spreads. Regressions (4) and (5) use 52 LBOs that use both Term A and B loans for buyout financing and have non-missing data on the spread of these loans. The primary source of loan information is LPC's (Loan Pricing Corporation) Dealscan database. We supplement LPC data with information from loanconnector.com and Edgar filings of the buyout firm. Lead fund reputation is defined as the number of all SDC-recorded public-to-private and private-to-private buyout transactions that the fund invested in during the prior three years. We obtained monthly bond yields from Bloomberg and defined credit spread as the difference between the yields of AAA vs. BB rated bonds. Three year average post buyout EBITDA growth projection of management is from buyout proxy statement and available for only 79 firms. Information on post buyout capital structure is obtained from proxy, 10-K, 8-K, 13-E, and 14-D statements. Capital equals the enterprise value of the buyout firm. Log assets equal the natural logarithm of the buyout firm's total assets when buyout financing terms are set. T-statistics are computed using robust standard errors and are reported in parentheses.

	Value Weighted "Narrow" Bank Loan Spread (bps over LIBOR)			Bank Loan minus Institutional Loan Spread (bps over LIBOR)	
	(1)	(2)	(3)	(4)	(5)
Lead fund reputation	-14.631 (-2.21)	-21.691 (-2.00)	-18.224 (-2.21)	-9.052 (-3.16)	-10.133 (-3.65)
Credit risk spread	31.280 (4.83)	34.151 (2.81)	30.056 (4.67)	10.557 (2.19)	10.977 (3.30)
EBITDA / Sales volatility	3.392 (3.54)	3.068 (2.36)	3.169 (3.03)	0.241 (1.05)	0.247 (1.21)
Projected EBITDA growth		-12.634 (-1.41)			
Log (Assets)			-4.084 (-1.05)		1.843 (0.73)
Post buyout debt / Capital			-62.715 (-2.35)		-40.328 (-2.46)
Difference in Term A and Term B loan maturity (months)				1.794 (3.55)	1.809 (3.30)
Constant	216.299 (9.62)	228.325 (5.95)	295.209 (6.77)	2.357 (0.15)	24.371 (0.88)
Number of observations	155	79	155	52	52
Adjusted R ²	0.19	0.27	0.24	0.29	0.35

Table VI
Determinants of Bank Monitoring and Control

The table presents the cross-sectional determinants of LBO covenant structures and proportion of traditional bank debt using a sample of LBOs. The sample includes 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. For example, regressions (1)-(3) use 122 LBOs with data available on number of financial covenants. Regressions (4)-(6) are based on 49 buyouts with Debt/EBITDA covenant and non-missing threshold data. Regressions (7)-(9) use 173 LBOs with data available on debt structure. 8 observations are lost because of missing EBITDA/Sales volatility. The primary source of loan information is LPC's (Loan Pricing Corporation) Dealscan database. We supplement LPC data with information from loanconnector.com and Edgar filings of the buyout firm. Lead fund reputation is defined as the number of all SDC-recorded public-to-private and private-to-private buyout transactions that the fund invested in during the prior three years. We obtained monthly bond yields from Bloomberg and defined credit spread as the difference between the yields of AAA vs. BB rated bonds. Three year average post buyout EBITDA growth projection of management is from buyout proxy statement and available for only 79 firms. Information on post buyout capital structure is obtained from proxy, 10-K, 8-K, 13-E, and 14-D statements. Capital equals the enterprise value of the buyout firm. Log assets equal the natural logarithm of the buyout firm's total assets when buyout financing terms are set. T-statistics are computed using robust standard errors and are reported in parentheses.

	Maximum number of financial covenants in loan contracts			Debt/EBITDA covenant threshold			Traditional bank debt / Post buyout debt (as %)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Credit risk spread	0.272 (6.52)	0.271 (4.47)	0.249 (6.03)	-0.815 (-4.04)	-0.435 (-2.23)	-0.722 (-3.55)	0.881 (0.29)	-1.116 (-0.24)	0.227 (0.08)
EBITDA / Sales volatility	0.011 (4.41)	0.012 (5.54)	0.007 (2.45)	0.090 (3.06)	0.079 (2.51)	0.039 (1.13)	0.388 (3.29)	0.394 (2.68)	0.305 (1.43)
Lead fund reputation	-0.172 (-3.49)	-0.175 (-2.43)	-0.130 (-2.57)	0.494 (1.87)	0.317 (1.34)	0.191 (0.80)	-6.855 (-3.05)	-4.684 (-1.35)	-4.408 (-1.90)
Projected EBITDA growth		0.614 (2.22)						1.751 (0.22)	
Log (Assets)			-0.088 (-3.10)			0.488 (2.83)			-4.396 (-2.98)
Post buyout debt / Capital			-0.085 (-0.41)			2.170 (3.49)			5.019 (0.52)
Post buyout debt / EBITDA					0.32 (3.52)				
Constant	0.595 (4.17)	-0.127 (-0.32)	1.199 (4.82)	6.577 (8.92)	3.870 (4.19)	2.115 (1.54)	46.508 (5.36)	47.812 (3.05)	66.520 (4.60)
Number of observations	122	68	122	49	49	49	173	88	173
Adjusted R ²	0.08	0.07	0.09	0.27	0.52	0.45	0.08	0.05	0.13

**Table VII
Trends in LBO Valuations**

The table presents annual medians of buyout stock price premium, raw, market, and industry adjusted cash flow multiples for a sample of 181 LBOs completed between January 1, 1997 and August 15, 2007. The table also includes credit risk spread defined as the difference between the yields of AAA vs. BB rated bonds. Stock price premium equals the percentage difference between the final buyout offer price and the price two months before the announcement date of the buyout. Capital equals the sum of (1) cash paid to acquire the target firm's equity (including options, warrants, and preferred stock), (2) rollover (e.g. retained) target firm equity, (3) market value of retired debt, (4) book value of retained pre-LBO debt, (5) fees and expenses of the transaction, less (6) cash and marketable securities outstanding before the LBO. Net cash flow equals EBITDA minus CapEx in the last full year before the final offer price of the LBO is set. Market operating EPS is the operating earnings to price for the S&P 500 in the month LBO offer price is set. Industry adjusted values use median valuations of industry peers identified using a 4-digit SIC match. The bottom panel of the table presents nonparametric rank tests we use to compare the values of the variables in three distinct time periods. (+) and (-) signs indicate the direction of the time trend. ***, **, and * indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Year	(1) Number of LBOs	(2) Stock price premium (as %)	(3) Net cash flow to capital (as %)	(4) EBITDA to capital (as %)	(5) Credit spread AAA - BB (as %)	(6) Market operating EPS (as %)	(7) Net cash flow to capital less market EPS (as %)	(8) EBITDA to capital less market EPS (as %)	(9) Industry adj. net cash flow to capital (as %)	(10) Industry adj. EBITDA to capital (as %)
1997	9	26.92	4.93	9.22	1.33	5.49	-0.56	3.74	-1.72	-0.90
1998	14	21.91	7.71	11.37	2.16	4.56	2.87	6.45	-1.18	-2.12
1999	17	46.67	9.17	13.23	2.20	3.60	5.57	9.29	-0.94	-0.18
2000	27	47.90	8.16	12.57	3.05	3.52	4.64	9.06	-0.80	-1.31
2001	12	48.17	5.21	16.00	3.99	4.25	0.96	11.92	-0.96	0.08
2002	5	58.89	12.57	15.25	4.09	3.38	9.18	11.86	4.62	3.69
2003	12	51.40	7.17	13.45	2.42	5.23	1.93	8.31	1.03	1.31
2004	9	21.82	7.34	12.43	2.14	4.92	2.42	7.51	-0.88	-1.14
2005	20	27.84	6.53	10.52	2.27	5.58	0.95	4.69	-0.60	-1.01
2006	25	21.98	6.07	9.90	1.91	6.12	0.21	3.86	-0.62	-0.56
2007	31	24.80	5.74	7.54	1.60	6.18	-0.56	1.35	-0.69	-1.51
Total	181	31.29	7.00	11.00	0.84	5.23	1.37	5.84	-0.80	-0.91
N obs.		181	177	181	181	181	177	181	177	181
Time trend:										
1997-2000 vs. 2001-2003		(+)	(+)	(+)**	(+)***	(+)**	(+)	(+)**	(+)	(+)**
1997-2000 vs. 2004-2007		(-)***	(-)**	(-)***	(-)***	(+)***	(-)***	(-)***	(+)	(-)
2001-2003 vs. 2004-2007		(-)***	(-)**	(-)***	(-)***	(+)***	(-)***	(-)***	(-)	(-)**

Table VIII
Cross-Sectional Determinants of Buyout Leverage and Valuations

The table below presents instrumental variables regressions explaining the determinants of buyout leverage and valuations using a sample of 166 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007 (we eliminated four deals with negative EBITDA, three deals with post buyout debt to EBITDA greater than 25, and 8 deals with missing EBITDA/Sales volatility). Lead fund reputation is defined as the number of all SDC-recorded public-to-private and private-to-private buyout transactions that the fund invested in during the prior three years. We obtained monthly bond yields from Bloomberg and defined credit spread as the difference between the yields of AAA vs. BB rated bonds. Three year average post buyout EBITDA growth projection of management is from buyout proxy statement and available for only 79 firms. Information on post buyout capital structure is obtained from proxy, 10-K, 8-K, 13-E, and 14-D statements. Capital equals the enterprise value of the buyout firm. Log assets equal the natural logarithm of the buyout firm's total assets when buyout financing terms are set. T-statistics are computed using robust standard errors and are reported in parentheses.

	First Stage			Second Stage		
	Post buyout debt / EBITDA			Log (Capital / EBITDA)		
	(1)	(2)	(3)	(4)	(5)	(6)
Post buyout debt / EBITDA				0.080 (3.61)	0.070 (4.65)	0.075 (3.56)
Log (Industry enterprise value / EBITDA)	3.674 (4.62)	2.610 (2.46)	3.594 (4.50)	0.261 (2.71)	0.234 (3.58)	0.279 (2.91)
Log (Industry debt / EBITDA)	0.609 (1.66)	0.845 (1.61)	0.540 (1.46)			
Credit risk spread	-0.878 (-2.53)	-1.157 (-2.42)	-0.836 (-2.39)			
EBITDA / Sales volatility	-0.059 (-1.81)	-0.067 (-2.13)	-0.054 (-1.64)			
Lead fund reputation	0.846 (3.03)	0.859 (2.27)	0.735 (2.48)	0.039 (1.29)	0.044 (1.68)	0.044 (1.53)
Projected percentage change in EBITDA		7.596 (3.79)			0.619 (4.07)	
Log (Assets)			0.203 (1.11)			
Constant	0.854 (0.30)	-5.673 (-1.78)	-0.087 (-0.04)	0.941 (8.48)	0.339 (1.92)	0.937 (8.29)
Number of observations	166	79	166	166	79	166
Adjusted R ²	0.23	0.36	0.23	0.71	0.82	0.71

Table IX
Likelihood of Financial Distress and Bankruptcy

The table presents probit regressions (marginal effects reported) relating buyout and financing characteristics to likelihood of financial distress, payment default, or bankruptcy, using a sample of 67 buyouts between January 1, 1997 and December 31, 2000. Lead fund reputation is defined as the number of all SDC-recorded public-to-private and private-to-private buyout transactions that the fund invested in during the prior three years. The primary source of covenant information is LPC's (Loan Pricing Corporation) Dealscan database. We supplement LPC data with information from loanconnector.com, Edgar filings of the buyout firm, and the list of covenant-lite loans from S&P. We use the number of financial covenants from the most covenant-heavy loan of the borrower. We obtained monthly bond yields from Bloomberg and defined credit spread as the difference between the yields of AAA vs. BB rated bonds. Information on post buyout capital structure is obtained from proxy, 10-K, 8-K, 13-E, and 14-D statements. Traditional bank debt includes revolving and Term A loans. Log assets equal the natural logarithm of the buyout firm's total assets when buyout financing terms are set. T-statistics are computed using robust standard errors and are reported in parentheses.

	Likelihood of Financial Distress/Bankruptcy		
	(1)	(2)	(3)
Lead fund reputation	-0.037 (-1.76)		
Number of financial covenants		-0.020 (-1.93)	
Traditional bank debt / Post buyout debt			0.217 (1.29)
Credit risk spread	-0.074 (-3.22)	-0.047 (-3.08)	-0.116 (-2.43)
Log (Assets)	0.059 (3.32)	0.045 (2.80)	0.127 (2.85)
Number of observations	67	49	67
Adjusted R ²	0.40	0.47	0.22

Figure I. Changes in the LBO Capital Structure

The figure below presents the capital structure of “traditional” (2004 and before) versus “new” (2005-2007) LBOs.

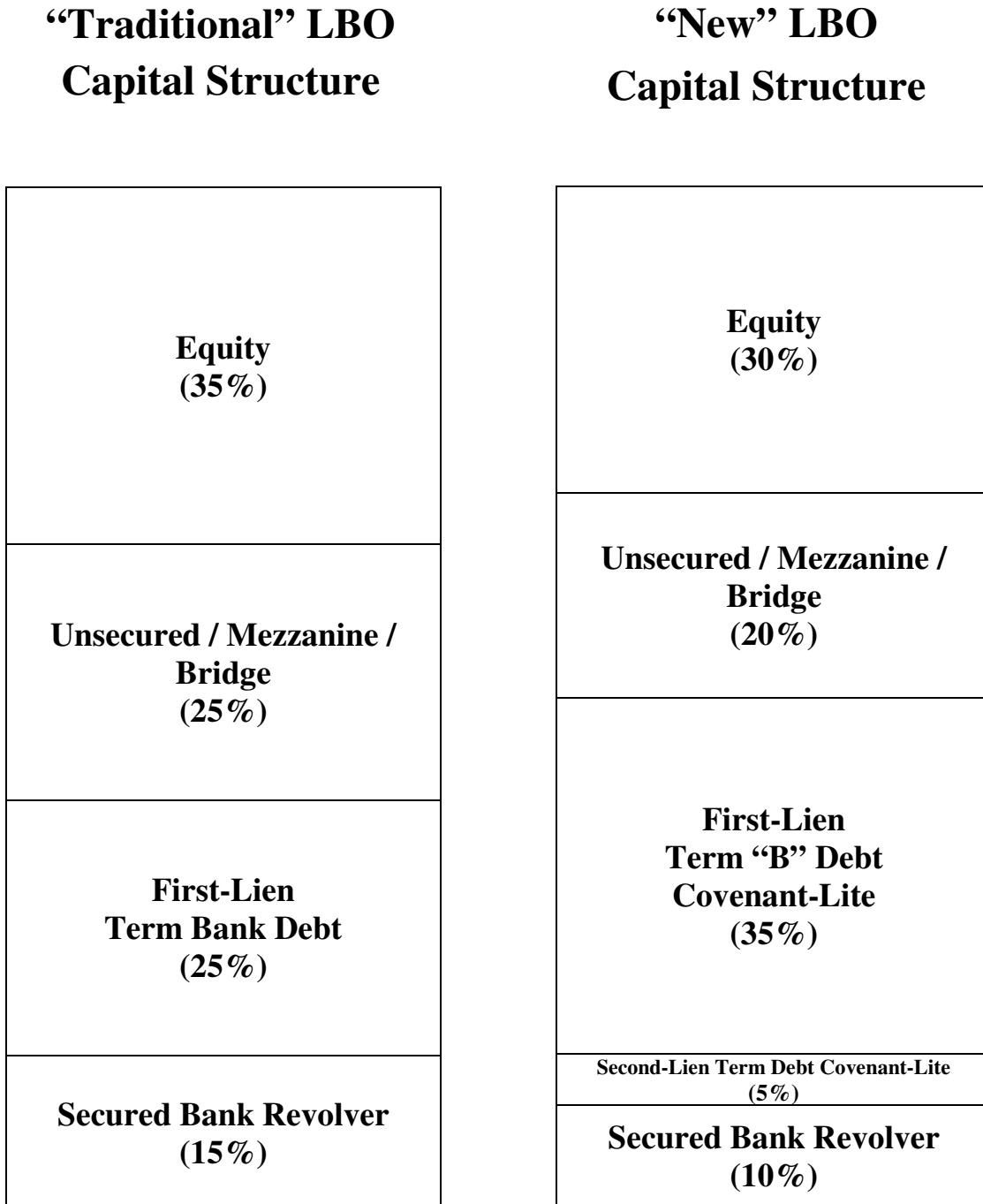


Figure II

The Average Amount of Traditional Bank Debt to Post Buyout Debt

The figure below presents the average amount of traditional bank debt to post buyout debt by year for a sample 181 public-to-private domestic LBOs completed between January 1, 1997 and August 15, 2007. The list of LBOs is obtained from the SDC Mergers & Acquisitions database. Information on the debt structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. Traditional bank debt includes revolvers and Term A loans.

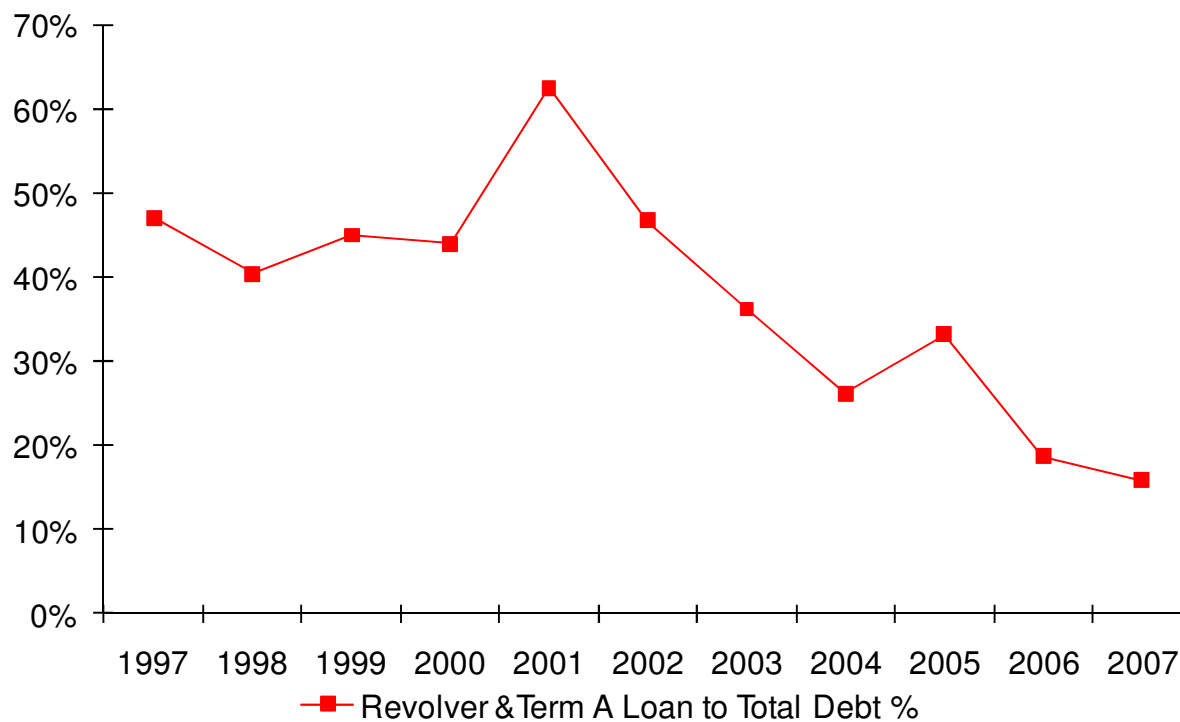


Figure III
Average Number of Financial Maintenance Covenants

The figure below presents the annual average number of financial maintenance covenants in the loan contracts of LBO firms and publicly traded “B” rated non-LBO firms. Senior debt ratings of non-LBO firms are from Compustat and based on S&P ratings at the end of the fiscal year prior to loan inception. The primary source of covenant information is LPC’s (Loan Pricing Corporation) Dealscan database. We supplement covenant data of LBO loans with information from loanconnector.com and the Edgar filings of the buyout firm. If the covenant data is missing for LBO or non-LBO loans, we search the list of covenant-lite loans provided to us by S&P; if the loan is listed as covenant-lite we set the number of financial covenants to zero, otherwise we delete the loan from the analysis. The analysis is at the deal level and we use the number of financial covenants in the most covenant-heavy loan in a deal package. The LBO sample consists of 122 transactions with non-missing covenant information and completed between January 1, 1997 and August 15, 2007.

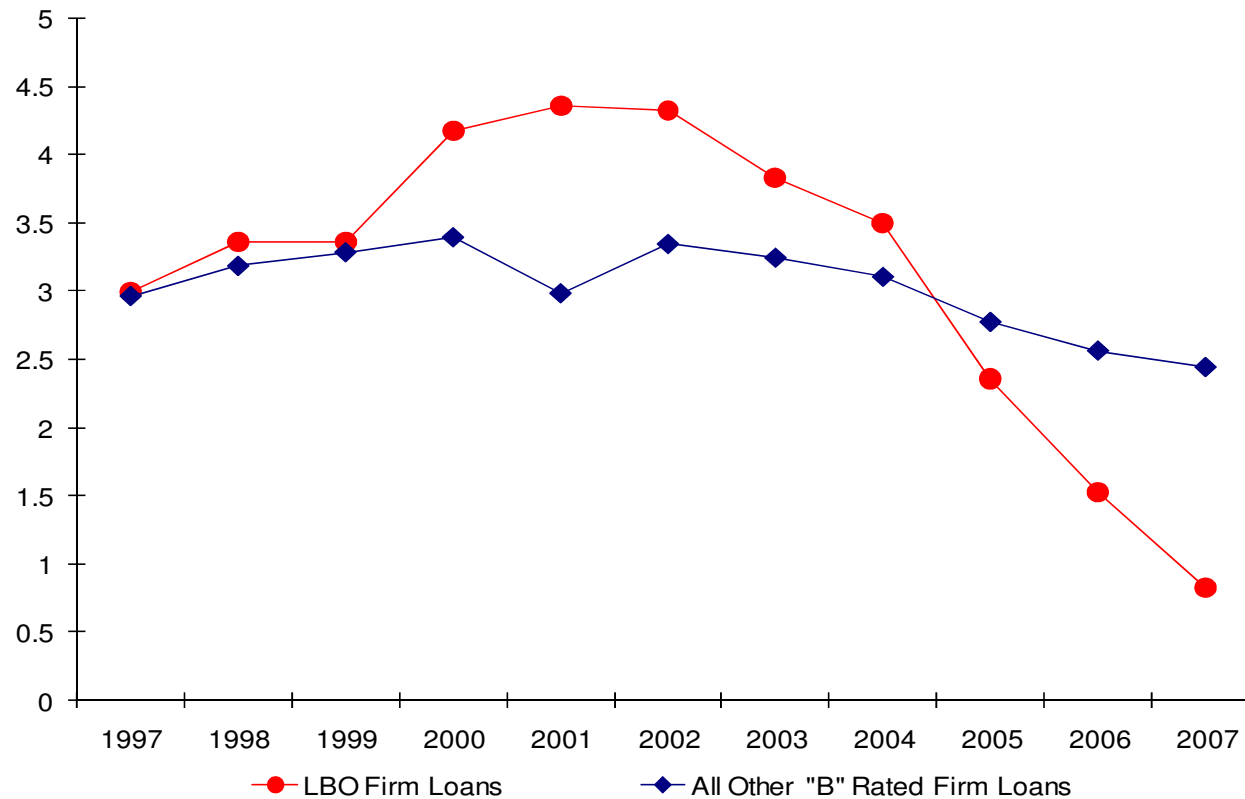


Figure IV
Median Post Buyout Leverage and Buyout Valuations

The figure below presents the relationship between the amount of buyout leverage and buyout valuations for a sample of 174 LBOs completed between January 1, 1997 and August 15, 2007. Four deals with negative EBITDA and three deals with buyout debt to EBITDA greater than 25 are excluded from the analysis. Information on the capital structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. Post buyout leverage is measured as post buyout debt to EBITDA from the last fiscal year before the offer price of the buyout is set. Buyout valuation is measured by Capital/EBITDA where capital equals, the sum of (1) cash paid to acquire the target firm's equity (including options, warrants, and preferred stock), (2) rollover (e.g. retained) target firm equity, (3) market value of retired debt, (4) book value of retained pre-LBO debt, (5) fees and expenses of the transaction, less (6) cash and marketable securities outstanding before the LBO.

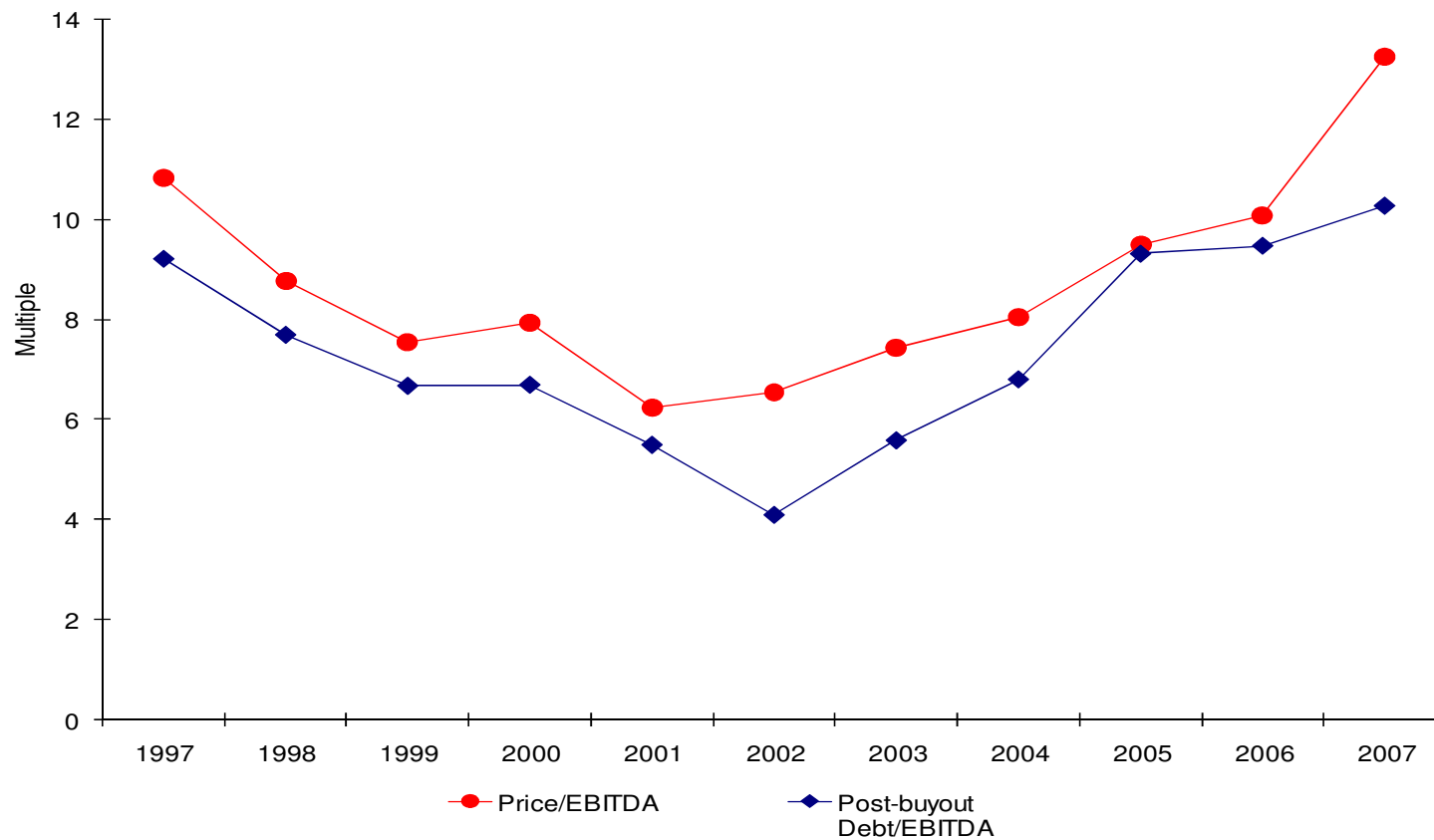


Figure V

Median Post Buyout Leverage and Credit Risk Spread

The figure below presents the relationship between the amount of buyout leverage and buyout valuations for a sample of 174 LBOs completed between January 1, 1997 and August 15, 2007. Four deals with negative EBITDA and three deals with buyout debt to EBITDA greater than 25 are excluded from the analysis. Information on the capital structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. EBITDA is from Compustat and based on the last annual income statement reported before the deal terms are finalized. We obtained monthly bond yields from Bloomberg and defined credit spread as the difference between the yields of AAA vs. BB rated bonds.

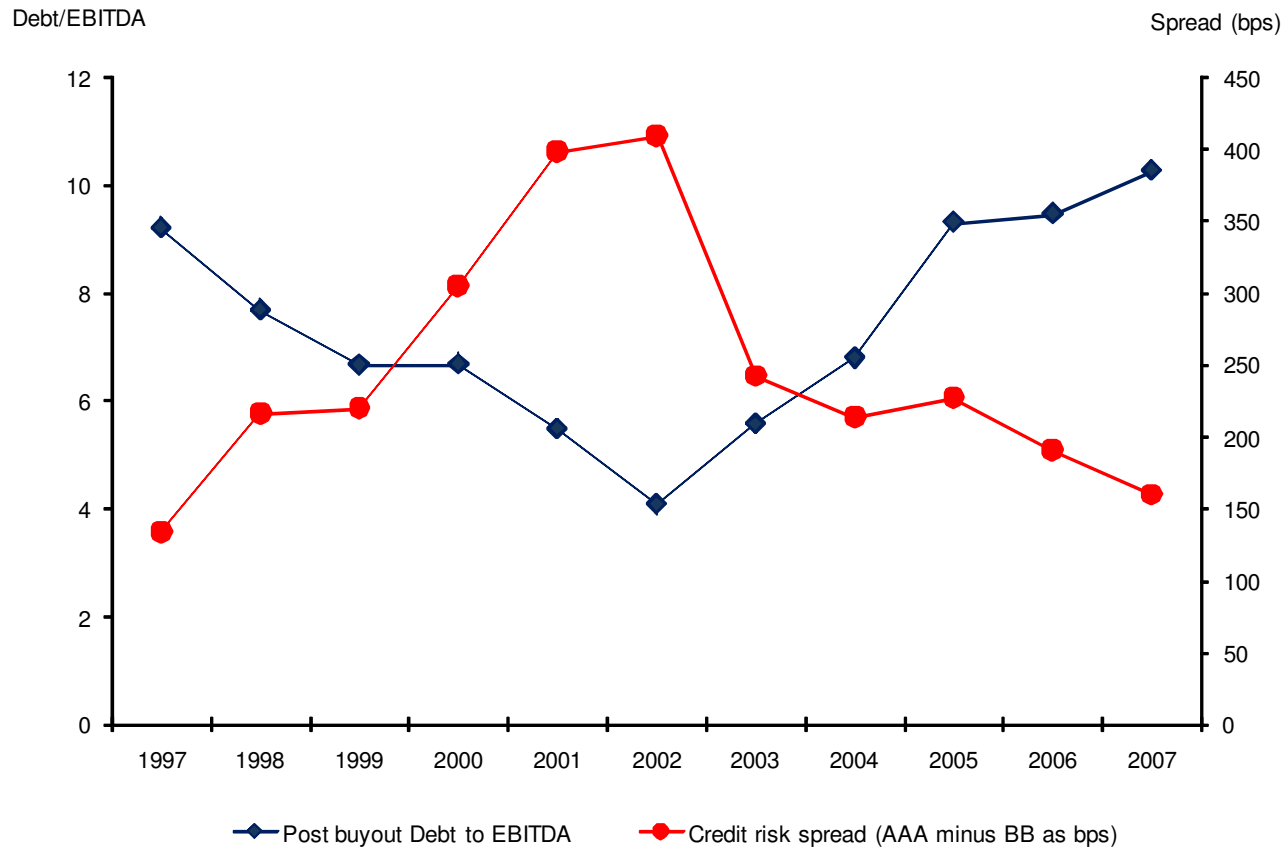


Figure VI
Trends in Buyout and Public Company Leverage

The figure below presents trends in pre and post deal leverage for a sample of buyouts and their industry peers. Buyout sample consists of 181 LBOs completed between January 1, 1997 and August 15, 2007. We exclude observations where EBITDA is negative or debt to EBITDA is greater than 25. Information on the capital structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. Post buyout leverage is measured as post buyout debt divided by EBITDA from the last fiscal year before the offer price of the buyout is set. Industry "matched" debt to EBITDA is the median debt to EBITDA of the firms that are in the same industry, based on 4-digit SIC codes, as the buyout firm at the end of the last fiscal year before the offer price of the buyout is set.

