

LENDER CONTROL AND THE ROLE OF PRIVATE EQUITY GROUP REPUTATION IN  
BUYOUT FINANCING

By

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To all who nurtured my intellectual curiosity, academic interests, and sense of scholarship,  
making this milestone possible

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In this study, we examine whether the reputation of the acquiring private equity group (PEG) is related to the financing structure, loan contract terms, and valuation of leveraged buyouts (LBOs). Using a sample of 180 public-to-private 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. In addition, 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.

## CHAPTER 1 INTRODUCTION

Commercial banks have traditionally played an important role in leveraged buyout (LBO) financing. For example, Kaplan and Stein (1993) find that, during the 1980s, banks provided the majority of buyout debt, typically in the form of short-term and covenant-heavy term loans and revolving lines of credit.<sup>1</sup>

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 (see, e.g., Berlin and Mester, 1992; Smith and Warner, 1979).<sup>2</sup> The ease of renegotiation may, in turn, lower financial distress costs (Gilson, John and Lang, 1990) and, more importantly, enable 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 (Chava and Roberts, 2007; Nini, Smith, and Sufi, 2007). Second, banks are generally thought to have a comparative advantage in monitoring (Diamond, 1984, 1991; Fama, 1985; 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

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<sup>1</sup> Even at the peak of the junk bond boom in the late 1980s, approximately 55% of buyout debt consisted of covenant-heavy bank loans (see Kaplan and Stein, 1993, Table 4, page 331).

<sup>2</sup> 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.

or the terms of lending.<sup>3</sup> 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 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 (HLT), Kaplan and Stein (1993) find that, during the 1980s, buyouts financed by junk bonds and relatively less covenant-heavy bank debt subsequently experienced a greater frequency of financial distress and bankruptcy.<sup>4</sup> Also, in a more recent study, using 176 LBOs between 1990 and 2006, Guo, Hotchkiss, and Song (2007) find evidence that post-buyout performance is positively related to the amount of bank financing.

Given the academic evidence on the importance of bank monitoring and control in HLTs, recent trends in LBO financing appear puzzling. For example, according to S&P, the volume of covenant-lite loans (term loans with *no* financial maintenance covenants such as maximum

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<sup>3</sup> 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.

<sup>4</sup> Kaplan and Stein (1993) argue that these patterns are consistent with “overheating” in the buyout market in the second half of the 1980s. 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.

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.<sup>5</sup>

During the 2000 to Spring 2007 time period, the frequency and the volume of term B and C loans (term loans placed with institutional investors such as hedge funds and insurance companies) used in LBO financing grew significantly. For example, based on Loan Pricing Corporation (LPC) data, the percentage of LBOs with Term B and C loans increased from 44% in 1997 to approximately 80% at the end 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.<sup>6</sup> 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 five 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 payment-in-kind (PIK) toggle features came into more frequent use. A PIK toggle feature provides the borrower with the choice of paying interest either in cash or in-kind through the issuance of additional debt to reduce the debt burden on the borrower in a time of difficulty.<sup>7</sup>

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

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<sup>5</sup> 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.

<sup>6</sup> See Private Equity and the Capital Markets at <http://www.frbsf.org/csip/>.

<sup>7</sup> Neiman Marcus was granted \$700 million in PIK toggles, the interest payments of which could be turned off until maturity at Neiman's option. The deferred interest would accrue at a higher rate (9.75% vs. 9.00%) when the instrument matures in 2015.

(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.<sup>8</sup> One notable exception is a recent paper by Axelson, Jenkinson, Stromberg, and Weisbach (2007, henceforth AJSW). They examine a sample of 153 private-to-private and public-to-private U.S. and foreign LBOs sponsored by the five largest private equity houses during the period 1985 to 2006 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. The sub-prime lending crisis in summer 2007 and the abrupt decline in LBO activity (except for the completion of previously negotiated deals) provide additional, albeit causal, evidence in support of a credit market “bubble”.<sup>9</sup>

In this paper, rather than focusing on the relationship between credit market conditions and buyout financing, we investigate whether the involvement of reputable PEGs is related to the structure of buyout financing. In particular, using a sample of 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, we examine whether PEG reputation is related to cross-sectional and time-series changes in the amount, cost, and maturity of “traditional” bank debt in buyouts, the covenant structure of LBO loans, and LBO leverage and pricing, after controlling for ex ante firm specific factors and credit market conditions. In addition, using a sub-sample of LBOs with at least three years of post-buyout history, we investigate whether the presence of monitoring and control from reputable PEGs is related to post-buyout performance.

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<sup>8</sup> See Altman (2007) and Bavaria and Lai (2007).

<sup>9</sup> The aggregate value of public-to-private transactions in the first half of 2007 was \$405 billion. In contrast, the aggregate deal value was \$86 billion during the second half of 2007 and \$15 billion in the first quarter of 2008 (Morgan Stanley, 2008).

There are several reasons to expect that the participation of reputable PEGs 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.<sup>10</sup> Consistent with this argument, the authors find that less senior bank debt is used in PEG-led transactions versus MBOs.

Second, an extensive theoretical literature 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...”<sup>11</sup> 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.<sup>12</sup>

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<sup>10</sup> 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.

<sup>11</sup> See Diamond (1989), page 829. See also John and Nachman (1985).

<sup>12</sup> 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 (to some extent) exogenous to the credit risk characteristics of the target firm and thus present a cleaner test of Diamond’s model.

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 older funds perform better than new funds. Similarly, Phalippou and Zollo (2006) find that small and young funds have significantly lower performance.<sup>13</sup> 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.<sup>14</sup> Also, reputable private equity sponsors may be better positioned (i.e., have deeper pockets) to inject additional equity to distressed portfolio companies at times of unforeseen difficulties. Therefore, borrowing by the portfolio companies of more reputable PEGs may rationally be viewed by lenders as less risky, resulting in better lending terms.

Fourth, 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 GPs 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 GPs is based on aggregate profits from all investments, more established PEGs with successful investment records may be less prone to risk shifting and may have incentives to pursue more conservative investment strategies.

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<sup>13</sup> 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.

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

Finally, reputable PEGs may have greater bargaining power with lenders as they do more and larger deals and thus pay larger bank fees both per deal and in aggregate. Therefore, bankers may subsidize current loans of reputable PEGs and provide other favorable non-price terms to attract future mandates from those groups. In this way, the bargaining power and prominence of reputable PEGs may reinforce overheating in the credit market by fostering competition among lenders and by making loans granted to reputable PEGs easier to package and sell to nonbank lenders.

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. During the same period, debt relative to EBITDA (i.e. leverage) and deal prices relative to EBITDA increased and the cost of borrowing declined. In addition, consistent with the findings of AJSW, we find that economy-wide credit market conditions as measured by credit risk spreads (the spread between BB and AAA bond yields) are significantly negatively 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 expected cost of financial distress, we cannot rule out that some of the changes in deal structure are also due in part to an overheating in the buyout market in recent years [similar to what Kaplan and Stein (1993) find for the late 1980s]. We also find that the structure of LBO financing (the amount of leverage and proportion of bank debt) and the cost of bank borrowing are significantly related to 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.

In terms of PEG reputation, we find that buyouts sponsored by high reputation PEGs 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 positively related to the amount of leverage used, and leverage is significantly and positively 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 target firm and the transaction, the size of the deal, credit market conditions, and year fixed effects. Also, our results are robust to using sub-samples of buyouts (e.g. small buyouts and buyouts completed before the "hot" LBO markets of 2006 and 2007) and alternative PEG reputation measures in the estimation.

In addition, using a sub-sample of transactions, we find that buyouts sponsored by high reputation PEGs or financed with more covenant-heavy bank debt are less likely to experience financial distress during the five years after the transaction. We find that the acquiring PEG injected additional equity after the transaction in only a small fraction of the deals in our sample (2.8%), and in none of these cases the buyout firm was in financial distress. These results suggest that the relationship between PEG reputation and ex post performance is *not* driven by the deep pockets of reputable PEGs. A more plausible explanation is that third party monitoring and control play an important role in reducing the likelihood of serious financial distress in HLTs.

Overall, our 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.

## CHAPTER 2 DATA DESCRIPTION

### **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 (in 2000 dollars).
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 our study 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 180 LBOs completed between 1997 and 2007. The total value of these 180 transactions exceeds \$290 billion. Over the same period, the aggregate enterprise value of all domestic public-to-private transactions listed in SDC is \$358 billion. Our sample, therefore, represents approximately 81% of the dollar volume of domestic private-to-public transactions listed in SDC during this period.

### **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. We supplement the information on loans used to fund the deal as follows:

1. 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, and covenant structure.
2. We use a dataset provided to us by S&P to identify covenant-lite and second-lien loans.<sup>1</sup>
3. 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.

### **Buyout Investors and PEG Reputation**

We hand collect ownership information for each buyout from the proxy statement and post-LBO 10-Ks (when available). In 90% of the transactions the acquirer is a PEG (or a group of PEGs). The remaining transactions are either MBOs (management buyouts) or leveraged buyouts sponsored by corporations. The most frequent PEGs in our sample are Texas Pacific Group (13 deals), Blackstone Group (ten deals), Kohlberg Kravis Roberts (ten deals), and Apollo Advisors (nine deals). Thirty-five percent of sample LBOs are club deals that involve multiple private equity investors. The average number of PEGs in those deals is 2.7.

We measure the reputation of each PEG by counting the number of all SDC-recorded public-to-private and private-to-private buyout transactions (not just the 180 deals in our sample) that the PEG invested in during the past 36 months. In the case of club deals, we count the deal as a full deal for each PEG. The PEGs with the highest reputation scores in various years are

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<sup>1</sup> S&P defines covenant-lite as a loan with no financial maintenance covenants (see Bavaria and Lai (2007)).

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 (which is no longer active), were the top five global PEGs based on the amount of capital raised during the 2002 and 2006 period.<sup>2</sup>

Using the reputation of the acquiring PEGs, we create a PEG reputation measure for each sample LBO. If there are multiple PEGs investing in the buyout firm, then we use the reputation score of the PEG 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).

As we discuss in more detail later in the paper, to check the robustness of our findings, we created four alternative measures of PEG reputation: (i) number of buyouts by the PEG since 1980 when SDC started collecting LBO data (i.e., experience); (ii) PEG age; (iii) LBO market share of the PEG by dollar deal volume in the prior three years; and (iv) assets under management of the PEG as of 2007 and as reported at the PEG's web page. Table 4-5 shows that all of our reputation measures are highly correlated.

### **Other Financial Data**

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

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<sup>2</sup> 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 data sets that are unavailable to us.

the same industry (based on four-digit SIC code) as the LBO firms in our sample.<sup>3</sup> We obtain bond yields from Bloomberg and define credit spread as the difference between the yields of BB versus AAA rated bonds.

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<sup>3</sup> If there are less than five firms in the LBO firm's industry (excluding the LBO firm), we define industry by using the three-digit (or two-digit, if necessary) SIC code.

## CHAPTER 3 SUMMARY STATISTICS

Table 3-1 presents summary statistics for 180 sample LBOs by the year in which the final transaction terms are set. The table also presents the signs of nonparametric rank test statistics that we use to examine time trends during the entire sample period and in three distinct sub-periods: 1997 to 2000, 2001 to 2003, and 2004 to 2007.

It is notable that the volume (both the number and the aggregate value) of LBOs in the first eight months of 2007 exceed the volume of deals in each of the prior ten full years, which suggests that the buyout market was “hot” in that period. Nevertheless, in the months following the end of our sample period, the 2007 credit crunch resulted in a freeze in LBO activity.

The median buyout in our sample has total capital of \$408.1 million. There is a significant increase in deal size after 2002. Total capital of the median buyout exceeds the \$1 billion threshold in both 2006 and 2007 when nine of the ten largest LBOs in history are announced and completed. The biggest transaction 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 buyout of Eagle Point Software Corp in March 2001.

The annual average credit risk spread, which exhibits an inverse U-shape time trend during our sample period. In years when the average credit risk spread is lower, the number and the aggregate value of LBOs are higher, which suggests as AJSW find that credit spreads drive activity in the LBO market. Also, the fraction of buyouts by reputable PEGs increases when debt is cheaper.

Finally, Table 3-1 also indicates a trend towards greater involvement of reputable PEGs in the buyout market in recent years. In particular, the fraction of PEG-lead deals and the average PEG reputation significantly increases after 2003; especially in the 2006 and 2007 period.

Table 3-1. Time-series summary statistics<sup>†</sup>

Year	(1) Number of LBOs	(2) Aggregate capital (\$ millions)	(3) Median capital (\$ millions)	(4) Credit spread (BB vs. AAA) (bps)	(5) Fraction of LBOs sponsored by PEGs (as %)	(6) Average PEG reputation
1997	9	4,253.5	407.0	133.4	100.0	5.8
1998	14	6,152.1	198.9	216.1	92.9	4.9
1999	17	4,715.0	113.2	219.5	88.2	3.8
2000	27	14,210.1	329.0	304.7	92.3	3.6
2001	12	5,924.7	230.4	398.5	66.7	2.5
2002	5	932.8	93.9	409.4	80.0	1.4
2003	12	5,795.0	235.5	242.4	66.7	1.9
2004	9	13,590.6	752.0	213.7	100.0	3.5
2005	20	61,316.2	773.3	227.0	90.0	5.4
2006	25	85,225.3	1,108.5	190.7	96.0	11.2
2007	30	87,473.0	1,647.4	159.7	96.7	9.4
Total	180	289,588.2	408.1	227.0	90.0	5.8
Time trend 1997-2000 vs. 2001-2003 1997-2000 vs. 2004-2007 2001-2003 vs. 2004-2007	n.m. n.m. n.m. n.m.	n.m. n.m. n.m. n.m.	(+) <sup>***</sup> (-) (+) <sup>***</sup> (+) <sup>***</sup>	(-) <sup>***</sup> (+) <sup>***</sup> (-) <sup>***</sup> (-) <sup>***</sup>	(+) (-) <sup>***</sup> (+) (+) <sup>***</sup>	(+) <sup>***</sup> (-) <sup>***</sup> (+) <sup>***</sup> (+) <sup>***</sup>

<sup>†</sup> The table presents summary statistics by year for a sample of 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007. The list of LBOs is obtained from the SDC Mergers & Acquisitions database. Information on capital structure and ownership 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. Credit spread is the difference between the monthly average annualized yields of BB vs. AAA rated bonds. PEG (private equity group) reputation is defined as 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. 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.

## CHAPTER 4 BUYOUT FINANCING STRUCTURES

### **Trends in Buyout Financing Structures**

In this section, we describe significant trends in buyout financing. Figure 4-1 provides a description of the capital structure of representative LBOs in the first half of our sample period (2004 and before) versus LBOs in the 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 4-1 provides a detailed description of the capital structure of the buyout firms in our sample. The equity portion of buyout capital is relatively stable in the 30%-40% range. Therefore, recent LBOs may look “safer” than buyouts of the late 1980s with median equity to capital ratio of 10%-15% (see Kaplan and Stein (1993)). However, buyout debt to EBITDA has substantially increased in the last few years, and thus the debt burden of buyout firms is still quite high.

Table 4-1 also provides information about the debt structure of buyout firms. The annual average ratios of revolving lines of credit and Term A loans to total buyout debt both decline over time. For example, the average ratio of revolvers to total buyout debt declines from 31.9% in 1997 to 9.6% in 2007. In addition, the average ratio of Term A loans to total buyout debt declines from 32.3% in 2001 to 9.1% in 2007. Although most buyouts continue to have revolving lines of credit, the fraction of buyouts with a Term A loan in their capital structure significantly declines from 91.7% in 2001 to 9.6% in 2007. Furthermore, the annual average ratio of traditional bank loans (which include revolving lines of credit and Term A loans that are kept on the books of issuing banks) to total buyout debt decreases significantly from 55.1% in

2001 to 18.6% in 2007.<sup>1</sup> All of these trends are consistent with the declining importance of “traditional” bank debt in buyout financing.

The decline in traditional bank debt ratios coincides with an increased usage of institutional term loans. For example, the average ratio of first-lien Term B loans to LBO debt increases from 12% in the 2001 to 2003 period to 47.6% in 2007. During the same period, the fraction of buyout firms using Term B loans more than doubles and reaches 96.7% in 2007. Term B loans are also popular between 1997 and 2000, but their proportion relative to total buyout debt is lower relative to the post-2004 era. In addition, second-lien loans that give creditors a junior claim (i.e. second priority) on the buyout firm’s collateral also gain popularity after 2004.<sup>2</sup> While none of our sample LBOs was financed with a second-lien term loan prior to 2005, between 2005 and 2007, 26 buyout firms (34.7%) took out a second-lien term loan. The average amount of second-lien loans relative to total buyout debt is approximately 7.3% in the 2005 to 2007 period.

Finally, Table 4-1 presents information on the use of “arm’s length” debt (i.e. bonds, private placements, mezzanine debt) in buyout financing. The fraction of buyouts financed using “arm’s length” debt decreases from 77.8% in 1997 to a low of 20.0% in 2002, but then bounces back to 60.0% in 2007. However, the annual average ratio of “arms length” debt to total buyout debt exhibits no significant time trend. In other words, there is no evidence that subordinated “arms length” debt was substituted for traditional bank debt in recent transactions.

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<sup>1</sup> 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 commercial banks while Term B, C, and D loans, which are called “institutional debt”, are structured to be sold to institutional loan investors.

<sup>2</sup> 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.

We next focus on interest rate terms and maturity of the LBO loans. Table 4-2 presents the annual averages of all-in-drawn spread and maturity of first-lien revolving lines of credit, Term A and Term B loans, and second-lien term loans.<sup>3</sup> All-in-drawn spreads (over six-month LIBOR) are from Dealscan and include both the interest cost and fees associated with borrowing. The average 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 rated corporate bonds yields. 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.<sup>4</sup> Also, 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, 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 a declining number of covenants.

We also examine the covenant structure of the traditional bank loans. To determine whether time-series 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 buyout 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

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<sup>3</sup> 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].

<sup>4</sup> Miller (2006) argues that institutional term loans are typically priced higher than amortizing Term A loans because they have longer 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.

supplement Dealscan data with information from loanconnector.com and the Edgar filings of the buyout firm. If the covenant data is missing 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 126 transactions with non-missing covenant information. The senior debt ratings of non-LBO firms are from Compustat and based on long-term S&P ratings at the end of the fiscal year prior to loan inception.

Figure 4-2 presents our findings. Between 2002 and 2007, the average number of covenants in buyout loans drops sharply from 4.36 to 0.83. In the same period, the number of covenants in non-LBO loans decreases 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 4-3 provides further details about the covenant structure of buyout loans. For example, consistent with the evidence shown in Figure 4-2, there are no covenant-lite buyout loans (i.e. loans with *no* financial maintenance covenants) prior to 2004 while 59.3% of buyout firms have covenant-lite loans during the first eight months of 2007.<sup>5</sup> Also, the annual average debt to EBITDA covenant threshold and enables us to examine changes in covenant tightness.<sup>6</sup>

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<sup>5</sup> 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 six deals.

<sup>6</sup> We focus particularly on this covenant because debt to EBITDA is the most commonly used financial covenant in LBO firm loan contracts.

The average threshold trends upward. This indicates that the covenant is set relatively more loosely in more recent years. However, this is partly mechanical because more recent deals also have higher Debt/EBITDA.

Table 4-3 also provides information about alternative measures of covenant tightness. For example, the table displays the annual average of covenant intensity, defined by Bradley and Roberts (2004) as the sum of six covenant indicators (collateral, dividend restriction, more than two financial covenants, asset sales sweep, equity issuance sweep, and debt issuance sweep). Covenant intensity significantly declines after 2003. The decline is primarily due to a decline in the use of dividend restrictions and financial covenants. Also, virtually all buyout loans are secured and 92.9% 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.

Finally, in recent years, the importance of deferred interest securities such as PIK toggles has 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 five LBO firms issued PIK toggle debt 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% of buyout firms took out PIK toggle debt.

### **Cross-Sectional Determinants of LBO Financing Structures**

In this section, we investigate the determinants of bank loan spreads, the number of financial loan covenants, bank loan maturity, and the amount of "traditional" bank debt and institutional loans relative to total LBO 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, 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 financial covenants, longer maturities, and less traditional bank financing to total debt financing.

### **Summary Statistics**

Summary statistics of the variables used in the cross-sectional analysis are provided in Table 4-4. In the year prior to the LBO, the median buyout firm generated \$365.4 million in revenues (expressed in 2000 purchasing power), which is significantly higher than the revenues of the median Compustat firm (\$100 million) in the same period. Consistent with Opler and Titman (1993) who argue that LBO firms have high free cash flows and fewer investment opportunities, we find that the median LBO firm has higher EBITDA/Assets and Free Cash Flow/Assets and lower R&D/Sales and Tobin's Q than the median firm in their industry or in Compustat (not shown). Despite the lack of investment opportunities, however, the managers of buyout firms expect, somewhat surprisingly, 13% per year EBITDA growth during the three years after the completion of the LBO. The valuations of buyout firms, as measured by capital (e.g. enterprise value) to EBITDA, closely mimic the valuations of their industry peers. Furthermore, the leverage (i.e. Total Debt/EBITDA) of the median buyout firm more than triples as a result of the transaction.

Table 4-4 also provides information about the characteristics of the acquiring PEGs that we use to measure PEG reputation. As shown, the median PEG in our sample has 12 years of experience, invested in ten LBOs since 1980 and four LBOs during the three years prior to the

sample transaction. Also, the median PEG has less than a 1% market share in the LBO market in terms of dollar buyout volume and \$3.6 billion dollars of assets under management as of 2007 (conditional on survival until 2007). In comparison, although not shown, the PEG that is ranked in the 90<sup>th</sup> percentile has \$40 billion under management, an 8.2% market share, and invested in 41 deals since 1980. The evidence suggests that there is significant heterogeneity among our sample PEGs and that the buyout markets are dominated by a few top PEGs.

Table 4-5 provides a correlation matrix of our reputation measures. All five measures are very highly correlated (significant at the 1% level). In particular, we find that PEGs with more past buyout experience are also older, larger, and have greater LBO market share. Because all five measures are highly correlated, in the cross-sectional analysis below, we use the number of LBOs by the PEG in the prior three years as our main PEG reputation measure. However, in Chapter 6, we discuss the robustness of our key findings to using the alternative measures of PEG reputation.

In Table 4-6 we estimate the relationship between PEG reputation and ex ante target firm characteristics as well as credit market conditions, using cross-sectional OLS regressions. We find that reputable PEGs acquire larger firms with higher growth opportunities (as measured by industry median Capital/EBITDA). On the other hand, the level and volatility of cash flows or pre-deal Debt/EBITDA are unrelated to PEG reputation. Furthermore, we find that the deals of reputable PEGs are clustered around periods of low credit spreads, consistent with the evidence in Table 3-1.

### **Determinants of Loan Spreads**

Regressions (1)-(4) in Table 4-7 present the determinants of the all-in-drawn spread over LIBOR in traditional bank loans, using 161 LBOs with non-missing data on loan spreads. If a buyout firm has more than one bank loan with different spreads we use the value-weighted

spread, where the weight is the value of each loan relative to the value of the entire loan package, as the dependent variable. The unit of observation in the regressions is a buyout, 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 the fractional change in EBITDA/Sales during the ten years prior to the buyout, pre-LBO EBITDA/Assets of the target company, pre-deal industry median Capital/EBITDA (a growth proxy), and our PEG reputation measure (the number of completed buyouts during the prior three years).<sup>7</sup>

As shown, in regression (1), we find that loan spreads are positively related to the credit risk spread and the volatility of the buyout firm's operating margins, which suggests that both credit market conditions and firm specific risk influence borrowing costs. Also, we find that pre-LBO profitability and loan spreads are negatively correlated but the relationship between the two is not significant at conventional levels. More importantly, we find that a one standard deviation increase in PEG reputation lowers the borrowing cost by 17 (=18.09 x 0.94) basis points (6.3% when evaluated at the mean) with the other variables in the model held constant. This is consistent with the argument that the buyouts of a high reputation PEG are perceived by creditors as less risky.

In regression (2), we include the natural log of pre-buyout sales to control for deal size. We find a weak negative relationship between buyout size and borrowing costs. Also, we find that only 20% (=1- 14.47 / 18.09) of the reputation effect that we find in regression (1) is attributable to differences in the size of deals done by high vs. low reputation PEGs.

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<sup>7</sup> When we replace industry median Capital/EBITDA by three year average post-buyout EBITDA growth projection of management (as reported in the proxy statement) we get very similar results.

In regression (3) we include post-LBO traditional bank debt / Capital as an explanatory variable. The idea is that banks may demand a higher compensation for risk as their commitment relative to total buyout capital increases. Alternatively, however, borrowers may choose to borrow more when bank debt is cheap. The evidence suggests that the latter effect dominates the former. In particular, we find that traditional bank loan spreads are negatively correlated with the amount of traditional bank debt in the buyout firm's capital structure.<sup>8</sup> Including bank leverage as an explanatory variable does not affect the sign and significance of the PEG reputation measure.

In regression (4), we add year fixed effects. Including year fixed effects does not significantly improve the explanatory power (R-squared) of our model. Also, when year fixed effects are included the coefficient on monthly credit spreads becomes statistically insignificant. Apparently, year dummies pick up most of the variation in credit spreads. In addition, the coefficient on PEG reputation remains significant at the 10% level. Therefore, even after controlling for the clustering of PEG sponsored deals in years with low credit risk spreads, we still find PEG reputation is negatively related to loan interest spreads.

One potential criticism for the analysis above is that all-in-drawn spread, the dependent variable in regressions (1)-(4), 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 the form of other acquisition related fees as opposed to interest payments. Moreover getting up-front fees may increase the lead

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<sup>8</sup> We get very similar results when we use total buyout debt, rather than traditional bank debt, to capital.

bank's willingness to arrange riskier deals (i.e. they essentially take the money and run). One way to address this issue is to examine the variation in the Term B and Term A loan spread difference. This difference is presumably independent of bank fees. If the negative relationship between traditional bank loan 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 B and Term A loans in deals where reputable PEGs are involved (or no relationship). In contrast, if lenders view PEG-led deals as less risky, then we would expect the Term B and Term A spread difference to be narrower when reputable PEGs are involved.

In our sample, 58 buyouts are financed with both Term A and Term B loans and have non-missing spread information on both loan types. The average (median) spread difference equals 45 (50) basis points, consistent with the numbers reported in Nandy and Shao (2007). Regressions (5) and (8) in Table 4-7 estimate the determinants of this difference. We find that the spread difference is significantly lower for buyouts sponsored by high reputation PEGs. With the other variables in the model held constant, a one standard deviation increase in PEG reputation lowers the spread difference by ten basis points (22% when evaluated at the mean). We also find that the difference is larger when the credit risk spread is higher and when the maturity difference between institutional and traditional term loans is longer. Furthermore, we find that Term B loans are relatively cheaper when the buyout firm is more profitable and its operating cash flows are less volatile. These results are robust to controlling for deal size and year fixed effects.

Overall, the evidence in Table 4-7 indicates that borrowing costs are lower for buyout loans 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.

### **Determinants of the Number of Financial Covenants and Loan Maturity**

As we discussed earlier, if PEG reputation serves as a substitute for creditor monitoring and control we would expect deals involving more reputable PEGs to be financed with bank loans involving fewer and less restrictive covenants and longer maturities. In regressions (1)-(4) in Table 4-8, we examine the determinants of the 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 financial covenants in its Term A loan(s) but has a leverage covenant in its revolving credit, then the dependent variable equals one. We estimate the model using Poisson regressions because the dependent variable is a count variable. The sample consists of 126 buyouts with information available on covenant structure.

In regression (1), the baseline specification, we model the number of financial loan covenants as a function of credit spreads, cash flow volatility and growth, profitability, and PEG reputation. We find that LBO 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 the number of financial covenants suggests 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. In addition, we find that buyout firms include more financial covenants when cash flows are expected to grow faster (e.g. when industry Capital/EBITDA or the management projection of post-deal EBITDA growth is higher). This is consistent with Demiroglu and James' (2007) argument that covenants are less

costly for borrowers expecting significant improvements in operating performance. 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, a one standard deviation increase in PEG reputation lowers the number of financial covenants by 0.77 (27.5% when evaluated at the mean).

As shown in Table 4-8, larger buyouts have fewer financial covenants and the marginal effect of reputation, in regression (1) is unchanged when deal size and bank leverage are included. In regression (4), we include year fixed effects. This significantly improves the explanatory power of our regressions (R-squared increases from 10.6% in regression (3) to 53.7%). When year dummies are included, the coefficient on PEG reputation is still negative but no longer statistically significant. To investigate this issue further, we estimate regression (3) for the 1997-2003 and 2004-2007 periods separately (not shown). We find that PEG reputation is significantly related (at the 1% level) to number of financial loan covenants in the latter period. The relationship is insignificant in the former period. There are two potential explanations for these findings.

First, the institutionalization of the private equity industry in recent years may have increased the importance of PEG reputation in the eyes of creditors to a level at which creditors started to offer loans with fewer covenants to reputable PEGs. Second, Diamond (1991) argues that in periods of higher present or anticipated interest rates a higher credit rating is required to borrow without monitoring (or borrow with fewer covenants). This suggests that in the former period, when interest rates were relatively high, only the most reputable PEGs could borrow with few covenants. To test this conjecture, we estimate regression (3) for the former period using

both PEG reputation and PEG reputation squared as explanatory variables (not shown). We indeed find that the squared term is negative and significant at the 5% level. Note that the squared term is negative but insignificant when the same model is estimated for the 2004-2007 period.

Given the relationship between PEG reputation and the number of covenants, a natural next step is to investigate whether PEG reputation is also related to the tightness of financial covenants conditional on the presence of covenants. In particular, we examine whether deals sponsored by reputable PEGs get higher Debt/EBITDA covenant thresholds (i.e. looser covenants). A couple of problems arise when examining the relationship between reputation and covenant tightness. First, the subsample of loans with a Debt/EBITDA covenant is relatively small (61 LBOs) and covenants are not consistently defined across loans. Second, because we condition on the presence of covenants (even though the likelihood of covenant inclusion is negatively related to PEG reputation), we are likely to underestimate the relationship between PEG reputation and the Debt/EBITDA covenant threshold. However, despite these caveats, we find that there is a positive and significant (at the 10% level) relationship between Debt/EBITDA covenant thresholds, even after controlling for buyout debt to EBITDA (not shown for brevity).

The second set of regressions presented in Table 4-8, regressions (5)-(8), which are estimated using OLS, examines the relationship between traditional bank loan maturity and PEG reputation. Short-term lending is often considered an alternative mechanism to covenants in transferring control rights to creditors to lower the agency costs of debt (e.g., Rajan and Winton, 1995). Therefore, if PEG reputation serves as a substitute for banker monitoring and control we expect loans sponsored by reputable PEGs to have longer maturities.

The dependent variable in regressions (5) to (8) is the maturity (in months) of revolving lines of credit. We use the maturity of the revolver because a revolver is the most frequently used loan type in our sample. We find that loans sponsored by reputable PEGs have longer maturities but the relationship is not very strong economically: using the coefficient from regression (5), a one standard deviation increase in PEG reputation is associated with a three month increase (5% when evaluated at the mean) in loan maturity. Overall, we find that buyouts led by high reputations PEGs are financed by loans that include fewer and less restrictive financial covenants and longer maturities. This evidence is consistent with the hypothesis that PEG reputation serves as a substitute for bank monitoring and control.

#### **Determinants of the Amount of Traditional Bank vs. Institutional Loans**

An alternative to issuing bank loans with fewer and looser covenants and longer maturities is to issue debt securities without monitoring (e.g. institutional loans or “arm’s length” debt). Cotter and Peck (2001) argue that the disciplinary role of intermediated debt is less important when reputation concerns provide PEGs adequate incentives to maximize performance. In regressions (1) to (3), we find that the buyouts of high reputation PEGs use significantly less intermediated (i.e. bank) debt: A one standard deviation increase in PEG reputation lowers the amount of traditional bank debt to total buyout debt by 4.15% to 7.23% (15.80% to 27.53% when evaluated at the mean) depending on the specification. As shown in regressions (4) to (6), buyouts of high reputation PEGs borrow more from institutional loan markets. Surprisingly, the coefficients on PEG reputation in regressions (1) to (3) are approximately equal to the absolute value of the reputation coefficients in regressions (4) to (6), respectively, which suggests that buyouts sponsored by reputable PEGs substitute traditional bank loans (almost one-for-one) by borrowings from institutional loan markets.

Table 4-9 sheds light on other factors that determine a firm's choice between intermediated bank debt vs. institutional loans. First, we find that smaller buyouts rely more heavily on bank debt and borrow less from institutional loan markets, which is consistent with larger buyouts having better access to capital markets. Second, buyouts with greater cash flow volatility borrow significantly more from banks and less from institutional loan markets, which is consistent with greater benefits from bank monitoring (and lower distress costs associated with bank debt) for these firms. Third, more profitable and high growth firms borrow more from institutional loan markets but not less from bank loan markets, which suggests that profitability and cash flow growth improve the overall debt capacity of buyout firms. Finally, credit market conditions do not seem to influence how much bank or institutional debt buyout firms use.

Overall, the evidence in Table 4-9 indicates that the buyouts led by high reputation PEGs are financed with less bank debt and more institutional loans. This evidence is again consistent with the hypothesis that PEG reputation serves as a substitute for bank monitoring and control.

### **PEG Reputation vs. Banking Relationships**

If the presence of past lending relationships with the PEG improves the banks' ability to predict the PEG's performance then the asymmetric information costs of the buyout loan may be lower. Consequently, banks may offer more favorable loan contracts to PEGs they know better. Since reputable PEGs have longer track records, they are also more likely to have past interactions with the bankers of their present buyouts. Therefore, our PEG reputation measure may pick up a "relationship effect".

To investigate this issue we examine whether the relationship between PEG reputation and all-in-drawn spread, number of financial loan covenants, loan maturity, and the ratio of traditional bank debt to total buyout capital persists after controlling for the presence of past lending relationships with the PEG and the banks providing financing. The estimation results are

presented in Table 4-10. We measure relationships by whether the lead bank providing financing lent to the PEG in the five years preceding the LBO in our sample. We also include in all regressions a dummy variable that equals one if the target firm has past lending relationships with the banks during the five years before the LBO; and zero otherwise. The idea again is that banks may provide more favorable financing when they are more informed about the target's future prospects. For presentation purposes, we only report the coefficients for PEG reputation and the two lending relationship dummies. The other explanatory variables in the regressions are volatility of fractional change in EBITDA/Sales, pre-LBO EBITDA/Assets, the natural logarithm of industry median enterprise value to EBITDA, and the natural logarithm of the pre-LBO sales. Also, we use the amount of traditional bank loans relative to the enterprise value of the LBO firm as an explanatory variable in all regressions except for regression (4). We estimate regression (2) where the dependent variable is the number of financial covenants by Poisson and all other regressions by OLS.

We find that the inclusion of the dummy variables does not affect the sign and the significance of the coefficients of our PEG reputation measure. Also, the relationship dummies are not significant in any of the regressions. The evidence suggests that banks do *not* provide more favorable buyout loan terms to their past borrowers. Consistent with this result we find that reputable PEGs shop around for deal financing. For example, Texas Pacific Group, during the January 2006 to August 2007 time period, borrowed from nine different lead banks to finance five of our sample LBOs. Not a single one of these nine banks joined the financing of more than two of the five LBOs.

Table 4-1. Capital structure<sup>†</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Average	Average	Fraction	Average	Average	Fraction	Average	Fraction	Average	Fraction with	Average
	equity	revolver to	With	Term A loan	“traditional”	with	Term B loan	with	2 <sup>nd</sup> lien loan	“arm's length”	“arm's length”
	to capital	LBO debt	Term A loan	to LBO debt	to LBO debt	Term B loan	to LBO debt	2 <sup>nd</sup> lien loan	to LBO debt	debt	debt
Year	(as %)	(as %)	(as %)	(as %)	(as %)	(as %)	(as %)	(as %)	(as %)	(as %)	(as %)
1997	36.7	31.9	33.3	12.7	44.7	55.6	18.5	0.0	0.0	77.8	35.0
1998	30.0	23.3	78.6	22.3	45.6	50.0	11.1	0.0	0.0	42.9	17.1
1999	35.2	25.0	94.1	24.8	49.8	64.7	21.4	0.0	0.0	35.3	10.1
2000	34.2	23.2	92.6	25.1	48.3	74.1	24.2	0.0	0.0	37.0	14.1
2001	35.1	22.8	91.7	32.3	55.1	41.6	12.6	0.0	0.0	25.0	9.9
2002	40.6	3.3	60.0	21.4	24.7	40.0	14.1	0.0	0.0	20.0	8.0
2003	42.9	24.1	41.7	14.7	38.9	33.3	8.9	0.0	0.0	41.7	21.2
2004	35.3	19.3	44.4	8.5	27.8	44.4	20.8	0.0	0.0	66.7	34.1
2005	36.0	19.7	50.0	14.4	34.2	55.0	23.1	50.0	7.7	45.0	16.1
2006	36.9	19.7	16.6	5.7	25.6	76.0	33.5	32.0	7.8	48.0	15.8
2007	33.0	9.6	23.3	9.1	18.6	96.7	47.6	26.7	6.5	60.0	19.4
Time trend	(+)	(-) <sup>***</sup>	(-) <sup>***</sup>	(-) <sup>***</sup>	(-) <sup>**</sup>	(+)	(+) <sup>***</sup>	n.m.	n.m.	(+) <sup>**</sup>	(+)
1997-2000 vs.											
2001-2003	(+) <sup>*</sup>	(-) <sup>**</sup>	(-) <sup>*</sup>	(-)	(-)	(-) <sup>**</sup>	(-) <sup>**</sup>	n.m.	n.m.	(-)	(-)
1997-2000 vs.											
2004-2007	(+)	(-) <sup>***</sup>	(-) <sup>***</sup>	(-) <sup>***</sup>	(-) <sup>***</sup>	(+)	(+) <sup>***</sup>	n.m.	n.m.	(+)	(+)
2001-2003 vs.											
2004-2007	(-) <sup>*</sup>	(-)	(-) <sup>***</sup>	(-) <sup>***</sup>	(-) <sup>**</sup>	(+) <sup>***</sup>	(+) <sup>***</sup>	n.m.	n.m.	(+) <sup>**</sup>	(+)

<sup>†</sup> The table presents the buyout capital structure by year for a sample 180 public-to-private U.S. 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 enterprise value of the buyout firm. “Traditional” bank debt includes Term A loans and bank revolvers. “Arm’s length” debt includes private placements, bonds, and mezzanine debt. 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. <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Table 4-2. Loan spreads and maturity<sup>†</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Average maturity of first-lien revolvers (months)	Average spread of first-lien revolvers (bps)	Average maturity of first-lien Term A (months)	Average spread of first-lien Term A (bps)	Average maturity of first-lien Term B (months)	Average spread of first-lien Term B (bps)	Average maturity of second-lien Term B (months)	Average spread of second-lien Term B (bps)	Average maturity of first-lien Term B vs. A (months)	Average spread of first-lien Term B vs. A (bps)
1997	57.8	221.9	84.0	250.3	84.6	266.3	n.a.	n.a.	9.0	22.6
1998	65.4	232.7	81.7	257.2	87.1	291.2	n.a.	n.a.	18.3	44.7
1999	67.7	310.6	67.6	318.5	90.3	355.7	n.a.	n.a.	21.0	53.4
2000	65.7	305.5	66.7	306.5	83.3	369.0	n.a.	n.a.	16.6	58.2
2001	61.5	294.8	71.4	305.5	86.4	335.0	n.a.	n.a.	10.8	45.0
2002	60.0	362.5	44.3	351.7	72.0	400.0	n.a.	n.a.	12.0	50.0
2003	60.0	341.7	63.0	362.5	70.5	431.3	n.a.	n.a.	10.0	50.0
2004	55.6	271.9	63.0	325.0	78.0	287.5	n.a.	n.a.	18.0	37.5
2005	61.9	268.9	61.4	338.4	76.7	264.6	72.0	563.9	12.0	10.0
2006	65.7	215.9	60.0	295.8	79.3	258.6	81.9	583.3	12.0	10.9
2007	72.4	248.7	81.0	258.6	78.3	250.0	81.8	518.8	3.0	6.4
Time trend	(+)	(-) <sup>***</sup>	(-)	(+)	(-) <sup>***</sup>	(-) <sup>***</sup>	n.m.	n.m.	(-) <sup>***</sup>	(-) <sup>***</sup>
1997-2000 vs.										
2001-2003	(-)	(+) <sup>**</sup>	(-)	(+) <sup>**</sup>	(-) <sup>**</sup>	(+) <sup>**</sup>	n.m.	n.m.	(-) <sup>***</sup>	(-)
1997-2000 vs.										
2004-2007	(+)	(-) <sup>***</sup>	(-)	(-)	(-) <sup>***</sup>	(-) <sup>***</sup>	n.m.	n.m.	(-) <sup>**</sup>	(-) <sup>***</sup>
2001-2003 vs.										
2004-2007	(+)	(-) <sup>****</sup>	(+)	(-)	(+)	(-) <sup>***</sup>	n.m.	n.m.	(-)	(-) <sup>**</sup>

<sup>†</sup> 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 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the summary statistics are based on buyouts with non-missing data. 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 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. <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Table 4-3. Loan covenant structure<sup>†</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Average Covenant Intensity Index	Fraction secured (as %)	Fraction with a dividend restriction (as %)	Fraction with a sweep covenant (as %)	Fraction covenant-lite (as %)	Average number of financial covenants	Average Debt/EBITDA covenant threshold
Year							
1997	4.42	100.0	100.0	50.0	0.0	3.00	5.80
1998	5.45	100.0	100.0	100.0	0.0	3.36	5.48
1999	5.71	100.0	100.0	100.0	0.0	3.36	5.39
2000	5.79	100.0	100.0	100.0	0.0	4.18	4.75
2001	5.00	100.0	100.0	80.0	0.0	4.36	4.06
2002	5.67	100.0	100.0	100.0	0.0	4.33	3.23
2003	5.67	88.9	100.0	100.0	0.0	3.83	4.85
2004	4.67	100.0	83.3	100.0	0.0	3.50	5.57
2005	5.30	100.0	100.0	100.0	7.1	2.31	6.81
2006	4.00	100.0	90.0	90.0	23.8	1.53	7.62
2007	4.20	100.0	77.8	100.0	59.3	0.83	7.31
Time trend	(-) <sup>***</sup>	n.m.	n.m.	n.m.	n.m.	(-) <sup>***</sup>	(+) <sup>**</sup>
1997-2000 vs.							
2001-2003	(-)	n.m.	n.m.	n.m.	n.m.	(+) <sup>**</sup>	(-) <sup>***</sup>
1997-2000 vs.							
2004-2007	(-) <sup>***</sup>	n.m.	n.m.	n.m.	n.m.	(-) <sup>***</sup>	(+) <sup>***</sup>
2001-2003 vs.							
2004-2007	(-) <sup>*</sup>	n.m.	n.m.	n.m.	n.m.	(-) <sup>***</sup>	(+) <sup>***</sup>

<sup>†</sup> The table presents the covenant structure of loans used in LBO financing. The sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the summary statistics are based on buyouts with non-missing data. 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. 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 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.

Table 4-4. Cross-sectional summary statistics<sup>†</sup>

Variables:	N	Mean	Median	Stdev.
<i>Characteristics of target firms:</i>				
Pre-LBO sales of the target (in \$mil)	180	1,333.6	365.4	3,246.8
Pre-LBO EBITDA/Assets of the target (as %)	180	16.5	15.7	8.9
Volatility of fractional change in EBITDA/Sales (as %)	172	58.1	26.2	65.0
3-year projected EBITDA growth by management (as %)	91	11.6	13.0	18.9
Capital/EBITDA	176	9.9	8.9	4.0
Pre-LBO industry median Capital/EBITDA	180	9.4	8.6	3.5
All post-LBO debt/EBITDA	173	8.5	7.7	3.7
Pre-LBO Total debt/ EBITDA	178	2.5	1.8	3.1
<i>Characteristics of bank loans:</i>				
Bank commitment / All post-LBO debt (as %)	180	36.5	32.5	26.9
Value-weighted bank loan spread (in bps)	161	272.2	275.0	71.2
Number of financial covenants	126	2.8	3.0	1.7
Debt/EBITDA covenant threshold	61	5.4	5.5	1.6
<i>Characteristics of PEGs:</i>				
Number of LBOs by the PEG in prior 3 years	180	5.7	4.0	6.4
Number of LBOs by the PEG since 1980	180	15.9	10.0	18.1
Age of the PEG	180	12.5	12.0	10.2
Market share of the PEG by deal volume in prior 3 years (as %)	180	2.1	0.6	3.2
Assets-under-management (as of 2007)	144	15.7	3.6	25.3
<i>Lending relationship measures:</i>				
% of targets with prior relationship w/ LBO bankers	180	23.3		
% of PEGs with prior relationship w/ LBO bankers	180	27.8		

<sup>†</sup> The table presents cross-sectional summary statistics for a sample of 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007. Panel A presents the characteristics of the buyout targets and the acquiring private equity groups (PEGs). Target firm financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat and the proxy statement. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. Capital equals the enterprise value of the buyout at the completion of the transaction. The primary source of information on bank loan characteristics and past lending relationships of the target and the PEG is the LPC's Dealscan database. We supplement Dealscan data with information from loanconnector.com and Edgar filings of the buyout firm. The number and volume of buyout deals by each PEG is obtained from SDC's M&A database. We collected information about the PEG's age and assets under management from PEG web pages. If the PEG does not have a web page, we assume that the year of first SDC recorded buyout of the PEG is the founding date of the PEG.

Table 4-5. Correlation matrix for private equity group reputation variables<sup>†</sup>

	(1)	(2)	(3)	(4)	(5)
(1) Number of LBOs by the PEG in the prior 3 years	1.00				
(2) Number of LBOs by the PEG since 1980	0.86***	1.00			
(3) Age of the PEG	0.63***	0.82***	1.00		
(4) Market share of the PEG by (\$) deal volume	0.82***	0.85***	0.67***	1.00	
(5) Assets-under-management (as of 2007)	0.80***	0.84***	0.69***	0.87***	1.00

<sup>†</sup> The table presents correlations between alternative measures of private equity group reputation. Our sample consists of 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007. The number and volume of buyout deals by each PEG is obtained from SDC's M&A database. We collected information about the PEG's age and assets under management from PEG web pages. If the PEG does not have a web page, we assume that the year of first SDC recorded buyout of the PEG is the founding date of the PEG. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

Table 4-6. Determinants of private equity group (PEG) reputation<sup>†</sup>

	LN(1+Number of LBOs by the PEG in the prior 3 years)	LN(1+Number of LBOs by the PEG since 1980)	LN(1+Age of the PEG)	Market share of the PEG by (\$) deal volume	Assets-under- management of the PEG (as of 2007)
Volatility of fractional change in EBITDA/Sales (as %)	0.00 [0.10]	0.01 [0.55]	-0.01 [-0.97]	0.01 [0.49]	0.00 [0.17]
Pre-LBO EBITDA/Assets (as %)	-0.00 [0.08]	-0.00 [0.31]	-0.00 [-0.93]	-0.00 [-1.27]	-0.00 [-0.94]
LN(Industry median Capital/EBITDA)	0.36** [2.05]	0.21 [0.83]	0.21 [0.80]	1.47*** [2.75]	0.64** [2.00]
Pre-LBO Total debt/ EBITDA	-0.01 [-0.29]	-0.01 [-0.19]	-0.04 [-1.41]	0.03 [0.62]	0.02 [0.58]
LN(Pre-LBO sales (\$mil))	0.21*** [4.42]	0.30*** [4.56]	0.22*** [3.34]	0.99*** [6.22]	0.38*** [5.47]
Credit risk spread (BB vs. AAA (as %))	-0.31*** [-3.69]	-0.52*** [-4.42]	-0.44*** [-3.41]	-0.85*** [-4.13]	-0.61*** [-4.97]
Number of observations	172	172	172	172	144
Adjusted R-squared	23.7%	26.3%	23.2%	33.2%	36.5%

<sup>†</sup> The table presents OLS regression estimates of the determinants of private equity group reputation. Our sample consists of 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007. The number and volume of buyout deals by each PEG is obtained from SDC's M&A database. We collected information about the PEG's age and assets under management from PEG web pages. If the PEG does not have a web page, we assume that the year of first SDC recorded buyout of the PEG is the founding date of the PEG. Target firm financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat and the proxy statement. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. Capital equals the enterprise value of the buyout at the completion of the transaction. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

Table 4-7. Determinants of loan spreads<sup>†</sup>

	Value-weighted all-in-drawn spread (bps over LIBOR) on “traditional” bank loans				Difference between first-lien Term B vs. Term A loan all-in-drawn spreads (bps)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LN (1+Number of LBOs by the PEG in the prior 3 years)	-18.09*** [-2.65]	-14.47** [-2.14]	-16.60** [-2.48]	-11.45* [-1.77]	-9.29*** [-3.22]	-10.04*** [-3.23]	-10.94*** [-3.75]	-7.47** [-2.03]
Volatility of fractional change in EBITDA/Sales (as %)	3.33*** [3.50]	2.94*** [3.05]	2.88*** [3.04]	2.70* [1.82]	0.29* [1.66]	0.39* [1.88]	0.49** [2.25]	0.64 [1.59]
Pre-LBO EBITDA/Assets (as %)	-0.88 [-1.18]	-0.99 [-1.34]	-0.88 [-1.16]	-1.23 [-1.57]	-1.15** [-2.50]	-1.12** [-2.51]	-1.28*** [-2.85]	-1.38*** [-2.84]
Post-LBO “traditional” bank debt / Capital (as %)			-0.57** [-2.09]	-0.67** [-2.54]			0.64* [1.84]	0.54 [1.49]
LN(Industry median Capital/EBITDA)	13.79 [0.74]	10.50 [0.56]	10.14 [0.06]	5.60 [0.30]	0.34 [0.03]	1.28 [0.12]	7.30 [0.66]	13.88 [1.04]
LN(Pre-LBO sales (\$mil))		-6.14 [-1.51]	-7.73** [-1.99]	-5.38 [-0.92]		1.94 [0.66]	3.82 [1.15]	9.40* [1.96]
Credit risk spread (BB vs. AAA (as %))	31.62*** [4.82]	30.80*** [4.59]	32.27*** [4.97]	19.30 [1.49]	9.30** [2.19]	9.01** [2.26]	8.26** [2.24]	4.12 [0.13]
Maturity gap (Term B vs. A) in months					1.84*** [3.84]	1.87*** [3.70]	1.76*** [4.09]	0.96* [1.80]
Year fixed effects	No	No	No	Yes	No	No	No	Yes
Number of observations	161	161	161	161	58	58	58	58
Adjusted R-squared	21.6%	22.6%	24.9%	25.7%	39.6%	40.3%	48.1%	38.6%

<sup>†</sup> We estimate the determinants of LBO loan spreads using OLS. The sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. The analysis is done at the buyout level and not at the loan level. The primary source of information on loans is the LPC’s Dealscan database. “Traditional” bank debt includes Term A loans and bank revolvers. If the buyout firm has multiple traditional bank loans, we use the value-weighted loan spread as the dependent variable in regressions (1) to (4). The number of past buyout deals by each PEG is obtained from SDC’s M&A database. Target firm (and industry) financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat and the proxy statement. Capital equals market value of assets minus cash. Credit spread is the difference between the monthly average annualized yields of BB vs. AAA rated bonds. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

Table 4-8. Determinants of loan covenant structure and maturity<sup>†</sup>

	Number of financial loan covenants				Maturity of revolving credit (in months)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LN (1+Number of LBOs by the PEG in the prior 3 years)	-0.17*** [-3.44]	-0.11** [-2.20]	-0.11** [-2.26]	-0.15 [-1.06]	3.40*** [3.40]	2.23** [2.24]	1.95** [2.01]	1.71* [1.63]
Volatility of fractional change in EBITDA/Sales	0.01*** [4.90]	0.01** [2.16]	0.01** [2.05]	0.02* [1.81]	-0.24*** [-2.77]	-0.10 [-1.29]	-0.12 [-1.47]	0.01 [0.09]
Pre-LBO EBITDA/Assets	0.43 [0.96]	-0.04 [-0.10]	-0.03 [-0.08]	-0.18 [-0.15]	36.38*** [3.66]	40.83*** [4.30]	42.52*** [4.70]	35.69*** [3.92]
Post-LBO “traditional” bank debt / Capital			-0.08 [-0.43]	-0.86* [-1.66]			-9.33** [-2.38]	-9.63** [-2.09]
LN(Industry median Capital/EBITDA)	-0.18* [-1.62]	-0.29** [-2.44]	-0.30** [-2.43]	0.07 [0.21]	2.83 [0.68]	3.90 [1.03]	2.22 [0.58]	1.86 [0.49]
LN(Pre-LBO sales (\$mil))		-0.13*** [-3.97]	-0.14*** [-3.72]	-0.02 [-0.19]		2.18*** [3.05]	1.83*** [2.75]	2.42*** [3.62]
Credit risk spread (BB vs. AAA (as %))	0.27*** [6.86]	0.23*** [5.72]	0.23*** [5.85]	0.06 [0.20]	0.97 [0.63]	1.25 [0.89]	1.42 [1.00]	1.82 [1.00]
Year fixed effects	No	No	No	Yes	No	No	No	Yes
Number of observations	126	126	126	126	156	156	156	156
Adjusted R-squared	8.2%	10.1%	10.6%	53.7%	14.1%	20.6%	18.2%	26.0%

<sup>†</sup> We estimate the determinants of the number of financial covenants in LBO loans using Poisson regressions and the maturity of LBO bank loans using OLS. The sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. The analysis is done at the buyout level and not at the loan level. The primary source of information on loans is the LPC’s Dealscan database. In case the buyout firm has multiple bank loans with different number of financial covenants, we use the maximum number as the dependent variable in regressions (1) to (4). The number of past buyout deals by each PEG is obtained from SDC’s M&A database. Target firm (and industry) financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat and the proxy statement. Capital equals market value of assets minus cash. “Traditional” bank debt includes Term A loans and bank revolvers. Credit spread is the difference between the monthly average annualized yields of BB vs. AAA rated bonds. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

Table 4-9. Determinants of the amount of traditional bank loans and institutional term loans<sup>†</sup>

	“Traditional” Bank Debt / Total Post-LBO Debt (as %)			Institutional Loans / Total Post-LBO Debt (as %)		
	(1)	(2)	(3)	(4)	(5)	(6)
LN (1+Number of LBOs by the PEG in the prior 3 years)	-7.69*** [-3.25]	-4.77** [-2.00]	-4.41* [-1.76]	7.41*** [3.74]	5.87*** [2.92]	4.16** [2.10]
Volatility of fractional change in EBITDA/Sales (as %)	0.41*** [3.00]	0.29 [1.17]	0.36 [1.49]	-0.25*** [-3.01]	-0.18* [-1.64]	-0.01 [-0.10]
Pre-LBO EBITDA/Assets (as %)	-0.04 [-0.17]	-0.11 [-0.47]	-0.36 [-1.60]	0.61** [2.39]	0.65** [2.45]	0.72*** [2.69]
LN(Industry median Capital/EBITDA)	-4.03 [-0.61]	-6.89 [-1.09]	-1.47 [-0.23]	11.30* [1.95]	12.81** [2.22]	6.33 [1.08]
LN(Pre-LBO sales (\$mil))		-5.38*** [-3.39]	-3.34** [-2.07]		2.83* [1.70]	0.76 [0.40]
Credit risk spread (BB vs. AAA (as %))	4.54 [1.51]	3.16 [1.09]	-7.56 [-1.39]	-1.63 [-0.69]	-0.90 [-0.39]	4.45 [1.29]
Year fixed effects	No	No	Yes	No	No	Yes
Number of observations	172	172	172	172	172	172
Adjusted R-squared	10.6%	18.3%	19.6%	16.3%	18.3%	24.1%

<sup>†</sup> We estimate, using OLS regressions, the determinants of the amount of traditional bank loans (Term A loans and revolving lines of credit) and institutional loans (Term B, C, D loans issued to be sold to institutional loan investors) relative to total LBO debt. The sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. Information on the debt structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. The number of past buyout deals by each PEG is obtained from SDC’s M&A database. Target firm (and industry) financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat and the proxy statement. Capital equals market value of assets minus cash. Credit spread is the difference between the monthly average annualized yields of BB vs. AAA rated bonds. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

Table 4-10. Loan contract features and past lending relationships<sup>†</sup>

	(1) Value-weighted “traditional” bank loan spread (bps over LIBOR)	(2) Number of financial loan covenants	(3) Maturity of revolving credit (in months)	(4) “Narrow” Bank Debt / Total Post- LBO Debt (as %)
LN (1+Number of LBOs by the PEG in the prior 3 years)	-25.52* [-1.92]	-0.27** [-2.46]	3.15** [2.23]	-5.43* [-1.83]
Dummy: PEG has a prior lending relationship with LBO bankers	27.03 [1.16]	0.04 [0.25]	-0.34 [-0.17]	2.96 [0.52]
Dummy: Target has a prior lending relationship with LBO bankers	-12.62 [-1.07]	-0.03 [-0.30]	1.96 [1.04]	-1.57 [-0.39]
Credit risk spread (BB vs. AAA (as %))	Yes	Yes	Yes	Yes
Proxies for the credit risk of the LBO firm	Yes	Yes	Yes	Yes
Number of observations	161	126	156	172
Adjusted R-squared	23.7%	11.2%	22.2%	18.0%

<sup>†</sup> We examine whether the presence of past lending relationships between the LBO bankers and the acquiring private equity group (PEG) or the target firm is related to LBO loan contract features and the amount of traditional bank loans (Term A loans and revolving lines of credit) in the debt structure of the LBO firm. The sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. The analysis is done at the buyout level and not at the loan level. Information on the debt structure of buyout firms is hand collected from proxy, 10-K, 8-K, 13-E, and 14-D statements. The primary source of information on loan contract features is the LPC’s Dealscan database. If the buyout firm has multiple traditional bank loans we use the value-weighted bank loan spread as the dependent variable in regression (1). If the buyout firm has multiple bank loans with different number of financial covenants, we use the maximum number as the dependent variable in regression (2). The number of past buyout deals by each PEG is obtained from SDC’s M&A database. Dummy variables that capture the presence of past lending relationships are based on Dealscan data. Credit spread is the difference between the monthly average annualized yields of BB vs. AAA rated bonds. Proxies for the credit risk of the LBO firm include volatility of fractional change in EBITDA/Sales, pre-LBO EBITDA/Assets, the natural logarithm of industry median enterprise value to EBITDA, the natural logarithm of the pre-LBO sales of the buyout firm (in \$mil) deflated to 2000 dollars using CPI index. We also use the amount of traditional bank loans relative to the enterprise value of the LBO firm as an explanatory variable in all models except for the one in regression (4). Target firm (and industry) financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat and the proxy statement. Regression (2) is estimated using a Poisson regression; the other models are estimated using OLS. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

## “Traditional” LBO Capital Structure

<b>Equity (35%)</b>
<b>Unsecured / Mezzanine / Bridge (25%)</b>
<b>First-Lien Term A Bank Debt (25%)</b>
<b>Secured Bank Revolver (15%)</b>

## “New” LBO Capital Structure

<b>Equity (30%)</b>
<b>Unsecured / Mezzanine / Bridge (20%)</b>
<b>Second-Lien Term Debt Covenant-Lite (5%)</b>
<b>First-Lien Term “B” Debt Covenant-Lite (35%)</b>
<b>Secured Bank Revolver (10%)</b>

Figure 4-1. Changes in buyout capital structure in recent years. The figure presents the capital structure of “traditional” (1997-2004) versus “new” (2005-2007) LBOs. The sample includes 180 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.

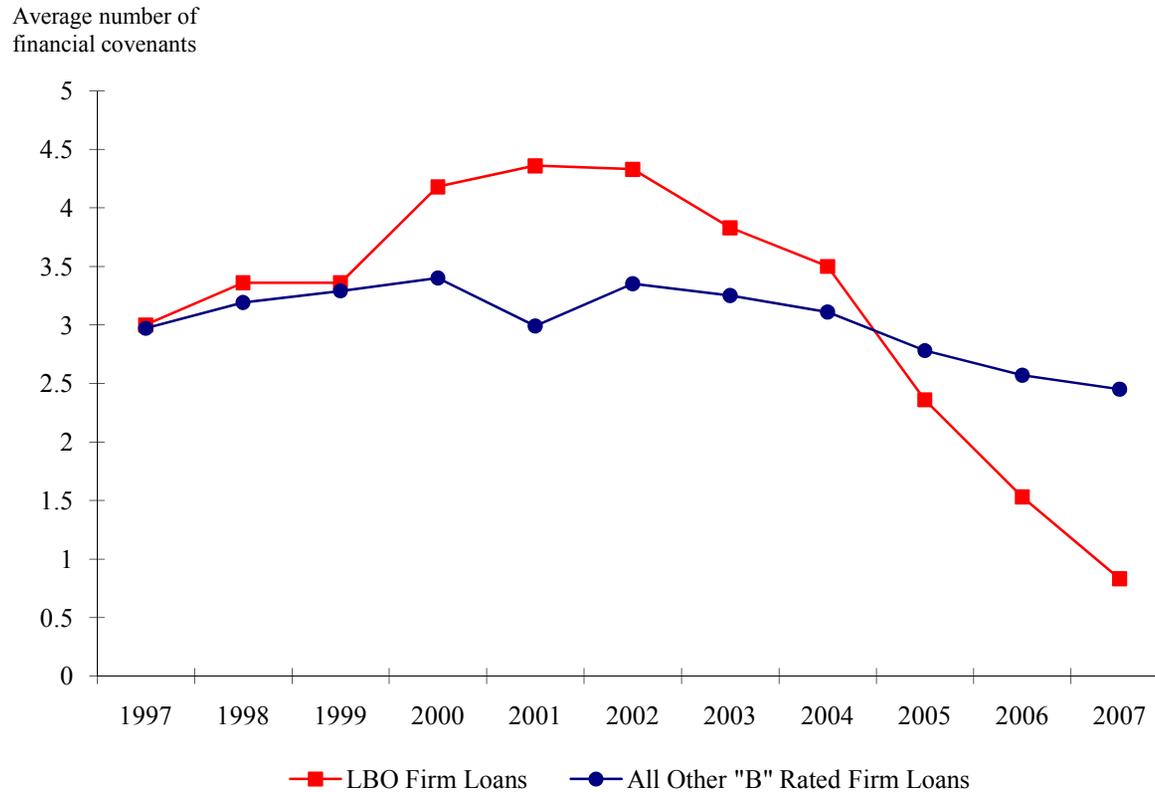


Figure 4-2. Average number of financial covenants in the loan contracts of buyout vs. benchmark firms. The figure above presents the annual average number of financial maintenance covenants in the loan contracts of LBO firms and publicly traded “B” rated non-LBO firms. The LBO sample consists of 126 transactions with non-missing loan covenant information and completed between January 1, 1997 and August 15, 2007. 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. 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.

CHAPTER 5  
ARE BUYOUT PRICES AND LEVERAGE 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 paper, AJSW 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 five global private equity houses during the 1985 to 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 AJSW in a couple of ways. First, AJSW find that firm specific factors that explain public firm leverage do not explain buyout leverage. AJSW use the characteristics of matched public firms to proxy for the characteristics of private buyout firms, which creates concerns about the accuracy of matching between buyout vs. public firms as acknowledged by the authors.<sup>1</sup> Given our focus on a narrower set of LBOs (firms going from public to private) we are able to control for firm specific factors directly. 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.

**Trends in Buyout Leverage and Prices**

Table 5-1 presents median buyout prices by year. We follow Kaplan and Stein (1993) and examine valuation multiples of buyout firms relative to fundamentals using two distinct cash

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<sup>1</sup> For example, 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.

flow multiples: capital to EBITDA (earnings before interest, taxes, depreciation, and amortization) and capital to net cash flow (EBITDA less capital expenditures). 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.<sup>2</sup> We calculate the cash flow multiples by using the most recent annual earnings numbers available to investors when the final offer price is set. Valuation multiples are set to missing for five buyouts with negative pre-deal EBITDA.

The table shows the median capital to net cash flow and EBITDA, respectively, by the calendar year of the buyout. Both valuation multiples exhibit an upward 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 multiples exhibit a U-shaped pattern. The prices are high in the bull market of the late 1990s, relatively lower in the post-bubble era, and higher again subsequent to 2003.

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 AJSW). Figure 5-1 shows that buyout leverage and buyout prices are indeed closely related; buyout prices are significantly higher when post buyout debt to EBITDA is higher.<sup>3</sup> 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 investigate the determinants of buyout leverage as well as the relationship between buyout leverage and prices in the next section.

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<sup>2</sup> Because net cash flow multiples are very noisy we mainly focus on EBITDA multiples in the discussion below.

<sup>3</sup> We measure leverage by Debt/EBITDA because this is the preferred buyout firm leverage measure among practitioners (see AJSW).

## Cross-Sectional Determinants of Buyout Leverage and Prices

To better understand the determinants of buyout firm capital structure and the relationship between leverage and buyout prices, we estimate a set of instrumental variables regressions relating buyout pricing to leverage (this is the same approach used by AJSW). We use instrumental variables for two reasons. First, by using predicted leverage from the first stage regressions in the second stage pricing regressions, we take care of the potential measurement error problem arising from scaling buyout debt with EBITDA. Second, leverage and buyout prices are jointly determined. An important limitation of this approach is that because leverage and pricing are jointly determined it is very difficult to come up with instruments that are correlated with leverage that but have no direct effect on deal pricing. Given this limitation, we focus primarily on the determinants of buyout leverage and view the pricing results as only suggestive.

The dependent variable of the first-stage regressions is the natural logarithm of post-buyout Debt/EBITDA (i.e. leverage). In specification (1), we model buyout leverage as a function of pre-buyout leverage, the credit risk spread, buyout size, cash flow volatility of the buyout firm, and PEG reputation. We also include the natural log of industry median enterprise value to EBITDA as a proxy for growth prospects in the buyout firm's industry. Pre-buyout leverage, cash flow volatility, and the 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.<sup>4</sup>

Consistent with the hypothesis that the reputation of the PEG lowers the GP's incentives for risk-shifting and thus affects lenders' perceptions of the underlying risk of the transaction, the results in Table 5-2 indicate that PEG reputation is significantly and positively related to buyout

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<sup>4</sup> According to AJSW, the declines in credit spreads do not seem to increase non-LBO public firm valuation multiples.

leverage. We find that a one standard deviation increase in PEG reputation increases buyout leverage by approximately 4.5% at the mean. Also, consistent with the evidence in AJSW, we find that buyouts are more heavily debt financed when the credit risk spread is lower. However, unlike AJSW, we find that buyout leverage is significantly related to firm specific factors. In particular, we find that firms with higher pre-deal leverage, cash flow volatility, and growth rates have higher buyout leverage.<sup>5</sup>

In specification (2), we measure growth prospects of the buyout firm directly, using three-year average post-buyout EBITDA growth projected by target firm management, for a subsample of LBOs with non-missing data. We find a positive and significant relationship between projected EBITDA growth and buyout debt, consistent with buyout firms choosing leverage based on their projected cash flows.

In specification (3), in addition to the explanatory variables used in specification (1), we include year fixed effects. This does not improve the explanatory power (R-squared) of our regressions. Also, when year fixed effects are included the coefficient on the credit spread becomes statistically insignificant. However, the coefficient on PEG reputation remains significant at the 10% level. The sign and significance of the other explanatory are not affected by the inclusion of year dummies.

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 growth, which suggests that leverage is not merely a proxy for expected growth in cash flows. The evidence suggests that buyout prices are

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<sup>5</sup> We also find that firms with higher median industry leverage tend to have significantly higher buyout leverage (not shown).

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.

Table 5-1. Trends in buyout pricing<sup>†</sup>

Year	Number of LBOs	(1) Capital to net cash flow (as %)	(2) Capital to EBITDA (as %)
1997	9	18.83	9.93
1998	14	12.50	8.80
1999	17	10.09	7.40
2000	27	12.22	7.82
2001	12	10.49	6.25
2002	5	7.96	6.56
2003	12	8.05	7.18
2004	9	12.74	8.05
2005	20	15.31	9.51
2006	25	15.60	10.21
2007	30	15.46	12.64
Time trend	n.m.	(+) <sup>***</sup>	(+) <sup>***</sup>
1997-2000 vs.			
2001-2003	n.m.	(-) <sup>**</sup>	(-) <sup>***</sup>
1997-2000 vs.			
2004-2007	n.m.	(+) <sup>***</sup>	(+) <sup>***</sup>
2001-2003 vs.			
2004-2007	n.m.	(+) <sup>***</sup>	(+) <sup>***</sup>

<sup>†</sup> The table presents annual medians of cash flow multiples for a sample of 180 LBOs completed between January 1, 1997 and August 15, 2007. Target firm financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat. Capital is calculated using information obtained from the proxy statement and 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. 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. <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> indicate that the nonparametric test statistic is statistically significant at 1%, 5%, and 10% levels, respectively.

Table 5-2. Determinants of buyout leverage and pricing<sup>†</sup>

	LN(Post-LBO Debt / EBITDA)			LN(Capital/EBITDA)		
	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
LN (1+Number of LBOs by the PEG in the prior 3 years)	0.09** [2.54]	0.12** [2.23]	0.06* [1.77]	0.03 [1.10]	0.02 [0.58]	0.04* [1.87]
Volatility of fractional change in EBITDA/Sales (as %)	-0.01** [-2.00]	-0.01** [-2.17]	-0.01 [-0.41]			
Pre-LBO Debt/EBITDA	0.07*** [7.31]	0.06*** [4.90]	0.07*** [7.50]			
LN(Industry median Capital/EBITDA)	0.34*** [3.22]		0.28*** [2.88]	0.19** [2.17]		0.17** [2.36]
3-year projected EBITDA growth by management (as %)		0.68* [1.77]			0.73*** [4.29]	
LN(Pre-LBO sales (\$mil))	0.00 [0.06]	0.01 [0.29]	-0.02 [-0.73]	-0.04** [-2.39]	0.00 [0.13]	-0.04** [-2.28]
Credit risk spread (BB vs. AAA (as %))	-0.12*** [-3.42]	-0.15*** [-4.23]	0.00 [0.03]			
Predicted LN(Debt/EBITDA) from 1 <sup>st</sup> stage				0.87*** [6.23]	0.69*** [7.56]	0.91*** [6.47]
Year fixed effects	No	No	Yes	No	No	Yes
Number of observations	172	88	172	172	88	172
Adjusted R-squared	37.5%	50.8%	45.0%	67.3%	78.2%	70.0%

<sup>†</sup> We estimate the relationship between buyout leverage and buyout pricing using two-stage least squares regressions. The dependent variable of the first-stage regressions is the natural logarithm of post-LBO debt to EBITDA (i.e. leverage) and the dependent variable of the second-stage regressions is the natural logarithm of buyout capital to EBITDA. The sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, but the regressions are based on buyouts with non-missing data. Also, we exclude buyouts with post-LBO debt to EBITDA greater than 25 or pre-buyout EBITDA less than 0. Information on the capital structure of buyout firms and management's EBITDA projections 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. Credit spread is the difference between the monthly yields of BB vs. AAA rated bonds. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

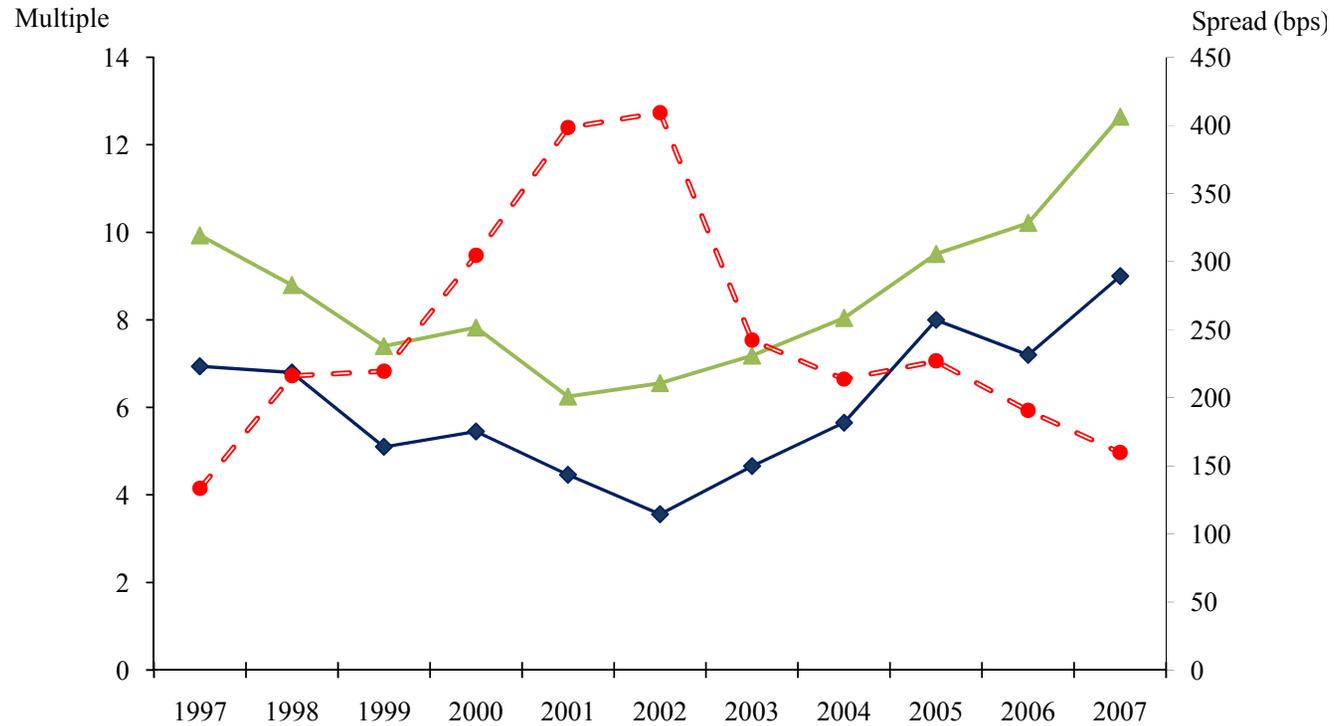


Figure 5-1. Median post-buyout leverage, buyout valuations, and credit risk spreads. The figure below presents the annual medians of post-buyout debt to EBITDA (i.e. leverage), and buyout capital to EBITDA (i.e. valuation), and the difference between monthly BB vs. AAA bond yields. The total sample includes 180 public-to-private U.S. LBOs completed between January 1, 1997 and August 15, 2007, however, we exclude buyouts with post-LBO debt to EBITDA greater than 25 or pre-buyout EBITDA less than 0 and thus use 172 LBOs to construct the figure. 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. EBITDA (earnings before interest, taxes, depreciation, and amortization) is based on the last annual financial statements issued by the buyout firm before the deal terms are set and is obtained from Compustat.

## CHAPTER 6 ROBUSTNESS CHECKS

Thus far in the paper, we have presented evidence that PEG reputation is significantly related to the structure of buyout financing. In this section, we examine the robustness of our cross-sectional results. First, we examine the importance of PEG reputation in relatively smaller deals where total assets of the target firm before the transaction are less than a billion dollars (in 2000 dollars).<sup>1</sup> Second, we estimate the determinants of LBO financing structures excluding deals completed after 2005. These two sets of regressions we think address concerns about the endogeneity of PEG reputation. Third, we estimate the regressions by using three alternative measures of PEG reputation: (i) LN (1+number of buyouts by the PEG since 1980 when SDC started collecting LBO data); (ii) LBO market share of the PEG by dollar deal volume in the prior three years; and (iii) LN (1+PEG age).

The estimation results are presented in Table 6-1. In each regression, we control for the credit risk characteristics of the buyout firm and the credit risk spread as we did in the earlier tables, but we do not include year fixed effects. We estimate the number of financial covenants with a Poisson regression, LBO leverage and pricing with two-stage least squares, and the remaining regressions with OLS. For presentation purposes, we report only the coefficient estimates corresponding to the PEG reputation variables in the table.

Table 6-1 indicates that our results on the importance of PEG reputation are quite robust. For example, PEG reputation coefficients maintain their sign and significance when the regressions are estimated using the sub-sample of LBOs. There is one exception, however. In small LBOs and LBOs before 2006, PEG reputation is still negatively related to number of financial loan covenants but the relationship is no longer statistically significant. Also, note that

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<sup>1</sup> We do not choose a lower cut-off due to concerns about sample size.

when we include both reputation and reputation squared in the regressions, we get negative and significant (at the 1% level) coefficients on the squared term, suggesting a non-linear relationship between PEG reputation and number of financial covenants.

Table 6-1 also displays the robustness of our findings to using alternative measures of PEG reputation. The evidence suggests that most of our results are robust to the choice of reputation measure. This is not surprising as we show in Table 4-5 that the PEG reputation measures are very highly correlated. As shown, PEG reputation coefficients maintain their signs in all estimations and only a few of them become statistically less significant. For example, the relationship between PEG reputation and buyout leverage is weaker when the market share of the PEG is used. Also, the relationship between PEG reputation and borrowing costs is weaker when PEG age is chosen as the reputation measure.

Overall, the evidence in Table 6-1 indicates that our results on the relationship between PEG reputation and the structure of buyout financing are robust to using a sub-sample of buyouts (e.g. small buyouts and buyouts completed before the “hot” LBO markets of 2006 and 2007) and alternative PEG reputation measures in the estimation.

Table 6-1. Robustness checks<sup>†</sup>

Dependent variable:	Alternative PEG reputation proxies				
	(1) LBOs with pre- deal assets < \$1 billion	(2) LBOs completed between 1997 and 2005	(3) LN(1+Number of LBOs by the PEG since 1980)	(4) Market share of the PEG by (\$) deal volume in the prior 3 years	(5) LN (1+Age of the PEG)
Value-weighted all-in-drawn spread (bps over LIBOR) on “traditional” bank loans	-18.60** [-2.06]	-16.94* [-1.80]	-9.16* [-1.82]	-5.04*** [-3.39]	-5.67 [-1.05]
Difference between Term B vs. Term A loan all-in-drawn spreads (bps)			-5.24** [-2.21]	-2.95*** [-3.46]	-3.34 [-1.10]
Number of financial loan covenants	-0.06 [-1.05]	-0.01 [-0.22]	-0.09*** [-2.70]	-3.16 [-1.60]	-0.10*** [-3.29]
Maturity of revolving credit (in months)	2.72** [2.27]	2.11* [1.63]	2.83*** [3.74]	0.95*** [3.32]	2.56*** [2.73]
“Narrow” bank Debt / Total Post-LBO Debt (as %)	-6.43** [-2.27]	-6.06* [-1.93]	-6.03*** [-3.51]	-1.73*** [-3.18]	-7.27*** [-3.75]
Institutional Loans / Total Post-LBO Debt (as %)	8.76*** [4.07]	7.22*** [3.39]	4.98*** [3.54]	1.22* [1.86]	5.87*** [3.84]
LN(Post-LBO debt / EBITDA)	0.14*** [3.62]	0.10** [2.36]	0.06** [2.16]	0.01 [0.95]	0.06* [1.87]
LN(Capital / EBITDA)	-0.00 [-0.02]	0.01 [0.19]	0.02 [0.66]	0.02** [2.20]	0.01 [0.58]

<sup>†</sup> We check the robustness of the regression results presented in Tables 4-5, 4-6, 4-7, and 5-1, using either a sub-sample of buyouts (in regressions (1) and (2)) or alternative PEG reputation proxies (regressions (3) to (5)). In each regression, we control for the credit risk characteristics of the buyout firm and the credit risk spread as we did in the earlier tables (we do not include year fixed effects in the estimations presented here). In leverage and pricing regressions presented in the last two rows in the table below, we follow the first specification in Table 5-1. For presentation purposes, we report only the coefficient estimates corresponding to the PEG reputation variables. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

## CHAPTER 7 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 to 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 ex post distress costs to be lower in deals involving reputable PEGs. While we are unable to measure the distress costs directly, we use the likelihood of becoming financially distressed ex post as a proxy (albeit a rough one).

To examine the existence and extent of post-buyout financial distress, we search the names of our sample firms in Factiva in the five years following the LBO for news articles reporting a covenant default, payment default, or bankruptcy.<sup>1</sup> 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, ten 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.

To investigate the cross-sectional determinants of the likelihood of post-buyout distress, we conduct a Probit analysis. The dependent variable, distress, equals one if the buyout firm files for bankruptcy or experiences a payment default in the five years following the LBO; zero 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.

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<sup>1</sup> Post-buyout financial statements are available from Compustat for only 30 (16.6%) buyout firms and thus we do not examine the relationship between deal structure and accounting-based performance measures.

On the other hand, excluding post-2000 buyouts creates a look-ahead bias. Therefore, we estimate the regressions in Table 7-1 using buyouts with at least three years of post-buyout history (i.e. buyouts between 1997 and 2003). The results are very similar when we estimate the models using deals between 1997 and 2000.

In regression (1), we model the likelihood of 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 PEGs adequate incentives to preserve their reputation by honoring their debt obligations or, alternatively, that buyouts of reputable PEGs are less risky due to better investment selection and monitoring abilities of the GPs of these PEGs. We also find that buyouts completed when the credit risk spread is high and bigger buyouts are more likely to experience distress.

In regression (2), we also include number of financial loan covenants and traditional bank debt to total buyout debt to examine whether the extent of bank monitoring and control is also related to the likelihood of default in HLTs. We find that buyouts are less likely to become distressed when the deal is financed using covenant-heavy intermediated debt that leads to banker oversight and early intervention.

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

Table 7-1. Determinants of post-buyout financial distress<sup>†</sup>

	(1)	(2)
	LBOs between 1997-2003	
LN (1+Number of LBOs by the PEG in the prior 3 years)	-0.80*	-9.54***
	[-1.83]	[-2.59]
Number of financial loan covenants		-2.98***
		[-2.60]
“Narrow” bank Debt / Total Post-LBO Debt (as %)		-17.11***
		[-3.27]
Value-weighted all-in-drawn spread (bps over LIBOR) on “traditional” bank loans		0.02***
		[4.31]
LN(Pre-LBO sales (\$mil))	1.27***	9.59***
	[3.21]	[2.57]
Credit risk spread (BB vs. AAA (as %))	-1.68***	-11.17***
	[-3.75]	[-2.75]
Number of observations	63	63
Pseudo R-squared	44.2%	83.3%

<sup>†</sup>We estimate the likelihood of Factiva reported payment default or bankruptcy during the 5 years following the LBO. The sample includes 63 public-to-private U.S. LBOs completed between January 1, 1997 and December 31, 2003 and have non-missing data on explanatory variables. The number of past buyout deals by each PEG is obtained from SDC’s M&A database. The primary source of covenant information is LPC’s (Loan Pricing Corporation) Dealscan database. We use the number of financial covenants from the most covenant-heavy loan of the borrower. Information on post buyout debt structure is obtained from proxy, 10-K, 8-K, 13-E, and 14-D statements. Traditional bank debt includes revolvers and Term A loans. Target firm (and industry) financials based on the last annual financial statements issued before the deal terms are set are obtained from Compustat. Credit spread is the difference between the monthly average annualized yields of BB vs. AAA rated bonds. All dollar values are in dollars of 2000 purchasing power adjusted using the Consumer Price Index. T-statistics are computed using robust standard errors and are reported in brackets. We use \*\*\*, \*\*, and \* to denote significance at 1%, 5%, and 10% levels (two-tailed), respectively.

## CHAPTER 8 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 buyouts sponsored by high reputation PEGs 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 2003 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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## BIOGRAPHICAL SKETCH

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