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The Structure of Debt and Active Equity Investors: The Case of the Buyout Specialist

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The Structure of Debt and Active Equity Investors: The Case of the Buyout Specialist[†]

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This paper examines the role buyout specialists play in structuring the debt used to finance the LBO and in monitoring management in the post-LBO firm. We find that when buyout specialists control the majority of the post-LBO equity, the LBO transaction is likely to be financed with less short-term and/or senior debt and less likely to experience financial distress. We also find that buyout specialists have greater board representation on smaller boards, suggesting that they actively monitor managers, and that for these transactions, using debt with tighter terms does not significantly increase the firm's performance. In contrast, in all other transactions using such debt does significantly increase the firm's performance. These findings suggest that active monitoring by a buyout specialist substitutes for tighter debt terms in monitoring and motivating managers of LBOs.

1. Introduction

Jensen (1986 and 1989) argues that leverage buyout transactions (LBOs) provide a "carrot" and "stick" mechanism to ameliorate the agency costs associated with free cash flow. First, managers' share ownership significantly increases, giving them

incentives to work harder (the 'carrot'). Second, firms borrow heavily to finance the purchase of publicly held stock. The ensuing heavy debt burden forces managers to efficiently run the company to avoid default (the 'stick'). Thus, a high debt level provides benefits that outweigh the higher expected bankruptcy and agency costs normally associated with high debt levels. In addition, third-party investors often acquire a large equity stake in the LBO, giving these investors incentives to motivate and monitor managers. Many studies have provided empirical evidence that supports Jensen's arguments (Lehn and Poulsen, 1989; Kaplan, 1989; Baker and Wruck, 1989; Smith, 1990; Denis, 1994; Wruck, 1994). This study examines in more detail how the disciplining benefits of debt vary with the type of LBO equity investors, which in turn explains the cross-sectional variation in the structure of the debt used to finance LBO transactions. In particular, we examine the role buyout specialists play in structuring the debt to finance the LBO and in monitoring management in the post-LBO firm.

In Jensen's argument (1986, p.324), it is not the total amount of debt outstanding per se but rather the amount of "debt service payments" per period that motivates managers to work harder. Thus, the structure or terms of the debt play an important role in how effectively debt motivates managers. Debt with a shorter maturity increases the debt service payments per period and increases the incentives for managers to work harder to increase firm value in the early stages of the LBO. In addition, private or senior bank loans are more likely to have restrictive covenants in the debt agreements compared to publicly held subordinated or 'junk' bonds (see Smith and Warner, 1979; James, 1987; Press and Weintrop, 1990; Begley, 1990; and Gilson and Warner, 1996). Furthermore, private lenders are more likely to closely monitor managers in the post-LBO firm than appointed trustees of public issues of subordinated bonds (see Smith and Warner, 1979; James, 1987; and Gilson and Warner, 1996). Thus, when LBOs are financed with more short-term and/or senior debt than with long-term and/or subordinate debt, debt is likely to play a more important role in monitoring and motivating managers in the post-LBO firm.

Apart from debt, managers or third-party equity investors are another significant source of financing for LBOs. When third-party

equity investors can actively monitor managers at a relatively low cost, the benefits to using debt to monitor managers decline. Since bankruptcy and debt agency costs reduce the return to these equity investors, using debt to monitor managers can be expensive. Buyout specialists, such as Kohlberg, Kravis, and Roberts (KKR), are likely to have a comparative advantage over other types of third-party equity investors in monitoring managers in highly levered firms, thus lowering the benefits from using tighter debt terms to motivate managers. Furthermore, buyout specialists are likely to be repeat players in the LBO debt market; with their reputations as 'good' borrowers at stake, lenders are likely to lend to them at easier terms. Thus, we hypothesize that LBOs controlled by buyout specialists are likely to be financed with less short-term and/or senior debt because the monitoring benefits from debt are less for these LBOs.

We examine the relationship between the characteristics of debt and equity financing for a sample of 64 LBOs completed from 1984 to 1989. We find that when buyout specialists control the majority of the post-LBO equity, the LBO transaction is likely to be financed with less short-term and/or senior debt and subsequently less likely to default. We also find that in these transactions, buyout specialists have greater board representation on smaller boards, suggesting that they actively monitor managers. We also find that for these transactions, using more senior debt does not significantly increase the LBO firm's performance. In contrast, in all other transactions, using more senior debt does significantly increase the firm's performance. These findings suggest that active monitoring by a buyout specialist substitutes for tighter debt terms in monitoring and motivating managers.

This study makes three contributions. First, this paper adds to previous research on the details of the structure of LBO debt and equity by examining their *joint* role in improving firm performance. The results here augment the findings in Denis (1994), a clinical paper that examines the changes in organizational form for two highly leveraged transactions. Denis focuses on changes in the organizational form – third-party investors, managerial stock ownership, compensation, and board composition – as they relate to increases in operating efficiencies. Denis finds that buyout specialists in the Safeway LBO significantly altered the organizational form, while managers, without the help of buyout specialists in the leveraged

recapitalization of Kroger, did not. Subsequently, firm value increased more for Safeway than for Kroger. We use a larger sample to include the role that debt structure plays as an alternative device to improve the performance of an LBO firm.

This paper also extends the results of Kaplan and Stein (1993), who examine the changes in the structure of debt financing in management buyouts during the time period of 1980 to 1989. They argue that the buyout market in the late 1980s "overheated," a showing that deals were financed using more publicly held subordinated debt, had smaller increases in post-LBO operating performance relative to buyout price, and were more likely to default. Our study adds to their results by examining the role that equity investors play in structuring the debt financing of LBOs. In our sample, we find in the late 1980s more transactions where either management or outside equity investors other than buyout specialists had a controlling interest in the LBO. These transactions are also more likely to default. Furthermore, as the amount of subordinate and/or long-term debt used to finance these deals increased, the increase in post-LBO performance declined. Thus, our results suggest one source of the "overheating" was a change in the type of equity investor participating in the LBO market.

Second, this paper contributes to research on the determinants of debt structure. Previous researchers have investigated how the maturity and seniority of the debt varies with the extent of growth options in the firm's investment opportunity set, degree of industry regulation, firm size, firm quality, credit risk, and taxes (see Barclay and Smith, 1995a,b, and the references therein). This paper demonstrates that the structure of equity ownership or the identity of the borrowers also determines the structure of debt. Of course, the structure of equity ownership is endogenously determined with other firm characteristics examined in previous studies. Yet, a lender is likely to evaluate the impact that the motivations of the managers and/or equity investors have on the firm's ability to re-pay the loan, which in turn drives the choice of loan terms. This is likely to be particularly true in the case of LBOs where both relatively large amounts are borrowed and equity ownership is concentrated in the hands of a few investors.

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Third, this paper examines another way in which active outside equity investors increase shareholder value. Some researchers have found that outside equity investors, i.e., blockholders, play an active role in the market for corporate control (see Mikkelson and Ruback, 1985; Holderness and Sheehan, 1985; Brickley et al., 1988; Gilson, 1990; Shivdasani, 1993; Peck, 1996; Denis and Serrano, 1996). Others have found that public pension funds pressure management into changing corporate governance structures or restructuring assets (see Romano, 1993; Murphy and Van Nuys, 1994; Wahal, 1996; Karpoff et al., 1996; Gillan and Starks, 1998; Del Guercio and Hawkins, 1999). Our results suggest that still another way that active equity investors can increase value is by restructuring the debt to minimize the expected bankruptcy and agency costs associated with debt.

The paper is organized as follows. Section 2 describes the data and the sample. Section 3 documents the relation between the debt and equity structure used to finance LBO transactions in our sample. Section 4 investigates whether buyout specialists are better at market timing, which allows them to participate in better structured deals. Section 5 reports the results of tests of other explanations for why we find that transactions in which buyout specialists have a controlling interest are likely to be financed with less short-term and/or senior debt. Section 6 provides evidence on the costs and benefits of using debt with tighter terms. Section 7 examines how buyout specialists monitor and motivate managers in the post-LBO firm. Section 8 discusses potential selection biases with our sample. Section 9 states our conclusions.

2. Sample and data
2.1. Sample

We construct a sample of 763 leveraged buyouts completed during 1984 to 1989 using three sources. First, we use the *Mergers and Acquisitions* magazine's annual top 100 acquisitions from 1984 to 1989 and the *Investment Dealers Digest* mergers and acquisitions database available from Lexis/Nexis to identify LBOs completed from 1984 through 1989. Second, we augment this sample using a keyword search on the full text of the *Wall Street Journal* from 1989 through

1993. Leveraged buyouts are often referenced in the *Wall Street Journal* after the completion of the transaction as well as when the transaction occurs.

We require that certain data be publicly disclosed after the firm has gone private. We define public disclosures as any 10-K filing, proxy statement, or annual report available to provide data for our analysis. We search both for the existence of all three documents and the disclosure of a particular data item in any of the available documents when collecting our data.

First, we require that public information is available on the structure of the debt financing used to complete the LBO transaction including a principal repayment schedule. This reduces the sample from 763 to 125 firms. This sample size is comparable to that of other studies. From a sample of management buyout offers (MBO) transactions (defined on page 317 as `at least one member of the incumbent management team obtains an equity interest in the new private firm') that exceed $100 million, Kaplan and Stein (1993) report in Table III, column (7), page 326, 71 firms that disclose data on debt structure including a principal repayment schedule over our sample period. Our sample of 125 is 76% larger than that of Kaplan and Stein (1993), most likely because we do not restrict our sample to MBOs or to large transactions.

Second, we require that the firms in our sample have sufficient stock price data on Center for Research in Security Prices (CRSP)/NASDAQ tapes to calculate buyout premiums. This reduces our sample to 92 firms. Firms that did not have sufficient stock price data to calculate a buyout premium typically arose from the purchase of part of a larger company. For example, Ethan Allen was once part of a publicly traded entity called Interco, a company composed of many businesses including Converse Inc., The Florsheim Shoe Co., and Broyhill Furniture Industries Inc., among others. In 1989, Ethan Allen was purchased by a group of the firm's senior managers using primarily debt financing. As a result, Ethan Allen was identified as an LBO, but our measure of a buyout premium cannot be calculated since Ethan Allen had no publicly traded stock before the LBO.

Third, we require that firms disclose compensation and ownership data for the first full post-buyout fiscal year. This requirement reduces our sample from 92 to 76 firms. Many LBOs are structured so that the firm becomes a wholly owned subsidiary of a privately held holding company so that they are not required to disclose compensation and ownership data. For example, Mary Kay Cosmetics Inc. went private in 1985 and argued in their subsequent 10-K filings that they were not required to disclose compensation and ownership data `pursant to General Instruction (J) (2) (c) of Form 10-K.a This finding is consistent with prior researchers' arguments that one of the reasons companies go private is to avoid public disclosure (see DeAngelo, DeAngelo, and Rice, 1984).

Finally, we require that data is available on Compustat the year after the deal is completed so that we can measure firm performance for the first full post-buyout fiscal year. Twelve firms were eliminated for failing to meet this requirement. GAF is an example of an LBO that meets the other data requirements but does not have publicly available data on post-LBO performance. In March 1989, GAF Corporation was acquired by a management group led by Samuel J. Heyman, GAF's Chairman and Chief Executive Officer. The last proxy statement for the company was filed on January 1, 1989 disclosing the ownership and compensation structure of the company before the LBO transaction. After the transaction, one 10-K was filed on April 20, 1990, disclosing information regarding the debt management, ownership, and compensation structure of the firm just after the LBO was completed and the financial performance for the firm for fiscal year 1989, the year *prior* to the LBO. The company did not file any subsequent financial statements that would provide data on post-LBO firm performance for our empirical tests. This last data requirement reduces our final sample to 64 firms.

2.2. Structure of the debt

Data used to measure the structure of the debt is obtained from public disclosures that describe the terms of the transaction. These disclosures provide a minimum principal repayment schedule over the subsequent five-year period for the total debt outstanding (both publicly issued debt and private debt such as bank loans) at the time

the transaction is completed. The longest maturity of the total outstanding debt is also disclosed. A variable we call *average maturity* is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years the principal repayments used are those disclosed in the financial statements. For years six through the year of the longest maturity of the debt, we evenly amortize the remaining debt outstanding. We also provide alternative measures of maturity as percentage of debt due in more than one, two, three, four, and five years using the measures devised by Barclay and Smith (1995a). All of our measures of maturity are statistically significantly positively correlated with each other. These maturity variables measure the minimum debt obligations due to the lender and thus what we call the relative tightness of the debt terms. These maturity measures exclude call features of the debt that effectively shorten the maturity of the debt. Debt calls, however, are at the discretion of the borrower. We do not expect that borrowers would exercise the call option and pay back the debt sooner during periods of financial distress. Excluding the effect of call options creates thus a more conservative measure of the tightness of debt terms for the purposes of our tests.

We also calculate a standard duration measure by discounting the principal repayments. We calculate four duration measures using a discount rate of 5%, 10%, 15%, and 20%. We re-run our tests using these measures of duration. The results continue to hold when we use an interest rate of 5% but not when we use higher interest rates. At higher interest rates, duration is not significantly related to our explanatory variables. However, using higher interest rates reduces the cross-sectional dispersion in our duration measure; the standard deviation as a percentage of the mean decreases by more than 50% when using higher interest rates. Reducing the dispersion in the independent variable reduces the power of the tests.

Public disclosures also provide information about the amount of different types of debt that we use to create the following five classes of debt based on their seniority: (1) senior bank debt (highest seniority), which includes term loan facilities, revolving loan facilities, employee stock ownership plan (ESOP) facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing; (2)

bridge financing (of equal seniority to senior bank debt); (3) senior secured notes (second highest seniority), which includes senior extendable notes and senior increasing rate notes; (4) senior notes (third highest seniority), which includes unsecured sinking fund debentures; (5) senior subordinated note (fourth highest seniority); (6) subordinated notes (lowest seniority); (7) industrial revenue bonds (unclassified seniority), which includes equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans; and (8) other (unclassified seniority), which is the amount of debt classified as 'other' on the financial statements, and includes commercial paper. We do not classify the seniority of industrial revenue bonds because default is likely to lead to the creditor seizing the asset backing the financing rather than forcing the firm into bankruptcy. The seniority of 'other' is not classified because we lack information other than for commercial paper, a negligible percentage of this category. Using the above classifications, we develop an average seniority measure equal to [(bridge financing + bank debt) *5 + senior secured debt*4 + senior debt*3 + senior subordinated debt*2 + subordinated debt*1]/[total debt outstanding-other - industrial revenue bonds]. This measure will be 5 when all senior bank debt is used to finance the LBO and 1 when all subordinated debt, i.e., 'junk' bonds, is used. We also provide the percentage of the type of debt in each seniority class as alternative measures of seniority.

Ideally, we would like to have the individual repayment schedule for each issuance of debt so that we could calculate separately the average maturity for debt that was issued at the time the LBO was completed and any previously issued debt. An individual repayment schedule would allow us to measure the average maturity for different seniority classes of debt. All our measures of maturity are statistically significantly negatively correlated with all our measures of seniority. This finding is consistent with previous studies that have found that privately held senior bank debt tends to be short-term, while publicly held subordinate debt tends to be long-term (see Gilson and Warner, 1996). We use our variables of average maturity and average seniority in our tests. We also use as alternative measures of debt structure the percentage of debt that tends to be short-term and senior (bridge financing and senior secured notes) and the percentage of debt that

tends to be long-term and subordinate (senior subordinated debt and subordinated debt).

2.3. Equity financing

Data on equity financing is also obtained from the disclosure that describes the terms of the transaction. Equity financing is expressed as a percentage of newly issued common stock of the buyout firm provided by different types of investors. While some equity financing is provided by issuing other types of stock, common is both used in every LBO transaction and represents the largest amount of the equity financing. It also has the most voting power.

2.4. Financial distress

Data from the *Wall Street Journal* is used to determine financial distress within two, four, and six years after the buyout is completed. We also search the bankruptcy reports available in Lexis/Nexis for instances where the LBOs in the sample are either restructured or enter bankruptcy. Our definition of financial distress is either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity, or grants of equity interests to creditors. Our definition of financial distress is the same as both Denis and Denis (1995) and Gilson (1989). Table 1 reports the distribution of LBOs over the sample period, cross-tabulated with the number of LBOs with available financial data and financial distress within two, four, and six years. The number of LBOs shown is comparable to that in other studies (see Kaplan, 1989; Smith, 1990; and Kaplan and Stein, 1993). While there is no apparent relationship between data availability and financial distress over the sample period, we do find that LBOs completed in 1986 and 1988 are more likely to undergo financial distress. This finding is consistent with Kaplan and Stein (1993), who find that 'overheating' in the buyout market in the late 1980s led to LBOs that were more likely to experience financial distress. In the remaining tests, we use the incidence of financial distress within six years of the LBO as our measure of default.

2.5. Board composition and managerial compensation

Data on board composition and managerial compensation is obtained from public disclosures that are filed within one year after the LBO is completed. We use data reflecting the earliest disclosed change in post-buyout board composition and the data reflecting compensation structure for the first full fiscal year after the buyout is completed. Compensation structure includes the CEO's common stock ownership, common stock options granted, total cash compensation, salary and bonus (when disclosed), and the existence of stock appreciation rights or options granted for securities other than common stock. We also collect data on the existence of a bonus plan. However, since only five firms failed to report a bonus plan, we exclude this data item from subsequent tests, but not the five firms.

2.6. Other firm characteristics

Data to measure goodwill and total assets on completion of the LBO are collected using statements filed as part of public disclosure of the LBO. Compustat is used to collect data on operating income before depreciation and amortization, EBITDA (item #13), total assets (item #6), total sales (item #12), total shareholder's equity (item #216), retained earnings (item #36), total current liabilities (item #5), and debt in current liabilities (item #34) for the first full post-buyout fiscal year. We also collect data on these items for the next four post-LBO fiscal years when it is available. Data on EBITDA, total assets, and total sales is also collected for the full fiscal year prior to the LBO. We collect data on EBITDA and total sales for the prior ten pre-buyout years when it is available. Following Kaplan and Stein (1993) we use this data to calculate the standard deviation of the growth rate in operating margins (EBITDA/sales) as a measure of risk. CRSP monthly return data is used to construct the average industry raw return using two-digit SIC codes for each firm in the sample. The return measure is the average holding period return of all firms in the industry for two, four, and six years after the buyout.

We use data from the *Wall Street Journal* and the CRSP tapes to calculate a buyout premium. The buyout premium is calculated using the final buyout offer price and the stock price 30 days before the

announcement date. The announcement date is defined as the first report of any buyout activity, including rumors. In the case of offers that are not all cash, the buyout price per share is calculated by dividing the total buyout price by the number of shares outstanding. We use the *Wall Street Journal* to determine whether a hostile bid was made for the firm. Data on asset sales during the first year of the LBO are also collected from the *Wall Street Journal*.

3. The relation between the structure of debt and equity financing in LBOs

Table 2 presents descriptive statistics on the type of investors providing equity financing. Buyout specialists such as KKR, Citicorp Venture Capital, Ltd., and Kelso Company are the majority of the investors, providing, on average, 51.64% of the equity financing. Management provides, on average, 20.03%, and miscellaneous corporations such as Campeau Corp., Lowes Corp., and Hallmark Cards provide, on average, 13.14%. The transactions financed by miscellaneous corporations are best described as "takeovers." For example, Campeau's acquisition of Allied Stores was structured as a leveraged buyout. The remainder of the equity financing is provided by ESOPs, insurance companies, trusts, commercial banks, credit corporations, individual investors, and individually organized limited partnerships.

Table 2 also shows that buyout specialists have majority control in 40 or 63% of the deals. We define majority control as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock; in two firms, buyout specialists are assigned control; in one firm, management; and in three firms, other outside equity investors. In the remainder of our tests we use dummy variables to indicate when management, buyout specialists, or other outside equity investors have control. We include ESOP controlled LBOs in the management-controlled group because top management owns stock in the ESOP and often acts as a trustee directing the voting of the ESOP shares. We use a dummy variable for control because

investors with majority ownership have enough votes to influence the policies of the firm.

These three types of controlling investors – management, buyout specialists, and other outside investors – are likely to have different incentives to improve post-LBO firm value and avoid default. On the one hand, when management owns almost all of the equity, they have powerful incentives to work hard to increase equity value. On the other hand, when management owns almost all of the equity, conflicts between debtholders and shareholders are likely to be relatively more severe for two reasons. First, managers have the means to transfer wealth to themselves from debtholders via managerial decisions about the allocation of the firm's resources. Second, when managers own almost all of the equity, all of the gains from such decisions will accrue to the managers and free-riding by outside shareholders is minimized. For such firms, conflicts between shareholders and debt holders can be minimized by using senior bank and/or short-term debt (see Smith and Warner, 1979; Barclay and Smith, 1995a, and the references therein).

Like management, buyout specialists also have incentives to increase equity value. Most buyout specialist firms are structured as limited liability partnerships. These partnerships raise buyout funds from institutional investors but often the buyout specialists who manage the fund are also principals and share directly in the increase in LBO equity value (see *The Wall Street Journal*, August 13, 1986, p.1 and August 30, 1986, p.3). Unlike management, they have disincentives to expropriate the wealth of debtholders. While managers are likely to participate in only one LBO deal in their careers, buyout specialists profit by doing repeated deals. Since they are likely to return to debt markets, it is important for them to retain their reputation as 'good' borrowers to insure their access to debt capital on relatively favorable terms. In addition, since buyout specialists are involved in many LBOs, they are likely to become skilled in monitoring managers of LBOs. If the cost of monitoring management is less than the costs of using tighter debt terms to motivate managers, buyout specialists are likely to use less short-term and/or senior debt to finance the LBO transaction.

The majority of other types of outside investors are corporations that have structured the acquisition of another company as an LBO. The acquisition becomes a subsidiary and the LBO debt is issued in the acquired firm's name. The managers of the parent company are likely to have less incentive than either management or buyout specialists to increase the equity value of the LBO for two reasons. First, the managers of these corporations often have no direct equity investment in these companies; they have used corporate resources to purchase the LBO subsidiary. Second, the LBO performance will increase the wealth of the managers of the parent company only indirectly through the effects of incentive compensation such as accounting-based bonuses, stock options, stock value, etc. To the extent that the LBO constitutes only a portion of the parent company's total portfolio of projects, the performance of the target LBO will have less impact on the compensation of the parent's top management. Furthermore, the parent's executives may be relatively inexperienced in monitoring management in the highly levered subsidiary. These types of outside investors are likely to find using debt with tighter terms a relatively low-cost way of motivating managers. In turn, lenders, cognizant of these incentive problems with LBO subsidiaries, are likely to prefer to lend more short-term and/or senior debt, which will give them more leverage over management.

The category of other types of outside investors includes insurance companies, trusts, commercial banks, credit corporations, individuals, and individually organized limited partnerships. These investors have less incentive to monitor LBO management. In the majority of these cases, the purchase of LBO equity is a passive investment. This is reflected in the fact that these investors in our sample never purchase a controlling interest. Even in the two cases where these investors were assigned control because they owned the largest percentage of stock, they still did not own a majority. In these companies, stock ownership is less concentrated, reducing the incentives of any one investor to increase equity value. These investors are likely to rely on tighter debt terms as a way to motivate management. At the same time, lenders prefer to lend debt with tighter terms.

Table 3 shows how debt characteristics vary with the type of controlling equity investor. As we predicted, buyout specialist-controlled LBOs tend to use less short-term and/or senior debt to finance the LBO than those controlled by either management or other outside investors. Both our measure of average maturity and the percentage of debt due in more than five years are, on average, greater for buyout specialist-controlled LBOs. Table 3 also shows that management-controlled LBOs, on average, use more senior debt and use less senior subordinated debt than buyout specialist-controlled LBOs. LBOs controlled by other outside investors, on average, use less subordinated debt. Table 3 also shows that buyout specialist-controlled LBOs are less likely to default than either management-or other outside investor-controlled LBOs. All these results are statistically significant at conventional levels. This finding suggests that tighter debt terms, in fact, increase the incidence of default in LBOs and so can act as a tool to motivate management. In the following sections, we test alternative explanations to these findings.

4. Are buyout specialists better at market timing?

Kaplan and Stein (1993) present evidence that 'overheating' in the LBO market in the late 1980s led to poorly structured deals. One explanation for our finding that buyout specialists participate in deals that are less likely to default is that they participated in more deals early on in our sample period. Table 4 shows the frequency of deals completed for each year in our sample by different types of controlling investors, cross-tabulated with the type of debt used and the incidence of default. Consistent with Kaplan and Stein, we find that both the number of deals and default rates increased in the late 1980s. Yet, Table 4 shows that the buyout specialists in our sample participated in this 'overheated' market as well as other investors. We find, in our sample, both that buyout specialists increased the number of deals that they completed in the late 1980s and more of these were likely to default. The default rate for buyout specialist-controlled LBOs is less for each year than for either management-or other outside equity investor-controlled LBOs, except for 1985, when only five deals by all types of investors were completed, and 1989, when only one deal defaulted.

Consistent with Kaplan and Stein we also find that, on average, the amount of subordinate debt financing increased in the late 1980s. In our sample, senior subordinated notes and subordinated debt as a percentage of total debt grew from an average value of 11% (median value of 3%) in 1984 to an average value of 32% (median value of 36%) in 1989. As Table 4 shows, again except for 1985, we find that buyout specialist-controlled deals consistently used, on average, less senior debt and/or debt of longer maturity than deals controlled by either management or other outside investors.

Interestingly, the findings in Table 4 suggest that one potential source of the 'overheating' documented by Kaplan and Stein is the increase in deals completed by management and, particularly, other outside investors in the late 1980s. We find that deals completed by these investors have a higher incidence of default. Kaplan and Stein also find that, in the late 1980s, an increase in the use of subordinate publicly held 'junk' bonds to finance deals that produced smaller increases in post-LBO performance. We also find evidence (presented in Section 6) that when deals were financed with less short-term and/or senior debt and more with long-term and/or subordinate debt, there is less of an increase in post-LBO performance. These findings hold only for management-or other outside investor-controlled deals. Again, this suggests that one source of 'overheating' in the LBO market was the change in the type of investors controlling the deals and a choice of debt structure that failed to adequately monitor management.

5. Are buyout specialists better at picking deals that ex ante can be financed with less short term and/or senior debt?

5.1. Growth options and the duration of assets

The choice of debt structure may also be related to the extent of growth options in the firm's investment opportunity set (see Barclay and Smith, 1995a). Buyout specialists may participate in the deals in which growth options drive the choice of maturity structure rather than any monitoring by buyout specialists. Following Barclay and Smith we use the ratio of the market value of the firm's assets to their book

value as a proxy for growth options. We estimate the market value of the firm's assets as the book value of assets when they are written up to reflect the buyout price on completion of the transaction. To create the ratio, we use the book value of assets for the year before the transaction. Table 5 shows there is no difference in our measure of growth options between firms in which buyout specialists have control and other LBOs. The ratio of buyout price to book value of assets can also reflect over or under pricing of the LBO rather than the extent of growth options. If this ratio is a noisy measure of growth options it can make it difficult to find statistically significant differences in growth options between different types of investor-controlled LBOs. It is likely that in our sample there is little dispersion in the extent of the firm's growth options. LBO candidates are likely to have high levels of free cash flow (see Jensen, 1986 and 1989; and Lehn and Poulsen, 1989) and thus are more likely to be clustered towards the "assets in place" end of the growth options continuum (see Myers, 1977). In our sample the extent of the firm's growth options may explain little of the cross-sectional variation in debt characteristics.

We also include EBITDA/(EBITDA + asset sales) as an alternative measure of the duration of the assets. In LBOs, value can be created by some combination of asset sales and improvements in operating cash flows. When the gains from an LBO primarily come from asset sales, debt financing is more likely to be short-term bank loans because asset sales are usually arranged at the time of the transaction. Thus, the proceeds from the asset sales can be used to pay of debt early on. In contrast, when the gains primarily come from improvements in operational efficiencies, then long-term debt is more likely to be used to finance the LBO. It is possible that buyout specialists are more likely to participate in deals where improvements in operational efficiencies account for a larger proportion of post-LBO value creation. Table 5 shows that there is no statistically significant difference in (EBITDA/EBITDA + asset sales) between firms in which buyout specialists have control and those controlled by other types of investors.

5.2. Buyout transaction

It is possible that the structure of the debt is determined in large part by the control contest that precedes the ultimate buyout transaction. In an attempt to secure credible financing, bidders for the firm may have used a particular type of debt because such funds were readily available rather than because of the monitoring benefits from various types of debt. On the one hand, Kaplan and Stein argue that in the late 1980s deals were both overpriced and financed with more subordinate, publicly held, 'junk' bonds because these sources of funds were readily available. On the other hand, private short-term financing may be easier to arrange during 'heated' buyout contests. It is also possible that buyout specialists use less short-term and/or senior debt because of characteristics of the buyout contest in which they engage.

We use four measures to capture the characteristics of the buyout transactions. First, we collect data on the number of LBOs with hostile bidders. Second, we include the frequency of deals done after 1985 to proxy for the 'overheating' phenomenon documented by Kaplan and Stein. Third, we use as measures of overpayment the buyout premium paid and the amount of goodwill scaled by total assets. Goodwill is measured by the difference between the buyout price and the book value of the assets at the time the transaction is completed.

We recognize, however, that both measures are noisy proxies for overpayment. Using the buyout premium assumes that firms that pay higher premiums are more likely to overpay and yet some buyouts justify a higher buyout premium. Similarly, lower premiums can also reflect overpayment when this premium is high relative to post-LBO firm value. Likewise, higher goodwill can be due to overpayment but also due to older assets or less tangible assets (for example, for a service firm) with lower book values or to a buyout with higher post-buyout value.

Table 5 shows that a smaller number of management-controlled LBOs had a hostile bidder during the buyout contest than other types of LBOs. It is likely that in management-controlled LBOs, management owns enough pre-buyout equity to successfully deter a potential

competitive bidder (see Peck, 1996). Table 5 also shows that deals controlled by buyout specialists have, on average, statistically significantly higher buyout premiums than deals controlled by management. This finding is consistent with the hypothesis that buyout specialists both overpaid for LBOs and used more readily available 'junk' bond debt. Alternatively, buyout specialists may have participated in deals that generated greater post-LBO value. In the following section, we provide evidence that supports this alternative explanation.

5.3. Firm performance

It is likely that LBOs that have higher expected cash flows are easier to finance with long-term and/or publicly held subordinated debt. Thus, one explanation for our findings is that buyout specialists participate in 'better' deals. Following Kaplan (1989) and Denis (1994), we use three measures for performance – operating cash flows scaled by total assets (EBITDA/total assets), sales (EBITDA/total sales), and asset sales (asset sales/total assets). We report the levels of these measures as well as the percentage change from before to after the LBO. Because the book value of assets are written up to reflect the LBO purchase price, earlier researchers adjust the pre-LBO book value of assets (usually by increasing pre-LBO total assets by the difference in pre-LBO book value and the purchase price) "to make inter temporal comparisons meaningful" (p. 226, Kaplan, 1989; Denis, 1994). Similarly, we also adjust our measure of pre-LBO total assets. As a measure of pre-LBO total assets, we use total assets measured at the end of the first post-LBO fiscal year, which reflects the price paid for the LBO minus any asset sales that occurred during the first year. Of course, if the firm sold off assets that contributed to EBITDA in the pre-LBO year, this would erroneously inflate our measure of pre-LBO performance. Thus, we add back asset sales to our measure of total assets to measure performance in the pre-LBO year.

Table 5 shows that there is no difference among the three type of investor-controlled LBOs in operating cash flows, scaled by either total assets or sales, in the fiscal year before the LBO. There is substantial evidence, however, that after the LBO, operating cash flows increase significantly (see Kaplan, 1989; Smith, 1990). It is

likely that lenders use pro-forma financial statements that project an increase in operating cash flows when they are negotiating debt terms. The findings in Table 5 suggest that buyout specialist-controlled LBOs perform better than the other types. Buyout specialist-controlled LBOs, on average, have higher operating cash flows scaled by total assets in their first post-LBO year than outside-investor controlled LBOs. We also find that this better performance is sustained. While not reported in the tables, we also find that (EBITDA/total assets) are statistically significantly higher for years two, four, and five. Compared to management LBOs, buyout specialist LBOs, on average, have a larger percentage increase in operating cash flows scaled by total sales. This result is statistically significant at the 10% level. While not reported in the table, we also find that buyout specialist LBOs, on average, have statistically significant higher operating cash flows scaled by total assets for post-LBO years three and four. Buyout specialist controlled deals also have higher asset sales and this result is statistically significant at the 10% level, as Table 5 shows.

These higher levels of post-LBO operating performance in firms controlled by buyout specialists could be because they pick deals that are better ex ante or they more effectively monitor management in the post-LBO firm. Similarly, buyout specialists may pick deals that have more assets that can be profitably sold off or they may play a more active role instigating the sell-off of assets. In either case, lenders are likely to extend easier terms to buyout specialists.

5.4. Firm size and leverage

Larger firms are likely to have better access to public debt markets and are thus less likely to rely on private debt, which tends to be both short-term and senior. Buyout specialists may be more likely to participate in larger deals; thus, we also investigate whether buyout specialist-controlled LBOs are larger than the others. We use both total sales and the total book value of assets as a proxy for firm size. Table 5 shows that buyout specialist-controlled LBOs are not statistically significantly larger than other LBOs.

It is also likely that firms that borrow more use more long-term debt. If buyout specialists borrow more than other investors, then it

possible that these deals are financed using less short-term and/or senior debt. We measure leverage as total debt used to finance the deal divided by book value of assets, which reflects the buyout price. Table 5 shows that buyout specialist-controlled LBOs do not differ significantly from others in the amount of leverage used.

5.5. Risk

Credit risk will increase when expected future cash flows are more variable or riskier. As credit risk increases, lenders want to be re-paid sooner and use more restrictive debt terms (see Diamond, 1993). Thus, buyout specialists may participate in LBOs with less risky cash flows which may be easier to finance with less short-term and/ or senior debt. Table 5 shows that there is no statistically significant difference in our measure of risk between buyout specialist-controlled LBOs and other types of LBOs.

5.6. Equity financing

Buyout specialists may provide more equity financing that prevents an LBO from defaulting. If they have a reputation for doing so, lenders may be willing to extend easier terms to them. We use total capital contributed by equity holders (defined as total shareholders' equity minus retained earnings) divided by total assets as a measure of equity financing. Table 5 shows that buyout specialist-controlled LBOs, on average, do not contribute more capital than management-controlled LBOs. While not reported in the table, we also do not find that buyout specialist firms have significantly higher levels of contributed capital in post-LBO years two through five. Buyout specialist-controlled LBOs have, on average, a higher dollar amount of contributed capital in the first post-LBO year than other outside investors. This result is statistically significant at the 5% level. It is likely that as experts in the buyout market, buyout specialists have easier access to capital than other types of outside equity investors. In addition, since buyouts are their primary business, buyout specialists are likely to commit more capital to the LBO than other outside investors. Yet, when other outside investors invest a lower amount in the LBO, they have less incentive to monitor management.

5.7. Cross-sectional regressions explaining debt structure

Table 6 shows the results of cross-sectional regressions explaining the choice of debt structure. Since we do not have observations for all the firms in our sample for the amount of equity capital contributed and risk, we exclude these observations from our regressions. When we include these variables in our regressions our results are qualitatively the same, but the statistical significance of the regression is reduced. The results show that buyout specialist-controlled LBOs are significantly more likely to use debt with longer maturity and less likely to use senior debt after controlling for other variables. We hypothesize that active monitoring by buyout specialists decreases the monitoring benefits of short-term and/or senior debt. In the next two sections, we provide evidence to support this hypothesis.

6. Is using short term and/or senior debt to 5nance LBOs more costly?
6.1. The likelihood of default

Using less debt that is short-term and/or senior is beneficial when it decreases the likelihood of default and associated bankruptcy costs. We test in our LBO sample whether deals financed with such debt, in fact, are more likely to default.

We estimate parameters of a logitistic regression, which includes various measures for the degree to which the debt is senior or short-term. We also control for other variables that are likely to increase the likelihood of default. As post-LBO operating cash flows and proceeds for asset sales increase, the firm is likely to have more cash to cover debt obligations. If the equity investors have overpaid for the firm, they are more likely to have either insufficient post-LBO cash flows to cover debt obligations or to have structured the deal poorly. Palepu and Wruck (1992) also find that defensive leveraged transactions are more likely to be poorly structured. Thus, as in Section 5, we use as proxies of overpayment and defensive transactions the buyout premium, the presence of a hostile bidder,

goodwill/ total assets, and a dummy variable for whether the deal was completed after 1985.

Denis and Denis (1995) show that ex post macroeconomic variables contributed to the financial distress for leverage recapitalizations. It is possible that LBOs default because either the market performed poorly or the industry they are in performed poorly. Thus, we include a measure of post-LBO industry performance. The return measure is the average holding period return of all firms in the industry for two, four, and six years after the completion of the buyout. Monthly returns are used to calculate the holding period return. Table 5 shows that industry performance is not statistically significantly higher for buyout specialist-controlled LBOs than for other LBOs. Since we are measuring the incidence of default over six years, we use in our regression the average holding period return for six years after the completion of the buyout.

We also examine expected debt coverage as a direct method to determine whether firms are able to meet their future debt obligations. We measure expected debt coverage as EBITDA for the first post-LBO year divided by the amount of debt due in one, two, three, four, and five years. Table 5 shows that expected debt coverage is statistically significantly higher for buyout specialist-controlled firms than other outside investor-controlled firms for the first post-LBO year. The combination of using debt with longer maturity, which lowers the per period debt obligation, and higher post-LBO cash flows increases the debt coverage for buyout specialist-controlled firms.

Since firms that are larger and have less leverage are less likely to default, we also include size (book value of total assets) and leverage (total debt/total assets) in our regression. We also include a dummy variable for whether the LBO is controlled by a buyout specialist. This allows us to test our earlier result reported in Table 3 that control by buyout specialists decreases the likelihood of default even after controlling for other variables that could cause default.

Table 7 reports the results of logit regressions for the likelihood of default. These regressions show that as more short-term and/or senior debt is used the likelihood of default increases. Table 7 also

shows that LBOs controlled by buyout specialists are less likely to default after controlling for other variables. While not reported in the tables when we re-run the regressions using the percentage of bridge financing, senior secured notes, senior subordinated debt and subordinated debt, as alternative measures of seniority and maturity, we get qualitatively same results.

Since we do not make observations for all the firms in our sample for the amount of equity capital contributed and risk, we exclude these observations from our regressions. When we include these variables in our regressions, our results are qualitatively the same, but the statistical significance of the regression is reduced.

We do not collect data on bankruptcy costs associated with default in our sample because this data is very costly to obtain. Other researchers, however, have documented the costs of bankruptcy. Weiss (1990) estimates that direct bankruptcy costs are on average 3.1% of total book value of debt plus the market value of equity. Anrade and Kaplan (1998) estimate that the costs of financial distress for a sample of highly levered transactions between 10% to 23% of firm value. We assume that these estimates of the costs of financial distress for the firms in our sample would be comparable.

More importantly, financial distress in LBOs is likely to reduce the return on equity holders' investment. Anrade and Kaplan estimate post-buyout equity investors earn an average total nominal return of 17% for a sample of highly leveraged transactions that become financially distressed. There are likely to be similar losses from financial distress for investors in our sample. Thus, equity investors have incentives to arrange the terms of the debt to avoid these costs when they can.

6.2. The monitoring benefits of short-term and/or senior debt

Wruck (1990) and Jensen (1989) argue that default and bankruptcy may have benefits that offset its costs. In an extension of that fundamental point, while more short-term and/or more senior debt increases the incidence of default, it is also likely to create

powerful incentives for managers to improve operating performance. Furthermore, Kaplan (1994) and Andrade and Kaplan provide evidence that when the threat of default fails to motivate management, default serves as a mechanism to re-organize the firm more profitably. Buyout specialists may find that actively monitoring managers, themselves, is less costly than using debt as a disciplining device. When buyout specialists control the LBO and actively monitor managers, firm performance will improve with or without using debt with tighter terms. In other LBOs, the use of tighter debt terms is likely to have a greater impact on managerial incentives and firm performance.

Table 8 reports the results of a regression to explain post-LBO changes in firm performance. We measure post-LBO changes as the percentage change in (EBITDA/total sales) from the year before the LBO to the first post-LBO year. As explanatory variables, we use the firm's debt structure and equity structure. We use a dummy variable for firms where buyout specialists have control and multiply the debt structure variables by this dummy since we expect that the use of debt in these firms to improve performance is likely to be different than in other firms. We also include the firm's pre-LBO operating cash flows scaled by sales, since firms that have a higher percentage change are likely to have a lower base to begin with. We also include a dummy variable for LBOs that occur after 1985 to control for 'overheating' in the LBO market.

Table 9 reports the results of regressions similar to those of Table 8. The exception is that we measure post-LBO changes as the relative (rank value) percentage change in (EBITDA/total sales) from the year before the LBO to the first post-LBO year. We use rank values because it reduces the influence of outliers in our regression. This is particularly a problem when (EBITDA/total sales) before the LBO is small, since a change in (EBITDA/total sales) becomes an even larger percentage change. For example, a firm in our sample (controlled by a buyout specialist) went from (EBITDA/total sales) of 0.04417 to 0.11502, which represented a 160.387% change. This was over ten times the average value of 15.951% for the entire sample. As the results in Tables 8 and 9 show, when we do not use rank values the results are qualitatively the same but the statistical significance of the regression is lowered.

We find that as non buyout specialist-controlled LBOs use more senior debt, the change in their operating performance is greater. We find the opposite relation for buyout specialist LBOs; in an equivalent test estimating a regression using only a sample of buyout specialist-controlled LBOs, the coefficient on the amount of senior debt used is statistically insignificantly different from zero. These finding suggest that more restrictive debt terms increase managerial incentives and firm performance only when the control of buyout specialists is absent.

Rather than increases in operating efficiency, lenders are more likely to be interested in the ultimate level of cash flows available to meet debt obligations relative to the total capital invested in the LBO, which, on average, they provide 87.62% (median value of 85.58%). Thus, the terms of the debt are likely to have a greater impact on the level of post-LBO performance rather than the change. As an alternative measure of post-LBO performance, we use post-LBO operating cash flows scaled by total capital measured at the end of the first post-LBO fiscal year, calculated as total assets minus non debt current liabilities. Table 10 reports the results of this alternative measure of post-LBO performance. The results are qualitatively similar to those reported in Tables 8 and 9, but more statistically significant. We also re-run the regressions in Tables 8}10 using the percentage of bridge financing, senior secured notes, senior subordinated debt and subordinated debt, as alternative measures of seniority and maturity and get qualitatively same results.

7. How do buyout specialists monitor managers in the post-LBO firm?

One way that outside equity investors can improve managerial incentives is to provide greater incentive compensation. As part of arranging the buyout, equity investors are also likely to play a role in restructuring management's compensation package. Denis (1994) provides evidence that improved incentive compensation and higher managerial ownership arranged by the LBO specialist, such as KKR, leads to greater post-LBO value creation. Thus, it is likely that buyout specialists improve incentive compensation in the post-LBO firm. Table 11 reports differences in various measures of incentive compensation

buyout specialist-controlled LBOs and other LBOs, using similar measures as reported in Denis. The results in Table 11 suggest that, other than the larger amount of stock held by management in management-controlled LBOs, there are no statistically significant differences in the structure of incentive compensation between firms with the three types of controlling investors.

Outside investors can also monitor and motivate management by their board membership. Board members have access to company information to monitor the firm's on-going operations; to direct operating strategy; and to evaluate management for an increase in compensation or removal from the firm. Prior researchers have shown that independent board members monitor managers (see Weisbach, 1988; Byrd and Hickman, 1992; Rosenstein and Wyatt, 1990; Shivdasani, 1993; Brickley et al., 1994; Cotter et al., 1997). Table 12 shows how composition of the board varies with the type of controlling investor. Buyout specialists take more representation on the boards they control than do other types of outside investors. Buyout specialist-controlled LBOs also have smaller boards. Yermack (1996) provides evidence that smaller boards are more effective than larger ones. Thus, buyout specialists are likely to more effectively monitor managers by having more seats on the board and by having smaller boards. These findings support our hypothesis that buyout specialists are more active monitors than other outside controlling investors.

8. Potential sample selection bias

Because our initial sample of 125 LBOs is reduced to 64, our results may be driven by a sample selection bias. While our sample size is reduced because of insufficient data, we do have data on *some* variables for firms that were excluded from our final sample because we did not have data on *all* of the variables used in our tests. We use these data to test whether there are significant differences in key variables used in our tests between firms included and excluded in our sample.

Table 13 shows that LBOs that are excluded from our sample do not differ significantly in leverage, average seniority, incidence of financial distress, the structure of equity financing, the frequency of

various investor-controlled LBOs, or board composition. Not surprisingly, Table 13 shows that firms excluded from our sample are significantly smaller. Two data requirements for our tests tend to exclude smaller firms. First, we require that firms be publicly traded before the LBO so that we can calculate a buyout premium. Since, on average, publicly traded firms are larger than privately held firms, our sample will be biased towards larger firms. Second, we require that firms disclose post-LBO performance. Firms are required to make these disclosures only when they finance the LBO using publicly traded securities. Privately financed LBOs are likely to be smaller. Table 13 also shows that there is no significant difference in post-LBO firm performance between firms in and out of the sample. While pre-LBO operating margins are significantly higher, post-LBO operating margins and changes in post-LBO operating margins are not statistically different for firms excluded from our sample from those that are included. Finally, we find that the average maturity of the debt is statistically significantly shorter for excluded firms, which suggests that LBOs left out of our sample may use different types of debt financing. More important to the interpretation of our results is whether the relation between debt and equity financing and the monitoring role that buyout specialists play is also different.

We have 20 excluded observations for which we have data on equity ownership. We use these data to test whether LBOs controlled by various types of investors excluded from our sample are financed with a different debt structure than those included in our sample. Table 14 reports differences in average maturity, average seniority, and frequency of financial distress for buyout specialist-, management-, and other investor-controlled LBOs that are included and excluded from the final sample. The results in Table 14 show that there are no statistically significant differences in the structure of the debt and the frequency of financial distress for LBOs led by different types of investors for deals included and excluded from the final sample.

We also have board composition data on the 20 excluded LBOs. We use these data to examine the extent to which buyout specialists versus other outside investors monitor the LBO via board representation for firms out of the sample. For firms out of the sample, buyout specialists have 26.12% (median value of 21.43%) of the

board seats on a board, with an average of 7.82 seats (median value of 8.00 seats) for LBOs that they control. The percentage of board seats is not statistically significantly different from that of buyout specialist-controlled LBOs included in the final sample (reported in Table 12) (p value for test of differences in means is 0.17; medians, 0.15), nor is board size (p value for test of difference in means is 0.77; medians, 0.78). For firms out of the sample, other outside investors have 4.17% (median value of 4.17%) of the board seats on a board of an average size of 5.66 seats (median value of 8.00 seats) for LBOs that they control. Again, the percentage of board seats is not statistically different from that of outside investor LBOs included in the sample (reported in Table 12) (p value for test of differences in means is 0.40; medians, 0.53), nor is board size (p value for test of difference in means is 0.46; medians, 0.54). These findings suggest that buyout specialists more actively monitor LBOs via board membership compared to other outside investors for LBOs excluded from the final sample as well as those that are included.

We are not able to test how the relationship between debt structure and post-LBO performance varies across different types of controlling investors for firms out of the sample. For these firms, we do not have data on all three of these variables; this is the primary reason why these firms are excluded from our final sample.

To the limited extent that we can empirically test for potential sample biases, the results suggest that our findings are not driven by a sample selection bias. Even though our sample is biased towards larger publicly financed transactions, the relationship between debt and equity structure and the buyout specialists' monitoring role in LBOs they control is not likely to be significantly different from that of smaller, privately financed transactions that are excluded from our sample. Of course, because we are not able to empirically test whether our results hold for privately financed LBOs for which we have no data, we can not definitively conclude that our results would hold for these transactions.

9. Conclusion

Ever since Berle and Means (1932), the classic agency problem is how investors control managers. Jensen's insight was that a high level of debt is one way to insure managers have incentives to maximize the value of the firm (see Jensen, 1986, 1989). Yet, as Smith and Warner (1979) showed in their seminal article, there are significant agency costs in relying on debt to motivate managers. The missing piece has been the absence of active investors. Buyout specialists are professional active investors. When they control the LBO, they monitor management, providing a substitute for debt as a disciplining device free of the agency and bankruptcy costs Smith and Warner (1979) identify. We find that: (1) when buyout specialists control the majority of the post-LBO equity, the LBO transaction is likely to be financed with less short-term and/or senior debt and subsequently less likely to default; (2) LBO performance only increases with tighter debt terms for LBOs in which buyout specialists are not involved; and (3) buyout specialists have greater board representation on smaller boards, suggesting that they actively monitor managers. These three findings support the general hypothesis that the presence of an active equity investor, such as a buyout specialist, influences the choice of debt structure as well as long-term firm performance. Further research can focus on whether and under what circumstances the presence of active investors of various types will influence the debt structure of firms and their subsequent performance.

Notes

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Appendix

Table 1: Data availability and frequency of financial distress for a sample of 64 leveraged buyouts completed from 1984 to 1989

Year of LBO completion	Number of LBOs	Number of LBOs that meet data requirements	Incidence of financial distress within two years[a] (percentage[b])	Incidence of financial distress within four years (percentage)	Incidence of financial distress within six years (percentage)
1984	118	4	0 (0%)	0 (0%)	0 (0%)
1985	94	5	0 (0%)	1 (1.56%)	2 (3.13%)
1986	135	11	1 (1.56%)	2 (3.13%)	5 (7.81%)
1987	136	10	0 (0%)	3 (4.68%)	3 (4.68%)
1988	142	22	4 (6.25%)	7 (10.94%)	7 (10.94%)
1989	138	12	0 (0%)	1 (1.56%)	1 (1.56%)
Total	763	64	5 (7.81%)	14 (21.88%)	18 (28.13%)

[a] Incidence of financial distress is the number of LBOs where there was either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity or grants of equity interests to creditors.

[b] Percentage of LBOs experiencing financial distress is calculated using the reduced sample where financial data are available.

Table 2: Characteristics of equity financing for a sample of 64 leveraged buyouts completed from 1984 to 1989

	Mean percentage of common stock held (median)	Number of firms where type of equity investor is assigned majority control	Mean percentage of common stock held with majority control (median)
Buyout specialists[a]	51.64 (63.44)	40	78.32 (76.53)
Management group	20.03 (6.50)	10	75.24 64.9
Miscellaneous corporations[b]	13.14 (0.0)	8	93.79 (100)
ESOP	6.19 (0.0)	4	88.25 92.3
Insurance companies, trusts, commercial banks, credit corporations	2.52 (0.0)	1	24.9 (24.9)
Individuals and individually organized limited partnerships	2.26 (0.0)	1	30.37 (30.37)

[a]Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.
[b]Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.

Table 3: Characteristics of debt financing for different type of investor-controlled LBOs for a sample of 64 leveraged buyouts completed from 1984 to 1989 (medians reported in parentheses).[a]

	Buyout specialist-controlled LBOs[b] (n = 40)	Management-controlled LBOs (n = 14)	Other investor-controlled LBOs (n = 10)
Total debt[c] ($ millions)	1,914.61 (698.51)	998.09 (359.81)	1,706.96 (841.96)
Incidence of financial distress (%)[d]	6 (15.00%)	4 (28.57%)	8*** (80.00%)
Average maturity[e] (years)	9.19 (8.57)	7.82* (7.84)*	6.59*** (6.64)***
Average seniority[f]	3.52 (3.51)	3.69 (3.67)	3.87 (3.89)
Percentage of debt due in more than one year	0.94 (0.97)	0.92 (0.94)	0.79*** (0.87)***
Percentage of debt due in more than two years	0.88 (0.92)	0.86 (0.88)	0.76** (0.82)**
Percentage of debt due in more than three years	0.83 (0.85)	0.79 (0.81)	0.70*** (0.76)**
Percentage of debt due in more than four years	0.76 (0.78)	0.70 (0.73)	0.63** (0.65)**
Percentage of debt due in more than five years	0.69 (0.71)	0.60** (0.64)*	0.55** (0.60)*
Bridge loan/total debt	0.05 (0)	0.01* (0)*	0.12 (0)
Senior bank debt/total debt	0.38 (0.41)	0.52** (0.53)*	0.41 (0.43)
Senior secured notes/total debt	0.07 (0)	0.04 (0)	0.08 (0)
Senior notes/total debt	0.11 (0)	0.10 (0)	0.08 (0)
Senior subordinated notes/total debt	0.20 (0.15)	0.11** (0.10)*	0.19 (0.11)
Subordinated debt/total debt	0.11 (0.11)	0.16 (0.12)	0.07* (0.02)*

Table 3 (*continued*)

	Buyout specialist-controlled LBOs[b] (n = 40)	Management-controlled LBOs (n = 14)	Other investor-controlled LBOs (n = 10)
Industrial revenue bonds/total debt	0.03 (0.01)	0.01 (0)	0.04 (0.01)
Other/total debt	0.06 (0.02)	0.04 (0.03)	0.01*** (0)*

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

[a] Difference in means and medians between buyout specialist-controlled LBOs and management-controlled LBOs and between buyout specialist-controlled LBOs and other outside investor-controlled LBOs is tested. Difference in means tested using a standard t-test. Difference in medians tested using a Wilcoxon sum rank test.

[b] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. ESOP-controlled LBOs are included in the management-controlled group. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company. Other investors include insurance companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.

[c] Total debt is the amount of debt outstanding at the time the transaction is completed.

[d] Incidence of financial distress is the number of LBOs where there was either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity or grants of equity interests to creditors. The relation between type of controlling investor and incidence of financial distress is tested using a Chi-square test.

[e] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[f] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt*2+subordinated debt*1]/[total debt outstanding-other–industrial revenue bonds].

Table 4: Default rates and debt characteristics by year of deal completion for different type of investor-controlled LBOs for a sample of 64 leveraged buyouts completed from 1984 to 1989 (medians reported in parenthesis).

	Average maturity (years)[a]	Average Seniority[b]	Number of deals (percentage of all deals)	Incidence of financial distress (percentage)[c]
1984				
Buyout specialist-controlled LBOs[d]	9.19 (8.36)	3.57 (3.37)	4	0 (0%)
Management-controlled LBOs	NA	NA	0	NA
Other investor-controlled LBOs	NA	NA	0	NA
Total	9.19 (8.36)	3.57 (3.37)	4 (6.25%)	0 (0%)
1985				
Buyout specialist-controlled LBOs	8.60 (8.60)	3.84 (3.84)	2	1 (50%)
Management-controlled LBOs	9.58 (9.80)	3.56 (3.39)	3	1 (33.33%)
Other investor-controlled LBOs	NA	NA	0	NA
Total	9.19 (9.52)	3.67 (3.39)	5 (7.81%)	2 (49%)
1986				
Buyout specialist-controlled LBOs	11.11 (11.13)	3.15 (3.50)	5	0 (0%)
Management-controlled LBOs	7.33 (7.33)	3.61 (3.61)	2	1 (50%)
Other investor-controlled LBOs	5.71 (5.46)	3.83 (3.73)	4	4 (100%)
Total	8.46 (7.66)	3.48 (3.50)	11 (17.19%)	5 (45.45%)
1987				
Buyout specialist-controlled LBOs	9.77 (7.89)	3.32 (3.62)	5	1 (20%)
Management-controlled LBOs	8.20 (8.52)	3.38 (3.43)	3	1 (33%)
Other investor-controlled LBOs	6.64 (6.64)	3.91 (3.91)	2	1 (50%)
Total	8.67 (7.59)	3.46 (3.53)	10 (15.63%)	3 (30%)
1988				
Buyout specialist-controlled LBOs	8.74 (8.56)	3.66 (3.57)	15	3 (20%)

Table 4 (*continued*)

	Average maturity (years)[a]	Average Seniority[b]	Number of deals (percentage of all deals)	Incidence of financial distress (percentage)[c]
Management-controlled LBOs	6.30 (6.17)	3.86 (3.93)	4	1 (25%)
Other investor-controlled LBOs	8.46 (7.96)	3.81 (3.79)	3	3 (100%)
Total	8.26 (6.99)	3.72 (3.61)	22 (34.38%)	7 (31.82%)
1989				
Buyout specialist-controlled LBOs	8.69 (8.51)	3.53 (3.49)	9	1 (11.11%)
Management-controlled LBOs	8.16 (8.16)	4.06 (4.06)	2	0 (0%)
Other investor-controlled LBOs	4.40 (4.40)	4.11 (4.11)	1	0 (0%)
Total	8.24 (8.22)	3.67 (3.49)	12 (18.75%)	1 (8.33%)

NA=not applicable

[a] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[b] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt * 2+subordinated debt*1]/[total debt outstanding-other–industrial revenue bonds].

[c] Incidence of financial distress is the number of LBOs where there was either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity or grants of equity interests to creditors.

[d] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. ESOP-controlled LBOs are included in the management-controlled group. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company. Other investors include insurance companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.

Table 5: Differences in financial and buyout characteristics for different type of investor-controlled LBOs for a sample of 64 leveraged buyouts completed from 1984 to 1989 (medians reported in parentheses).[a]

	Buyout specialist-controlled LBOs[b] (n = 40)	Management-controlled LBOs (n = 14)	Other investor-controlled LBOs (n = 10)
Duration of assets:			
Market value/ book value	1.47 (1.32)	1.34 (1.36)	1.57 (1.34)
EBITDA/(EBITDA + asset sales)$_{t+1}$	0.63 (1.00)	0.71 (1.00)	0.50 (0.50)
Buyout transaction:			
Premium[c]	54.37% (51.59%)	35.60%*** (39.44%)**	62.57% (55.01%)
Goodwill/total assets	0.27 (0.24)	0.23 (0.35)	0.30 (0.25)
Number of firms with hostile bidders (percentage)	16 (40%)	1 (7.14%)	6** (60%)
Number of LBOs completed after 1985	34 (85%)	11 (78.57%)	10 (100%)
Firm performance:			
Asset sales/total assets	0.08 (0.00)	0.03* (0.00)	0.06 (0.02)
(EBITDA / total sales)$_{t-1}$	0.1279 (0.0875)	0.1232 (0.1177)	0.11862 (0.0979)
(EBITDA /total sales)$_{t+1}$	0.1344 (0.0980)	0.1151 (0.1156)	0.1119 (0.1119)
% Change in (EBITDA/total sales) from $t-1$ to $t+1$	24.09% (18.06)	−0.58%* (−16.84%)*	7.34% (2.92)
(EBITDA /total assets)$_{t-1}$[d]	0.0892 (0.0901)	0.0968 (0.1015)	0.0754 (0.0689)
(EBITDA/total assets)$_{t+1}$	0.1145 (0.1087)	0.1163 (0.1076)	0.0915* (0.0879)*
% Change from $t-1$ to $t+1$ (EBITDA/total assets)	31.97% (24.88)	35.61% (−8.75)	25.91% (37.08)
Firm size and leverage:			
Total sales	2,262.40 (826.50)	1,497.31 (619.65)	1,830.23 (845.90)
Total assets	2,761.65 (1,004.64)	1,281.63 (635.63)	2,649.68 (1,142.20)
Total debt/total assets	0.70 (0.71)	0.71 (0.70)	0.67 (0.72)

Table 5 (*continued*)

	Buyout specialist-controlled LBOs[b] ($n = 40$)	Management-controlled LBOs ($n = 14$)	Other investor-controlled LBOs ($n = 10$)
Risk			
Standard deviation in growth rate of operating margin (EBITDA/sales)	1.45 (0.18) ($n = 34$)	0.68 (0.31) ($n = 12$)	2.92 (0.20) ($n = 8$)
Amount of equity financing:			
(Contributed capital/ total assets)$_{t+1}$	0.94 (0.84) ($n = 32$)	1.00 (0.99) ($n = 10$)	0.64** (0.55) ($n = 7$)
Industry performance[c]:			
Industry return $_{t+2}$	1.20 (1.17)	1.40** (1.32)*	1.30 (1.29)
Industry return$_{t+4}$	1.55 (1.37)	1.60 (1.80)	1.45 (1.50)
Industry return$_{t+6}$	1.61 (1.41)	1.71 (1.75)	1.66 (1.60)
Debt coverage:			
(EBITDA + asset sales)$_{t+1}$/debt due in one year	160.79 (4.79)	11.75 (3.94)	1.94 (1.74)***
EBITDA$_{t+1}$/debt due in one year	42.27 (3.22)	11.22 (2.79)	1.33** (0.98)
EBITDA$_{t+1}$/debt due in two years	17.18 (3.35)	58.39 (3.48)	35.81 (3.05)
EBITDA$_{t+1}$/debt due in three years	15.99 (2.55)	7.63 (2.78)	5.52 (2.33)
EBITDA$_{t+1}$/debt due in four years	16.24 (2.20)	2.76 (2.12)	2.21 (2.18)
EBITDA$_{t+1}$/debt due in five years	15.70 (2.40)	2.39 (1.84)	2.15 (1.80)

Table 5 (*continued*)

	Buyout specialist-controlled LBOs[b] (n = 40)	Management-controlled LBOs (n = 14)	Other investor-controlled LBOs (n = 10)
Risk			
Standard deviation in growth rate of operating margin (EBITDA/sales)	1.45 (0.18) (n = 34)	0.68 (0.31) (n = 12)	2.92 (0.20) (n = 8)
Amount of equity financing: (Contributed capital/ total assets)$_{t+1}$	0.94 (0.84) (n = 32)	1.00 (0.99) (n = 10)	0.64** (0.55) (n = 7)
Industry performance[e]: Industry return $_{t+3}$	1.20 (1.17)	1.40** (1.32)*	1.30 (1.29)
Industry return$_{t+4}$	1.55 (1.37)	1.60 (1.80)	1.45 (1.50)
Industry return$_{t+6}$	1.61 (1.41)	1.71 (1.75)	1.66 (1.60)
Debt coverage: (EBITDA + asset sales)$_{t+1}$/debt due in one year	160.79 (4.79)	11.75 (3.94)	1.94 (1.74)***
EBITDA$_{t+1}$/debt due in one year	42.27 (3.22)	11.22 (2.79)	1.33** (0.98)
EBITDA$_{t+1}$/debt due in two years	17.18 (3.35)	58.39 (3.48)	35.81 (3.05)
EBITDA$_{t+1}$/debt due in three years	15.99 (2.55)	7.63 (2.78)	5.52 (2.33)
EBITDA$_{t+1}$/debt due in four years	16.24 (2.20)	2.76 (2.12)	2.21 (2.18)
EBITDA$_{t+1}$/debt due in five years	15.70 (2.40)	2.39 (1.84)	2.15 (1.80)

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

[a] Difference in means and medians between buyout specialist-controlled LBOs and management-controlled LBOs and between buyout specialist-controlled LBOs and other outside investor-controlled LBOs is tested. Difference in means tested using a standard *t*-test. Difference in medians tested using a Wilcoxon sum rank test. All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, eg., *t*+1=first full fiscal post LBO year; *t*−1=first full fiscal pre-LBO year.

[b] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. ESOP-controlled LBOs are included in the management-controlled group. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company. Other investors include insurance companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.

[c] The buyout premium is calculated using the final buyout price per share and the stock price 30 days before the announcement date. The announcement date is defined as the first report of any buyout activity, including rumors.

[d] Total assets are written up after the LBO is completed to reflect buyout price. Because of this accounting change, total assets in the year before the buyout will be

relatively low. For the year before the buyout, total assets are the total assets reported the first year after the LBO is completed plus asset sales during the first year. For similar adjustments to pre-buyout assets, see Kaplan (1989) and Denis (1996).
[e] Industry market adjusted monthly returns are calculated by taking the average holding period return for all firms in two-digit SIC code industry minus the equal weighted market return. The holding period is one year before the LBO completion.

Table 6: Regression coefficient estimates for debt maturity and seniority characteristics for a sample of 64 leveraged buyouts completed from 1984 to 1989 (*p*-values in parentheses).

	Average maturity[a]	Average seniority[b]	Bridge loan/total debt	Senior bank debt/total debt	Senior subordinated notes/total debt	Subordinated debt/total debt
Intercept	2.277375 (0.60)	3.444266 (0.00)	0.1333823 (0.57)	0.066948 (0.86)	0.343290 (0.15)	−0.053449 (0.76)
Control by buyout specialists[c]	1.827895 (0.01)	−0.210735 (0.21)	0.004088 (0.92)	−0.106211 (0.06)	0.046654 (0.23)	−0.011488 (0.70)
Total debt/total assets	4.344331 (0.07)	−1.348895 (0.03)	−0.034045 (0.82)	−0.449151 (0.05)	0.132270 (0.18)	0.098292 (0.38)
Ln(total assets)	0.719776 (0.06)	0.106831 (0.28)	0.000003 (0.70)	0.050517 (0.17)	−0.044272 (0.07)	0.019059 (0.29)
(EBITDA/total assets)$_{t-1}$[e]	−0.108035 (0.95)	1.721481 (0.26)	0.049978 (0.90)	0.312107 (0.58)	−0.049403 (0.89)	−0.266626 (0.33)
Asset sales/total assets	1.826767 (0.50)	−1.504307 (0.03)	−0.161450 (0.33)	−0.054527 (0.83)	0.342109 (0.05)	0.243709 (0.06)
Buyout premium[e]	−1.370962 (0.29)	−0.497774 (0.34)	0.010703 (0.89)	−0.213939 (0.08)	0.016457 (0.84)	0.058910 (0.32)
Goodwill/total assets	1.160023 (0.85)	−1.773809 (0.28)	0.468942 (0.21)	−0.064537 (0.10)	0.523760 (0.17)	0.054922 (0.84)
Hostile bidder	−0.966939 (0.21)	0.244070 (0.22)	0.004789 (0.92)	−0.009141 (0.90)	0.031795 (0.50)	−0.115260 (0.00)
LBO completed after 1985	−1.349601 (0.15)	−0.044576 (0.85)	0.080100 (0.48)	0.026481 (0.76)	0.107737 (0.07)	0.016259 (0.71)
Market value/book value	−0.751393 (0.76)	0.806102 (0.20)	−0.174518 (0.24)	0.424032 (0.07)	−0.197951 (0.19)	−0.044730 (0.69)
EBITDA\EBITDA + asset sales$_{t-1}$	−0.204198 (0.84)	−0.164873 (0.55)	−0.044204 (0.47)	0.097034 (0.31)	0.071550 (0.26)	0.058393 (0.21)
p value for significance of regression	0.01	0.11	0.93	0.25	0.04	0.10

[a] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[b] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt *2+subordinated debt*1]/[total debt outstanding-other –industrial revenue bonds].

[c] Control by buyout specialists is a dummy variable equal to one when buyout specialists control the LBO; zero otherwise. Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. Examples of a buyout specialist in the

sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.

[d] All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, e.g., $t+1$=first full fiscal post LBO year; $t-1$=first full fiscal pre-LBO year.

[e] The buyout premium is calculated using the final buyout price per share and the stock price 30 days before the announcement date. The announcement date is defined as the first report of any buyout activity, including rumors.

Table 7: Logistic coefficient estimates for the likelihood of financial distress for a sample of 64 leveraged buyouts completed from 1984 to 1989 (p-values in parentheses).[a]

	Model 1	Model 2	Model 3	Model 4
Intercept	-1.2894 (0.78)	-0.0209 (1.00)	-4.6459 (0.26)	-4.1915 (0.29)
Control by buyout specialists[b]	-1.3640 (0.08)	-1.3713 (0.09)	-1.9004 (0.01)	-1.5474 (0.05)
Average maturity[c]	-0.4006 (0.07)	-0.4254 (0.05)	—	—
Average seniority[d]	0.3026 (0.67)	—	0.7936 (0.25)	—
EBITDA$_{t+1}$/debt due in one year[e]	—	—	—	-0.0601 (0.29)
EBITDA$_{t+1}$/debt due in two years	—	—	—	-0.0227 (0.48)
EBITDA$_{t+1}$/debt due in three years	—	—	—	0.2042 (0.49)
EBITDA$_{t+1}$/debt due in four years	—	—	—	-0.3377 (0.28)
EBITDA$_{t+1}$/debt due in five years	—	—	—	0.0192 (0.92)
Total debt/total assets	5.7326 (0.05)	5.4554 (0.05)	4.6624 (0.09)	6.2714 (0.08)
Ln(assets)	0.3020 (0.51)	0.3574 (0.40)	-0.1444 (0.72)	-0.0153 (0.97)
Assets sales/total assets	0.3909 (0.90)	0.1879 (0.95)	0.5087 (0.86)	2.4641 (0.47)
(EBITDA/total assets)$_{t+1}$	-22.3624 (0.05)	-22.4430 (0.05)	-17.0885 (0.07)	—
Industry returns$_{t+6}$[f]	0.2687 (0.75)	0.2185 (0.79)	0.6175 (0.39)	0.4961 (0.60)
Buyout premium[g]	0.1814 (0.91)	0.0202 (0.99)	1.0851 (0.47)	0.2506 (0.87)
Hostile bidder	-0.0881 (0.92)	-0.0658 (0.94)	0.2330 (0.77)	-0.2934 (0.74)
Goodwill/total assets	-3.5779 (0.12)	-3.805 (0.13)	-3.1105 (0.16)	-2.1513 (0.30)
LBO completed after 1985	-0.3732 (0.77)	-0.4041 (0.75)	0.4145 (0.71)	-0.0660 (0.96)
p-value for significance of regression	0.09	0.06	0.10	0.07

[a] Incidence of financial distress is the number of LBOs where there was either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity or grants of equity interests to creditors.

[b] Control by buyout specialists is a dummy variable equal to one when buyout

specialists control the LBO; zero otherwise. Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.

[c] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[d] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt *2+subordinated debt*1]/[total debt outstanding-other –industrial revenue bonds].

e All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, e.g., $t+1$=first full fiscal post LBO year; $t-1$=first full fiscal pre-LBO year.

[f] Industry market adjusted monthly returns are calculated by taking the average holding period return for all firms in two-digit SIC code industry minus the equal weighted market return. The holding period is one year before the LBO completion.

[g] The buyout premium is calculated using the final buyout price per share and the stock price 30 days before the announcement date. The announcement date is defined as the first report of any buyout activity, including rumors.

Table 8: Regression coefficient estimates for change in post-LBO performance, measured as the percentage change in (EBITDA/total sale), from $t − 1$ to $t + 1$, for a sample of 64 leveraged buyouts completed from 1984 to 1989 (p-values in parentheses).[a]

	Coefficient Estimates
Intercept	− 68.076199 (0.52)
(EBITDA/total sales)$_{t−1}$	− 315.477303 (0.07)
Total debt/total assets	30.684307 (0.67)
Average maturity[b]	5.718114 (0.36)
Average seniority[c]	35.435500 (0.08)
LBO completed after 1985	18.138196 (0.61)
Ln(total sales)	− 15.314058 (0.15)
Control by buyout specialist[c]	93.320976 (0.51)
Control by buyout specialists*(EBITDA/total sales)$_{t−1}$	177.968961 (0.33)
Control by buyout specialists*total debt/total assets	89.893562 (0.45)
Control by buyout specialists*average maturity	− 6.089378 (0.40)
Control by buyout specialists*average seniority	− 36.173010 (0.14)
Control by buyout specialists*LBO completed after 1985	− 41.914872 (0.35)
Control by buyout specialists*Ln(total sales)	9.467707 (0.46)
p-value for significance of regression	0.32

[a] All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, e.g., $t+1$=first full fiscal post LBO year; $t−1$=first full fiscal pre-LBO year.

[b] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[c] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank

debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt *2+subordinated debt*1]/[total debt outstanding-other–industrial revenue bonds].
[d] Control by buyout specialists is a dummy variable equal to one when buyout specialists control the LBO; zero otherwise. Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.

Table 9: Regression coefficient estimates for relative change in post-LBO performance, measured as the rank value of the percentage change in (EBITDA/total sales), from $t-1$ to $t+1$, for a sample of 64 leveraged buyouts completed from 1984 to 1989 (p-values in parentheses).[a]

	Coefficient Estimates
Intercept	− 12.786249 (0.73)
(EBITDA/total sales)$_{t-1}$	− 149.192792 (0.02)
Total debt/total assets	15.662065 (0.53)
Average maturity[b]	2.905771 (0.19)
Average seniority[c]	16.979713 (0.02)
LBO completed after 1985	7.436694 (0.55)
Ln(total sales)	− 6.779934 (0.07)
Control by buyout specialist[d]	53.983752 (0.28)
Control by buyout specialists*(EBITDA/total sales)$_{t-1}$	109.647226 (0.09)
Control by buyout specialists*total debt/total assets	7.518830 (0.86)
Control by buyout specialists*average maturity	− 2.661367 (0.30)
Control by buyout specialists*average seniority	− 17.918941 (0.04)
Control by buyout specialists *LBO completed after 1985	− 10.760294 (0.50)
Control by buyout specialists*Ln(total sales)	4.974885 (0.27)
p-value for significance of regression	0.15

[a] All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, e.g., $t+1$=first full fiscal post LBO year; $t-1$=first full fiscal pre-LBO year.
[b] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For

years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[c] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt *2+subordinated debt*1]/[total debt outstanding-other-industrial revenue bonds].

[d] Control by buyout specialists is a dummy variable equal to one when buyout specialists control the LBO; zero otherwise. Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.

Table 10: Regression coefficient estimates for post-LBO performance, measured as (EBITDA /total capital)$t + 1$, for a sample of 64 leveraged buyouts completed from 1984 to 1989 (p-values in parentheses).[a]

	Model 1
Intercept	− 0.124838
	(0.40)
(EBITDA/total assets)$_{t−1}$	1.190965
	(0.04)
Total debt/total assets	− 0.060492
	(0.53)
Average maturity[b]	0.007513
	(0.33)
Average seniority[c]	0.062747
	(0.03)
LBO completed after 1985	− 0.025204
	(0.60)
Ln(total assets)	− 0.010129
	(0.48)
Control by buyout specialist[e]	0.247335
	(0.19)
Control by buyout specialists*(EBITDA /total assets)$_{t−1}$	0.085151
	(0.89)
Control by buyout specialists*(total debt/total assets)	− 0.060882
	(0.64)
Control by buyout specialists*average maturity	− 0.006062
	(0.50)
Control by buyout specialists*average seniority	− 0.050466
	(0.13)
Control by buyout specialists*LBO completed after 1985	0.014026
	(0.81)
Control by buyout specialists*Ln(total assets)	0.002625
	(0.88)
p-value for significance of regression	0.00

[a] All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, e.g., $t+1$=first full fiscal post LBO year; $t−1$=first full fiscal pre-LBO year.

[b] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[c] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank

debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt *2+subordinated debt*1]/[total debt outstanding-other–industrial revenue bonds].
[d] Control by buyout specialists is a dummy variable equal to one when buyout specialists control the LBO; zero otherwise. Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.

Table 11: Selected CEO compensation characteristics for different type of investor-controlled LBOs for a sample of 64 leveraged buyouts complete from 1984 to 1989 (medians in parentheses).[a]

	Buyout specialist-controlled LBOs[b] (n = 40)	Management-controlled LBOs (n = 14)	Other investor-controlled LBOs (n = 10)
Percentage of common stock held[c]	4.65 (0.89)	18.07*** (12.71)	6.27* (0.15)
Implied stock sensitivity per $1,000 [d]	46.47 (8.87)	180.71*** (127.10)	62.75 (1.54)
Percentage of common stock options	2.32 (1.74)	8.51 (0.35)	0.15* (0)
Implied option sensitivity per $1,000[e]	13.90 (0.0)	51.08 (2.11)	0.90 (0)
Number of firms that have a stock appreciation right plan or grant options for securities other than common stock (percentage)	9 (22.5%)	5 (35.71%)	5 (50%)
Value of common stock held as a percentage of total cash compensation[e]	1,916.80 (207.02)	79,010.09 (283.40)	0.08 (0.06)
Bonus as a percentage of salary	90.85 (32.88) (n = 16)	82.44 (85.11) (n = 3)	61.48 (50) (n = 7)
Total cash compensation/ total assets	0.21 (0.05)	0.21 (0.10)	2,748.77 (0)

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

[a] Difference in means and medians between buyout specialist-controlled firms and management-controlled firms and between buyout specialist controlled firms and other outside investor controlled firms is tested. Difference in means tested using a standard *t*-test. Difference in medians tested using a Wilcoxon sum rank test. Statistical difference in frequencies of number of firms tested using a chi-square test of association. All data collected within one full fiscal year of LBO completion.
[b] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. ESOP-controlled LBOs are included in the management-controlled group.

Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company. Other investors include insurance companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.
[c] Stock ownership includes stock beneficially held as an equity partner in the LBO holding company as well as additional stock awarded/purchased during the first full post-LBO fiscal year.
[d] Following Denis (1994), implied sensitivity of options is estimated as 0.6 times the implied sensitivity of the same fraction stake of common stock.
[e] Stock is valued at the buyout premium price per share.

Table 12: Selected board composition characteristics for different type of investor-controlled LBOs for a sample of 64 leveraged buyouts completed from 1984 to 1989 (medians in parentheses).[a]

	Buyout specialist-controlled LBOs[b] (n = 40)	Management-controlled LBOs (n = 14)	Other investors-controlled LBOs (n = 10)
Percentage of board members who are management	44.42 (40)	52.20 (50)	51.49 (46.80)
Percentage of board members who buyout specialists	37.41 (34.31)	12.40*** (15.48)***	3.95*** (0)***
Percentage of board members who are partners of limited partnerships that provide equity financing	4.34 (0)	4.74 (0)	5.65 (0)
Percentage of board members who are executives are miscellaneous corporations	0 (0)	2.14 (0)	19.76*** (3.13)***
Percentage of board members who are executives are insurance companies, trusts, commercial banks, credits corporations	1.77 (0)	4.14 (0)	1.25 (0)
Percentage of board members who are other types[e]	10.17 (0)	24.39** (24.29)**	17.19 (10.80)
Percentage of board members who are equity investors with control	37.16 (33.33)	29.02 (22.5)	20.68** (10.53)**
Total number of directors	8.25 (7)	8.64 (9.5)	12.1** (11)**

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

[a] Difference in means and medians between buyout specialist controlled firms and management controlled firms and between buyout specialist controlled firms and other outside investor controlled firms is tested. Difference in means tested using a standard *t*-test. Difference in medians tested using a Wilcoxon sum rank test. All data collected within one full fiscal year of LBO completion.
[b] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. ESOP-controlled LBOs are included in the management-controlled group. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company. Other investors include insurance

companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards. [c] Other includes academics, accountants, consultants, professional directors, lawyers, and medical professionals.

Table 13: Differences in selected firm characteristics for firms included and excluded from the final sample for a beginning sample of 125 leveraged buyouts completed from 1984 to 1989 (medians reported in parentheses).[a]

	Firms in sample (n = 64)	Firms out of sample
Firm size:		
Total sales	2, 027.51 (775.6)	697.55*** (321.2)*** (n = 61)
Total assets	2, 420.40 (1,025.30)	803.09*** (425.4)*** (n = 61)
Equity financing:		
Percentage of common stock held by buyout specialists[b]	51.64% (63.44%)	49.00% (48.45%) (n = 20)
Percentage of common stock held by management group[c]	26.22% (9.68%)	31.42% (7.30%) (n = 20)
Percentage of common stock held by other investors[d]	24.10% (11.53%)	13.13% (0%) (n = 20)
Buyout specialist-controlled LBOs[e]	40 (62.50%)	12 (60.00%) (n = 20)
Management-controlled LBOs	14 (21.88%)	6 (30.00%) (n = 20)
Other investor-controlled LBOs	10 (15.63%)	2 (10.00%) (n = 20)
Debt financing:		
Number of firms that experience financial distress (percentage)[f]	18 (28.13%)	11 (18.03%) (n = 61)
Average maturity (years)[g]	8.49 (7.95)	7.65 (7.20)** (n = 61)
Average seniority[h]	3.61 (3.55)	3.50 (3.51) (n = 61)
Total debt/ total assets	0.70 (0.71)	0.65 (0.68) (n = 61)

	Firms in sample (n = 64)	Firms out of sample
Firm performance:		
(EBITDA/total sales)$_{t-1}$	0.11 (0.10)	0.16 ** (0.13) *** (n = 26)
(EBITDA/total sales)$_{t+1}$	0.13 (0.10)	0.14 (0.10) (n = 24)
% Change in (EBITDA/total sales) from $t-1$ to $t+1$	15.95% (13.40%)	−1.74% (−27.94%) (n = 7)
Board composition:		
Percentage of board members who are management	47.22% (42.86%)	55.93% (50.00%) (n = 20)
Percentage of board members who are buyout specialists	26.71% (20.00%)	18.11% (10.00%) (n = 20)
Percentage of board members who are other investors	14.38% (0%)	18.50% (14.29%) (n = 20)
Percentage of board members who are equity investors with control	32.02% (28.57%)	34.97% (25.00%) (n = 20)
Total number of directors	8.94 (8.00)	9.16 (8.00) (n = 20)

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

[a] Difference in means tested using a standard *t*-test. Difference in medians tested using a Wilcoxon sum rank test. All data collected within one full fiscal year of LBO completion except where noted. Subscripted time periods are relative to the LBO completion date, e.g., $t+1$=first full fiscal post LBO year; $t-1$=first full fiscal pre-LBO year.

[b] Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company.

[c] Includes ESOP financing.

[d] Other investors include insurance companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.

[e] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock.

[f] Incidence of financial distress is the number of LBOs where there was either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity or grants of equity interests to creditors. The relation between type of controlling investor and incidence of financial distress is tested using a Chi-square test.

[g] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are

those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[h] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing+bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt*2+subordinated debt*1]/[total debt outstanding-other−industrial revenue bonds].

Table 14: Differences in the relation between debt and equity financing for firms included and excluded from the final sample for a beginning sample of 125 leveraged buyouts completed from 1984 to 1989 (medians reported in parentheses).[a]

	Included firms	Excluded firms
Buyout specialist-controlled LBOs:[b]		
Average seniority[c]	3.52	3.63
	(3.51)	(3.73)
	(n = 40)	(n = 12)
Average maturity[d]	9.19	8.30
	(8.57)	(7.83)
	(n = 40)	(n = 12)
Incidence of financial distress[e]	6	3
	(15%)	(25%)
	(n = 40)	(n = 12)
Management-controlled LBOs:		
Average seniority	3.69	3.80
	(3.67)	(4.06)
	(n = 14)	(n = 6)
Average maturity	7.82	8.40
	(7.84)	(8.59)
	(n = 14)	(n = 6)
Incidence of financial distress	4	1
	(28.57%)	(16.67%)
	(n = 14)	(n = 6)
Other investor-controlled LBOs:		
Average seniority	3.87	3.85
	(3.89)	(3.85)
	(n = 10)	(n = 2)
Average maturity	6.59	10.84
	(6.64)	(10.84)
	(n = 10)	(n = 2)
Incidence of financial distress	8	1
	(80.00%)	(50%)
	(n = 10)	(n = 2)

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

[a] Difference in means tested using a standard *t*-test. Difference in medians tested using a Wilcoxon sum rank test.

[b] Control is defined as owning 50% or more of the voting common stock. There are six firms where no one investor owns 50% or more of the voting common stock. In these cases, control is assigned to the investor with the largest percentage of common stock. ESOP-controlled LBOs are included in the management-controlled group. Examples of a buyout specialist in the sample are Kohlberg, Kravis, and Roberts; Citicorp Venture Capital, Ltd.; and Kelso Company. Other investors include insurance companies, trusts, commercial banks, credit corporations, individual investors, individually organized limited partnerships, and miscellaneous corporations. Examples of miscellaneous corporations are Campeau Corp.; Lowes Corp.; and Hallmark Cards.

[c] Data on debt amounts of different seniority are the amounts outstanding at the time the transaction is completed. Senior bank debt includes term loan facilities, revolving loan facilities, ESOP facilities, tender offer facilities, partnership loans, and other bank debt excluding bridge financing. Industrial revenue bonds include equipment financing, collateralized equipment financing, mortgage notes, capitalized lease obligations, and real estate backed loans. Senior secured notes include senior extendable notes and senior increasing rate notes. Senior notes include unsecured sinking fund debentures. Other is the amount classified as other on the financial statements and includes commercial paper. Average seniority is equal to [(bridge financing + bank debt)*5+senior secured debt*4+senior debt*3+senior subordinated debt *2+subordinated debt*1]/[total debt outstanding-other–industrial revenue bonds].

[d] Average maturity is calculated by summing the estimated principal repayments each year weighted by the year in which the payment is due and then dividing by the total amount of debt outstanding. For the first five years, the principal repayments used are those disclosed in the materials issued to shareholders describing the transaction. For years six through the year of the longest maturity of the debt, the remaining debt outstanding is evenly amortized.

[e] Incidence of financial distress is the number of LBOs where there was either a bankruptcy filing or a restructuring of the firm's debt where creditors accept less than full compensation for their original debt position by either reductions in stated interest or principal, extensions of debt maturity or grants of equity interests to creditors. The relation between type of controlling investor and incidence of financial distress is tested using a Chi-square test.