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The effect of change-in-control covenants on takeovers: Evidence from leveraged buyouts

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ABSTRACT

Change-in-control covenants first became commonplace towards the end of the takeover wave in the 1980s. We examine merger and acquisition activity from 1991 to 2006 to see how such covenant protection influences the wealth effects and probability of takeovers. Examining a sample of leveraged buyouts (LBOs) we find bondholders with such covenant protection experience average wealth effects of 2.30% while unprotected bonds experience −6.76% upon the announcement of an LBO. Furthermore, we document that the existence of bondholder change-in-control covenants cuts the firm's probability of being targeted in an LBO in half. We also find that change-in-control covenants reduce the probability of being targeted in non-LBO takeovers, but the effect appears less dramatic.

1. Introduction

Change-in-control (CIC) covenants proliferated in response to the hostile takeover wave of the late 1980s. They were hoped to be particularly effective in deterring the negative wealth effects of LBOs (Warga and Welch, 1993). Crabbe (1991) and Cook and Easterwood (1994) examine the yield spreads and the wealth effects of issuing bonds with such protection. While their evidence is consistent with the notion that CIC covenants effectively deter LBOs, little direct evidence exists. We fill this gap in the literature by examining the effect of CIC covenants on takeover activity during the period from 1980 through 2006, which includes two recent LBO takeover waves as well as one in the 1980s.

We explore the influence of CIC covenants in two ways. First, we examine whether CIC covenants indeed protect bondholders in the event of an LBO. If CIC covenants are effective, we expect less negative bond returns around LBOs for bonds with CIC covenants. Second, we examine whether CIC covenants deter LBOs in the first place. If CIC covenants are effective in protecting bondholders *and* private equity firms view expropriation of wealth from bondholders as an important source of gains in LBOs, then we would expect CIC covenants to lower the probability a firm will be targeted for an LBO.

We find that, like the experience documented for the 1980s by Warga and Welch (1993), bondholders suffer negative wealth effects to LBOs. The mean abnormal return across all bond issues in our sample is −4.9%, statistically different from zero. However, this mean masks significant cross-sectional variation attributable to CIC covenants. For the sub sample of bonds without CIC protection, the mean abnormal return is −6.8%. In contrast, the mean for bonds with CIC covenant protection is 2.3%. The difference between the two samples of −9.1% is significant at the 1% level. On this basis, the covenant protection seems highly effective in protecting bondholders against expropriation, and might actually lead to bondholder gains in these transactions, as they typically receive 101% of face value plus accrued interest.

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As noted earlier, if private equity firms view expropriation of wealth from bondholders as a source of gain in LBOs *and* covenant protection mitigates such expropriation, we would expect LBO targets to have a lower incidence of CIC protection. Indeed, among our sample of LBO targets during the recent wave, 41% have change-in-control covenants, compared to 57% for a sample of non-LBO control firms. This difference of 16% is statistically different from zero. We next estimate a logit regression of the probability of being an LBO target. After controlling for other determinants, we find that firms without change-in-control covenants are twice as likely to be targeted as firms without such covenants. We also find that the probability of other types of takeovers (non-LBO acquisitions and mergers) is negatively related to the presence of covenant protections, though the relation is weaker than it is for LBOs. Billett et al. (2004) find that bondholders typically do not suffer in regular takeovers, and often gain. Nevertheless, protective covenants also seem to deter regular takeovers, because bondholders might exercise their right to be paid off even if they are not necessarily worse off from the transaction.

To look at the influence of CIC covenants, we also need to identify and control for other changes in the private equity market and the structure of deals that might have occurred. For example, LBO deals in the 1980s stereotypically involved hostile bids financed by massive debt loads. Targeted firms in this wave of LBOs tended to be high cash producers with significant room for operating/management improvement (Opler and Titman, 1993). Anecdotal evidence regarding the more recent wave of private equity deals suggests that some of their characteristics have changed. The recent wave does not appear to be associated with hostile raiders and embittered target managers. A *Wall Street Journal* article dated 1/3/2007 comparing the eighties to the recent LBO wave states "Perhaps the most surprising change? KKR is no longer the 'barbarian at the gate'", suggesting management is much less resistant to LBO inquiries. While LBOs still rely heavily on junk bond financing, they appear to use less of it. In the same article George Roberts, of the private equity firm KKR, states that deals in the 1980s were financed with 93% debt and 7% equity, compared to current deals which are 67% debt and 33% equity. Perhaps this is not surprising given that around 27% of the debt issues associated with LBOs in the late 1980s ended up in default (Kaplan and Stein, 1993).

Along these lines we document that relative to the 1980s, the more recent LBO wave is characterized by less bidder competition, proportionally fewer hostile deals, and smaller toeholds. Like Opler and Titman (1993), we document that LBO firms in the 1980s had high cash flow and low market-to-book (M/B) ratio. We further find that LBO firms in the recent decade exhibit similar tendencies, although the standard deviations of cash flow, M/B ratio and other firm characteristics suggest a much greater assortment of firms undergo LBOs in the recent wave. These results suggest that LBO targets during both periods were plagued by overinvestment problems, and mitigating these problems via higher leverage is an important motivation.

The rest of the paper proceeds as follows. The next section reviews related literature. Section 3 describes our sample. Section 4 discusses empirical results. Finally, Section 5 summarizes and concludes.

2. Literature review

Public ownership is traditionally viewed as an efficient mechanism for providing access to the capital market and promoting better management. With a surge of leveraged buyouts in the 1980s, the weakness of public corporations became apparent. Jensen (1989) suggests that the public company had outlived its usefulness and the emergence of private equity provides a new and powerful model of management. The natural question is: What is the source of wealth gain in going-private transactions?

Kaplan (1989a) focuses on tax benefits as the source of wealth gains in LBOs in the 1980s. He estimates the tax benefits to be between 21% and 72% of the premium paid to the target firm shareholders. However, it is unlikely that tax shields alone motivate LBOs, because firms took on more debt than was necessary to eliminate their taxable earnings (Opler, 1992). Lehn and Poulsen (1989) argue that LBOs are motivated by the gains from realigning incentive problems, particularly those associated with free cash flow. In support of this argument, they find that firms with high free cash flow are more likely to go private. Similarly, Opler and Titman (1993) find that firms with high cash flow and low Tobin's *q* are more likely to become LBO targets, suggesting that LBOs are used to curb overinvestment arising from free cash flow. Furthermore, Kaplan (1989b) reports a significant increase in operating performance following going-private transactions, which he attributes to better incentive alignment between executives and shareholders.

The discussion above suggests that the gains to private acquirers in LBOs stem from various types of synergies that enhance the total value of the LBO target. Shleifer and Summers (1988) conjecture instead that the gains to private acquirers come at the expense of pre-buyout bondholders. Consistent with this conjecture, several studies, including Asquith and Wizman (1990), Cornett and Travlos (1993), and Warga and Welch (1993), document a statistically significant bondholder loss upon LBO announcements in the 1980s. For example, Warga and Welch report that pre-existing target bondholders suffered significant losses averaging approximately 7%.[1]

There are also studies that examine bondholder wealth effects in mergers and acquisitions in general. Billett et al. (2004) examine the wealth effects to target bondholders in transactions that involve both a publicly traded target and acquirer. They document that target bondholders gain 1.09% on average. They further show that target bondholder gains are much larger when

[1] There is also evidence that bondholders do not suffer in LBOs. Marais et al. (1989) examine the abnormal returns to 33 bond issues for LBO transactions from 1974 to 1985. They find the average abnormal return for these straight bonds is negative, but very close to zero (−0.00 is the reported figure) and statistically insignificant. However, the data they use might not be as informative as that used by Warga and Welch (1993). Marais et al. (1989) use bond prices from the *Wall Street Journal* and compute abnormal returns by subtracting the overall Dow Jones Bond Index. As noted by Warga and Welch, the *Wall Street Journal* reported prices come from the NYSE. The bond trades on the NYSE are typically small trades by individual investors. The more liquid market is between large dealers. Thus, using prices from Lehman Brothers, the largest dealer in corporate bonds at the time, Warga and Welch find the average abnormal return (computed using a rating and maturity matched index) is far more negative than that documented in prior studies.

the bonds are below investment grade (4.30% on average). Interestingly, mergers between publicly traded companies provide evidence of bondholder coinsurance effects in contrast to the expropriation effects found in the LBO literature, possibly because the change in leverage and the frequency of bond rating downgrades associated with mergers is far less dramatic than that in LBOs.

Billett et al. (2004) also note that the positive target bondholder wealth effects associated with public mergers is only found in the 1990s. They posit that the increased use of CIC covenants in the 1990s, resulting from expropriation of bondholder wealth around LBOs in the 1980s, could contribute to this finding. While they exclude LBOs from their sample, their findings suggest that bondholder wealth effects from LBOs will be more positive (less negative) in the 1990s and much more so in the case of CIC protection.

A number of studies explore the rise and use of change in control covenants. Using a sample of bond issues between November 1988 and December 1989, Crabbe (1991) reports that the use of such covenants reduces the yield by 24–30 basis points. Furthermore, Cook and Easterwood (1994) report that a firm's existing bonds tend to increase in value upon the issuance of new bonds with CIC covenants. Yet, it is not clear from extant literature whether CIC covenants are effective in mitigating expropriation of bondholders around LBOs. If so, they might also deter takeovers that rely on expropriation as a source of gain for the shareholders.

The upsurge in LBOs in the 1990s gave rise to new attention in the popular press and academia. Oxman and Yildirim (2006) observe a decreasing premium over time and attribute this to a change in LBO fundamentals. Bargeron et al. (2008) compare the announcement gain to target shareholders in the LBO transactions with other acquisitions by public buyers and conclude that the higher premium paid by public bidders is due to the lower inside ownership in acquiring firms.

Guo et al. (forthcoming) examine the post-buyout operating performance and observe a significant positive return to pre-buyout capital with a relative small cash flow gain. They find that the value creation in the LBO transactions is still positively related to the tax benefit, better management incentives and the reduction in agency cost due to more monitoring. Mehran and Peristiani (2006) find that a large fraction of the companies that went private from 1990 to 2004 were fairly young as public firms. They argue that these young firms are unable to fully enjoy the benefits of public ownership because of their failure to attract a critical mass of security analyst coverage and investor interest.

3. Data construction

We collect our sample of U.S. LBO targets from the Securities Data Company's (SDC) mergers and acquisition database over the period 1980–2006. Our sample includes all completed deals identified by SDC as leveraged buyouts, going private transactions, or management buyouts. We require LBO target firms to be listed on the NYSE, AMEX, or NASDAQ exchanges and have price information prior to the transaction in the Center for Research in Securities Prices (CRSP) database. We also require that the firm have accounting information available from COMPUSTAT and market capitalization in excess of $100 million (in 2006 dollars) one year prior to the buyout. Because some private acquirers make a series of stake purchases before the final buyout, we keep those deals where the acquirer's ownership is less than 50% before the transaction and 100% after the transaction. We find that some target firms remain public even though they are identified as having undergone an LBO by SDC. To ensure that the observations in our sample are indeed LBOs, we manually check all target firms that are not delisted in CRSP within one year after the announcement and eliminate those that are not taken completely private. The above criteria result in a final sample of 407 deals. To examine the effect of CIC covenants, we obtain covenant information for our sample from FISD. For those bond issues with missing covenant information on FISD, we hand-collect the CIC covenants from the debt issue prospectus (mainly SEC Form 424) on EDGAR. Among 407 observations, 80 have CIC covenant information.

We also construct a benchmark sample to compare with our LBO sample. In particular, for each firm-year in our LBO sample, we identify a benchmark sample of firm-years that meet the following criteria: (i) the firm is listed on Compustat and CRSP, (ii) the

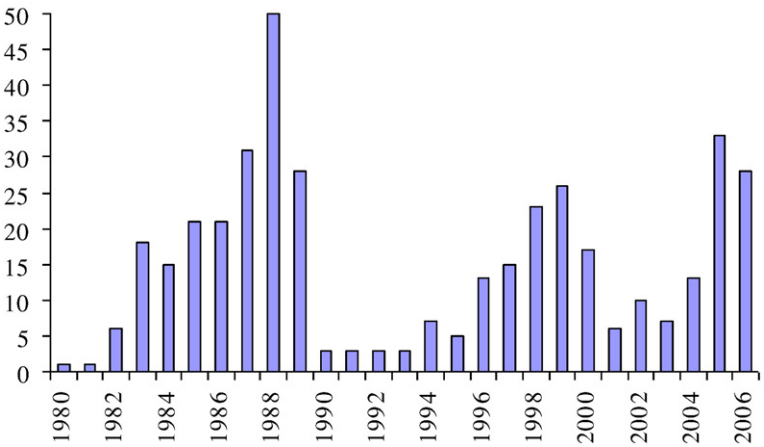

Fig. 1. Yearly distribution of LBO deals. The figure displays the number of LBO deals in each year from 1980 to 2006 for the sample of 407 LBO deals.

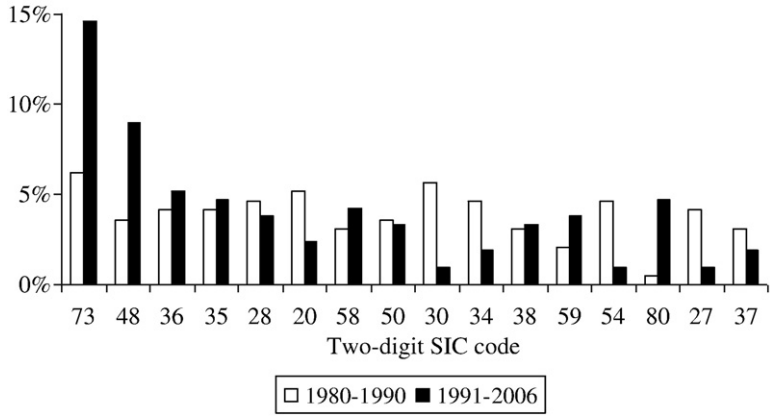

Fig. 2. Industry distribution of LBO deals. The figure displays the distribution of LBO deals across the 16 two-digit SIC codes that have at least 10 observations.

firm matches the industry of the LBO firm, (iii) the year matches the year of the LBO, (iv) the market capitalization exceeds $100 million in 2006 dollars, and (v) the firm was not acquired in the year of interest. The benchmark sample consists of 11,328 firm-year observations across 3434 non-merger target firms. Among these firms, 571 firms have CIC covenant information.

We construct another benchmark sample of firms that were targeted in non-LBO takeovers. We apply similar criteria as above except that we replace criterion (v) with a requirement that the benchmark firm was acquired in a regular takeover in the year of interest. This benchmark sample consists of 2294 firms. Among these firms, 559 firms have CIC covenant information.

Fig. 1 plots the distribution of LBO deals across the sample period from 1980 to 2006. The plot shows three LBO waves: the first occurred in the late 1980s, the second accompanied the stock market boom of the mid-late 1990s and ended with the burst of tech bubble in 2000, and the most recent wave started in 2004 and has just recently slowed down because of the credit crisis in the sub-prime mortgage market. The number of observations in the last two waves is significantly smaller than in the first wave, and the gap between the last two waves appears less distinct. Thus, for the purposes of our analysis, we combine the last two waves into one.

We also investigate the industry distribution of our sample. Fig. 2 shows the distribution of LBO deals across the 16 two-digit SIC codes that have at least 10 observations. Comparing the distributions for 1980–1990 and 1991–2006, we find that the LBO deals are more evenly distributed across industries in the 1980s than in the recent period. Most notably, the fractions of LBO deals in SIC code 7300–7399, Business Services (including computer software), and SIC code 4800–4899, Communications, were among the highest during 1980–1990 at 6% and 4%, respectively, and their fractional representation more than doubled to 15% and 9%, respectively, in the 1991–2006 sample. According to Dealogic, nearly half of the $37.5 billion in leveraged buyouts during the first quarter of 2005 took place in the tech and telecom sectors. Jesse Reyes, head of private equity research and consulting firm Reyes Analytics, said that tech is a great place for opportunities, much like private equity firms looked at the manufacturing industry in the 1980s.[2]

4. Empirical results

4.1. Firm and deal characteristics

Panel A of Table 1 displays firm characteristics of LBO targets, regular takeover targets, and firms that are not targeted. Both types of target firms tend to be smaller, but there are otherwise only modest discernible differences in these univariate statistics. Panel B shows bond characteristics for the same classifications of firms. Both types of target firms are less likely to have CIC covenants than other firms. The fraction of LBO targets with CIC covenants is 41%, the fraction for regular takeover targets is 44%, and the fraction for non-takeover targets is 57%. This is the first piece of evidence that CIC covenants reduce the probability of being targeted. The fraction of target firms with convertible debt is also lower. This fraction is 38% for both types of takeover targets and 44% for other firms.

Next, we compare firm characteristics (panel C and D) and deal characteristics (panel E) between the two subperiods in our sample (1980–1990 and 1991–2006). Panel C shows that recent LBO targets have significantly higher growth opportunities, as indicated by the market-to-book ratio, but lower operating performance than earlier targets. The mean log market-to-book ratio increased from 0.34 in the 1980s to 0.84 in the recent decade, and the mean return on assets (ROA) declined from 12% to 10%. Some of the decline in ROA and increase in market-to-book is likely due to a temporal trend in the entire population of firms, and we control for this trend in our later comparison of the LBO firms to the benchmark sample. There is also some evidence that debt

[2] Barbarians at the tech gate, CNN Money, April 2005.

Table 1
Descriptive statistics.

	LBO target		Regular takeover target		Non-takeover target	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Firm characteristics among LBO target firms, regular takeover target firms and non-takeover target benchmark firms						
Total assets	4115.694	1203.345	5497.820	1742.784	8621.630	2070.134
Log (total assets)	7.348	7.093	7.600	7.463	7.686	7.635
Log (M/B)	0.647	0.553	0.885	0.760	0.711	0.741
Book leverage	0.387	0.325	0.387	0.361	0.361	0.330
ROA	0.105	0.106	0.059	0.096	0.060	0.084
Free cash flow	0.079	0.066	0.062	0.069	0.013	0.067
Long-term leverage	0.334	0.291	0.350	0.317	0.327	0.296
No. of observations (firms)	80	80	559	559	571	571
Panel B: Bond characteristics among LBO target firms, regular takeover target firms and non-takeover target benchmark firms						
Covenant dummy	0.413	0.000	0.442	0.000	0.573	1.000
Covenant fraction	0.255	0.000	0.304	0.000	0.343	0.333
Debt with covenant protection/total assets	0.153	0.000	0.167	0.000	0.201	0.078
Convertible debt dummy	0.375	0.000	0.379	0.000	0.443	0.000
Convertible debt fraction	0.335	0.000	0.292	0.000	0.347	0.000
Convertible debt/total asset	0.153	0.000	0.120	0.000	0.193	0.000
No. of observations (firms)	80	80	559	559	571	571

	All LBOs		1980–1990		1991–2006		Difference	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel C: LBO target firm characteristics across two subperiods								
Total assets	4115.69	1203.34	6151.73	2158.82	2827.59	954.82	−3324.13	−1204.01***
Log (total assets)	7.35	7.09	7.85	7.68	7.03	6.86	−0.82***	−0.82***
Log (M/B)	0.65	0.55	0.34	0.18	0.84	0.81	0.50***	0.63***
ROA	0.11	0.11	0.12	0.11	0.10	0.11	−0.02	0.00
Free cash flow	0.08	0.07	0.06	0.05	0.09	0.08	0.04**	0.03**
Book leverage	0.39	0.33	0.40	0.35	0.38	0.32	−0.03	−0.03
No. of observations (firms)	80	80	31	31	49	49		

	All LBOs	1980–1990	1991–2006	
	Standard deviation	Standard deviation	Standard deviation	Ratio of standard deviations
Panel D: Comparison of the standard deviation of LBO target firm characteristics between two subperiods				
Total assets	9020.56	12447.19	5720.01	0.46***
Log (total assets)	1.28	1.21	1.23	1.01
Log (M/B)	0.65	0.50	0.66	1.32
ROA	0.08	0.09	0.07	0.83
Free cash flow	0.09	0.06	0.10	1.72***
Book leverage	0.24	0.18	0.27	1.46**
No. of observations	80	31	49	

	All LBOs		1980–1990		1991–2006		Difference	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel E: LBO deal characteristics across two subperiods								
Months between announcement date and completion date	5.66	4.53	6.62	5.87	5.05	4.23	−1.57	−1.63*
Months between first bid and announcement date	0.86	0.00	1.12	0.00	0.70	0.00	−0.42	0.00
No. of competing bidders	1.15	1.00	1.29	1.00	1.06	1.00	−0.23	0.00*
Competing bidder dummy	0.09	0.00	0.16	0.00	0.04	0.00	−0.12*	0.00*
Toehold	9.93	0.00	17.32	0.00	5.40	0.00	−11.92**	0.00**
LBO deal completion ratio	0.74	0.74	0.64	0.61	0.79	0.80	0.15***	0.19***
Friendly deal dummy	0.92	1.00	0.93	1.00	0.92	1.00	−0.01	0.00
No. of observations	80	80	31	31	49	49		

The table presents descriptive statistics for 80 LBO target firms, 559 regular takeover target firms, and 571 non-takeover target firms between 1980 and 2006. We collect our sample of LBO targets and regular takeover target firms from the Securities Data Company's (SDC) mergers and acquisition database. We construct our benchmark non-takeover targets using the following matching criteria: i) they match the industry of the takeover firms (LBOs and regular takeovers), (ii) the year matches the year of the takeover, and (iii) the firm is not acquired in the year of interest. We require all firms to be listed on the NYSE, AMEX, or NASDAQ exchanges, have price information prior to the transaction in the Center for Research in Securities Prices (CRSP) database, have accounting information available from COMPUSTAT, have market capitalization in excess of $100 million (in 2006 dollars) one year prior to the year of interest, and have available bond covenant information from FISD. Panel A shows the firm characteristics and panel B shows CIC covenant characteristics. Book leverage is the book value of debt scaled by total assets. M/B is the ratio of market value of equity to the book value of equity. Free cash flow is (operating income − interest − dividend − tax) scaled by total asset. ROA is EBIT scaled by total assets at the beginning of the year. Covenant dummy is equal to one when the firm has at least one issue with CIC provision in the year of interest. Covenant fraction is the percentage of bond issues that have CIC provision. Debt with covenant protection/total assets is the total amount of debt with CIC provision divided by the total assets. Convertible dummy is equal to one when the firm has at least one convertible bond issue in the year of interest. Convertible debt fraction is the fraction of all bond issues that are convertible. Convertible debt/total asset is the total amount of convertible debt divided by total assets.
***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 2
Bond issue characteristics over time.

	All		1980–1990		1991–2000		2001–2006	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Bond rating	10.398	13.000	4.195	0.000	11.186	13.000	11.033	13.000
Junk dummy	0.495	0.000	0.799	1.000	0.452	0.000	0.471	0.000
Covenant dummy	0.325	0.000	0.130	0.000	0.313	0.000	0.407	0.000
Convertible dummy	0.103	0.000	0.160	0.000	0.071	0.000	0.139	0.000
Time to maturity	12.788	9.989	15.584	12.030	13.008	9.992	11.508	9.534
Coupon rate	7.452	7.375	9.318	9.625	7.766	7.625	6.327	6.126
Issue proceeds/total asset	0.190	0.044	0.140	0.031	0.250	0.042	0.120	0.051
Yield to maturity	0.028	0.014	0.026	0.015	0.030	0.020	0.025	0.010
Yield spread (%)	1.424	1.080	0.384	1.052	1.475	1.011	1.852	1.288
Premium	0.982	0.999	0.971	1.000	0.984	0.999	0.984	0.999
No. of issues	22,692	22,692	2393	2393	12,763	12,763	7536	7536

The table presents descriptive statistics for 22,692 bond issues from the period 1980–2006 as well as three sub-periods: 1980–1990, 1991–2000, and 2001–2006. We include all issues from FISD with non-missing data for change-in-control provisions. All variables are obtained from FISD, and we do not require any data availability on Compustat, CRSP, or SDC. The junk dummy is equal to one if the bond is rated below BBB and zero otherwise.

ratios of LBO targets have declined over time. For example, the mean total debt ratio (using the book value of debt and the market value of equity) declined from 0.40 to 0.38.

Panel D presents the standard deviation of the firm characteristics. Most firm characteristics, including leverage, free cash flow, and the market-to-book ratio, are more dispersed in the recent decade than in the 1980s. These results support the notion that the buyout firms are pursuing a greater variety of targets, perhaps because the obvious LBO candidates (the "low-hanging fruit"), e.g., those with high cash flow and poor growth opportunities, have gradually disappeared as they are acquired or take actions to make themselves less vulnerable.

A commonly cited difference between LBO waves is that hostile LBOs were more prevalent in the 1980s. This often resulted in multiple bidders competing with one another for the target. Management often became a competing bidder in an attempt to maintain control of the company. In panel E, we use several measures to examine the competition among potential buyers for the LBO targets. We observe that the percentage of deals involving multiple bidders has decreased significantly from 16% to 4%. Similarly, the average number of competing bidders has decreased significantly from 1.29 to 1.06. A caveat is that the number of competing bidders is obtained from SDC and only captures the number of publicly disclosed competing bidders. According to Boone and Mulherin (2007), public takeover activity is only the tip of the iceberg of actual takeover competition during the 1990s. Many targets are auctioned among multiple bidders even before the takeover intent is first announced. But if the proportion of non-public bidders to total bidders is reasonably constant over time, our results can be interpreted as evidence that competition for LBO targets was more intense in the 1980s.

We also calculate an LBO deal completion ratio, defined as the number of LBO deals that are eventually completed divided by the total number of LBO deals announced within a year. A higher deal completion ratio suggests lower competition and/or lower resistance to deals. As expected, the ratio is lower in the 1980s at 0.64, indicating that 64% of announced LBO deals are completed eventually, than the ratio of 0.79 in the recent decade, and the difference is statistically significant.

In order to increase the probability of success, private buyers in the 1980s often engaged in a series of stake purchases in target firms prior to the final acquisition. Consequently, it took longer for a private buyer to secure a deal. Our results provide evidence that there is significant lower toehold prior to the transactions and fewer months between the announcement date and the completion date in the recent period. Finally, we find that the proportion of friendly deals decreases from 93% in the 1980s to 92% in the recent period, although we recognize that the definition of hostility is fraught with error (Schwert, 2000).

The above evidence suggests that it has become easier to execute LBOs over time in that buyers encounter less competition and less resistance. This could be due to an increasing tendency of buyout firms to co-invest. In 2004, PanAmSat Corporation was bought out by Carlyle, KKR and Providence. SunGard Data Systems, Inc., a financial services software company, was acquired in 2005 by a consortium of seven private equity firms including Blackstone, Goldman Sachs and KKR. The 32.6 billion dollar deal with HCA in 2006 involves Bain, KKR and Merrill Lynch. Such alliances increase financing capability and might reduce competition, which in turn could cut premiums for target shareholders.[3]

Lastly, we examine the overall trend in characteristics for bond issues with available CIC covenant information. Table 2 presents univariate statistics for each of the three decades starting with the 1980s. Note that we only require data on bond issue characteristics from FISD, such that we have 22,692 observations from 1980 to 2006. The fraction of junk bond issues, the average time to maturity, and the average coupon rate have all declined since the 1980s. Most important for our purposes is the trend in the use of CIC covenants. In the 1980s, only 13% of bond issues had CIC covenants, and this fraction rose to 31% in the 1990s and 41% in the current century. Fig. 3 displays the fraction of bond-issuing firms that have CIC covenants in at least one of its issues in a given year. For the years 1985–1987, this fraction is 3% or less, and then it hovers between 13% and 33% during 1989–2006. This

[3] Cao (2008) finds that the premium in club deals is in fact higher than non-club deals. He suggests clubbing among private equity firms signals high quality of targets.

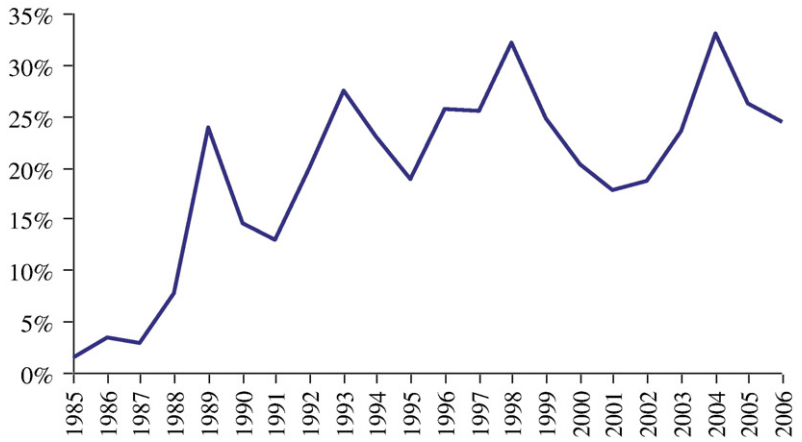

Fig. 3. Use of change-in-control covenants by year. The figure displays the fraction of bond-issuing firms that have change-in-control covenants in at least one of its issues in a given year. The data is from FISD and includes all firms with covenant information.

suggests a striking increase in the use of covenants. The increase is even more pronounced when considering the cumulative effect, given that an increasing number of firms will likely have at least one issue with a CIC covenant, even if their recent issue does not contain a CIC covenant. Our results are consistent with Lehn and Poulsen (1991) who report CIC covenants in 2.6% of bond issues in 1986 and 32.1% of issues in 1989 and Billett et al. (2007) who find that the use of all types of covenants has dramatically increased over time.

4.2. Stock market response to LBOs

We next look at target shareholder excess returns around the LBO announcement date in Table 3. We estimate the excess returns for two windows: the period from 60 days before the first bid (which might precede the LBO announcement in the case of multiple bidders) to three days after the LBO announcement, and the period from 60 days before the first bid to the LBO completion date. The mean returns range from 28.7% to 34.7% during 1980–1990, and from 24.1% to 27.3% during 1991–2006. Thus, it is apparent that shareholders of LBO targets gain significantly during both periods. The decrease in the mean return of between 4.6% and 7.4% further suggests that shareholders of LBO targets gain less during the more recent period. While we are wary of interpreting this temporal decline, it is consistent with lower overall LBO gains to all equityholders involved (i.e., both private equity investors and target shareholders). One possible reason for a lower overall gain could be less expropriation from bondholders, a possibility which we examine more directly below.

4.3. Determinants of being an LBO target

The significantly negative bond returns around LBO announcements documented by Warga and Welch (1993) suggest that bondholder wealth expropriation was prevalent and might have been a motive for the LBO wave in the 1980s. We predict that the higher the pre-buyout debt, the greater the potential for wealth transfer from bondholders, and, therefore, the higher the probability of being acquired. On the other hand, the tax benefit hypothesis proposed by Kaplan (1989a) suggests the opposite. Increasing leverage after LBO deals will increase the tax benefits of debt. Because lower pre-LBO leverage in target firms provides greater excess debt capacity, and, hence, greater potential for creating value from increased tax shields after the transaction, the tax shield hypothesis predicts a negative correlation between the ex ante leverage in target firms and ex post tax benefits.

Table 3
Target shareholder wealth effects.

	1980–1990		1991–2006		Difference	
	Mean	Median	Mean	Median	Mean	Median
60 days before first bid to 3 days after the announcement	28.74%	25.95%	24.13%	23.16%	−4.61%*	−2.79%
60 days before first bid to completion	34.69%	33.25%	27.26%	26.58%	−7.43%**	−6.67%***
Number of observations	195	195	212	212	407	407

The table presents the mean and median abnormal stock return for the LBO target firms surrounding the LBO announcement dates. In this analysis, we do not require data to be available from FISD. All other data requirements are the same as Table 1. The abnormal return is calculated as the difference between the cumulative stock return of the target firm and the cumulative return of value-weighted market return. The announcement date refers to the announcement of the LBO deal in question. In the case of multiple bidders, the first bid refers to the first bid for the target. Otherwise, the first bid is the same as the announcement date. The difference in means *t*-test assumes unequal variances across groups when a test of equal variances is rejected at the 10% level. The significance level of the difference in medians is based on a Wilcoxon sum-rank test. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4
Likelihood of LBO.

	1980–1990		1991–2006		All	
Leverage	0.775		0.959**		0.761***	
	(1.52)		(2.51)		(2.60)	
LT leverage		1.925***		1.383***		1.332***
		(2.62)		(3.12)		(3.78)
ST leverage		−1.383		−0.326		−0.604
		(−1.61)		(−0.48)		(−1.24)
Log (total assets)	−0.101**	−0.078	−0.278***	−0.260***	−0.167***	−0.145***
	(−2.22)	(−1.47)	(−6.06)	(−4.81)	(−5.15)	(−3.81)
Free cash flow	4.124***	3.259**	1.571***	1.291**	1.719***	1.367***
	(4.04)	(2.53)	(3.52)	(2.51)	(4.25)	(2.79)
Log (M/B)	−0.532***	−0.678***	−0.113*	−0.188***	−0.238***	−0.325***
	(−5.64)	(−5.36)	(−1.90)	(−2.68)	(−5.14)	(−5.64)
ROA	−0.234	−0.254	−0.002	−0.001	−0.001	0.00
	(−1.22)	(−1.06)	(−0.88)	(−0.56)	(−0.33)	(0.11)
Intercept	0.934	0.047	0.522	−0.062	−0.066	−0.655
	(0.60)	(0.03)	(0.53)	(−0.05)	(−0.07)	(−0.55)
Industry dummy	YES	YES	YES	YES	YES	YES
Number of observations	2614	2143	7041	5548	9676	8035
Pseudo R^2	0.13	0.14	0.12	0.13	0.11	0.13

The table reports logit regressions of the likelihood of being LBO target firms versus non-merger firms. Non-merger firms match the LBO target firms by industry and year and have a market capitalization greater than $100 million in 2006 dollars. Similar to Table 3, we do not require data availability on FISD, and, thus, we have a sample of 407 LBO observations and 11,328 non-merger benchmark observations. The dependent variable equals one for LBO targets and zero for non-merger firms. Leverage is the total debt with maturity equal to or greater than 5 years scaled by total asset. ST leverage is the total debt with maturity shorter than 5 years scaled by total asset. Other independent variables are defined in Table 1. Heteroscedasticity-robust *z*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

To test these two offsetting effects, we examine the correlation between the likelihood of becoming an LBO target and the firm's leverage ratio, measured as the book value of debt divided by total assets.[4] We also control for other firm characteristics since we have shown in the previous section that several characteristics of LBO targets have changed over time. We run the regressions separately for our two sub-periods (i.e. 1980–1990 and 1991–2006) to see if and how the motivation has changed. All specifications include two-digit SIC code dummy variables to control for industry effects.

Table 4 reports the regression results. We find a positive coefficient on leverage in both sub-periods and for the full sample, but the coefficient is statistically insignificant in the 1980s sub-period. Thus, *ceteris paribus*, LBO targets are generally more levered than non-LBO benchmark firms, suggesting that the wealth expropriation motive dominates the tax benefit motive. To further test the debt expropriation hypothesis, we decompose leverage by maturity, where we define short-term debt as debt with maturity shorter than five years and long-term debt as debt with maturity greater than or equal to five years. Presumably, long-term debt will be more subject to expropriation than short-term debt, because short-term debt will likely be paid off before any of the new debt from the LBO transaction becomes due. The coefficient on long-term debt is positive and statistically different from zero in both sub-periods. In contrast, the coefficient on short-term debt is statistically indistinguishable from zero. Overall, these results suggest that wealth expropriation is an important motive for LBOs in both sub-periods.

Opler and Titman (1993) argue that LBOs create value because they reduce the agency problems in the target firms with unfavorable investment opportunities and relatively high free cash flow. In support of this argument, they find that LBO targets in the 1980s had high cash flow and poor investment opportunities. We find evidence that the motive to reduce agency problems persists into the latest LBO wave. In particular, the coefficient on free cash flow is consistently positive and the coefficient on the market-to-book ratio is consistently negative. However, the absolute values of both coefficients are more than twice as large in the 1980s, suggesting that the effects of free cash flow and growth opportunities are less profound in the recent wave than in the 1980s, which we interpret to mean that LBOs in the 1980s were more likely used as a mechanism to curb overinvestment problems than more recent LBOs.

4.4. Bondholder wealth effects

The regression results provide some evidence that bondholder wealth expropriation was present throughout our sample period. However, the innovation in covenant protection at the end of the 1980s LBO wave might have reduced this expropriation relative to what Warga and Welch (1993) document for the 1980s. To address the issue of expropriation directly, we first examine the determinants of including CIC provisions in a bond issue. We collect the covenant information and issue characteristics directly from the Fixed Investment Securities Database (FISD), which contains detailed information about public debt issues across all rating categories.

[4] We also use industry-adjusted leverage and find results similar to those we report here.

Table 5
Determinants of change-in-control provisions.

	Dependent variable: change-in-control dummy				
	1	2	3	4	5
Junk dummy	3.386***	3.459***	2.609***	2.442***	1.864***
	(35.390)	(34.310)	(21.590)	(8.258)	(5.431)
Time to maturity	−0.004	−0.005	−0.018***	−0.001	0.008
	(−1.070)	(−1.237)	(−3.445)	(−0.0985)	(0.541)
Yield to maturity	0.058***	0.050***	0.282***	0.245**	0.191*
	(3.908)	(3.303)	(8.430)	(2.558)	(1.814)
Industry liquidity		−0.011	0.302	−6.285	−8.820**
		(−0.00991)	(0.255)	(−1.372)	(−2.097)
Convertible dummy			3.205***	4.246***	4.353***
			(15.000)	(7.094)	(6.485)
Log (g (total asset)					−0.605***
					(−4.194)
Free cash flow					−1.147
					(−0.256)
Log (market to book)					−0.384**
					(−2.152)
ROA					−0.958
					(−1.346)
Constant	−6.920***	−6.610***	−9.292***	−3.582***	2.482
	(−8.672)	(−6.860)	(−8.732)	(−2.728)	(1.106)
Industry dummy	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes
R-square	0.46	0.47	0.54	0.56	0.60
No. of issues	8848	8180	8180	1310	1070

The table reports logit regressions of the likelihood of having change-in-control bond covenant for the general bond issue population. We use all bond issues from FISD with non-missing data for change-in-control provisions. We do not require any data on SDC. Requirements on firm level characteristics from Compustat and *G*-index reduces the sample size in models 2–5. The dependent variable equals one if the bond issue has a change-in-control provision in the bond covenant and zero otherwise. The junk dummy is equal to 1 if the bond is rated below BBB and 0 if it is rated above. Time to maturity and yield to maturity are directly obtained from FISD. Industry liquidity is defined as the sum of target firm total assets divided by the sum of total assets in all Compustat firms within the same industry and year. *G*-index is defined as in Gompers et al. (2003). Heteroscedasticity-robust *z*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5 shows the results. Junk bonds (bonds with rating below BBB) are more likely to include CIC covenants, perhaps because firms with relatively lower credit ratings are more likely to be LBO targets. Further, the use of CIC covenants is positively related to yield-to-maturity leverage. Combined with the coefficient on the junk bond variable, these results suggest that riskier issues, as indicated by lower rating and higher yield are more likely to include CIC covenants. This is consistent with the notion that riskier issues are more likely to be expropriated in takeovers, and therefore have a greater need for CIC protection. Finally, the use of CIC covenants is negatively related to the time to maturity. Perhaps firms are reluctant to adopt such a restrictive covenant over long horizons.

We also analyze convertible debt, because convertible debt might be an alternate way for bondholders to share the gain in takeover and might be correlated with the use of CIC covenants. Table 6 shows that there is a strong positive relation between the convertibility feature and CIC covenants in corporate bonds. For example, 72% of convertible debt issues have CIC covenants, whereas only 28% of straight debt issues have CIC covenants. This positive relation is also borne out in the regressions in Table 5.

Next, we investigate the bond price reactions surrounding LBO announcements during the recent decade. For our sample of LBOs from 1994 to 2006, we hand-collect bond price data from Moody's/Mergent Bond Record and also use the most recent bond price data from TRACE.[5] As pointed out by Warga and Welch (1993), it is critical that bond prices used to calculate excess returns are transactions prices and not matrix prices. We only use actual transactions prices. We follow Billett et al. (2004), in computing excess bond returns as the bond's monthly total return (change in price plus accrued interest) minus the monthly total return on an index of bonds with matching rating and maturity. The bond indices are constructed by Lehman Brothers and include nine Standard and Poor's bond rating categories (AAA, AA, A, BBB, BB, B, CCC, CC, and D) as well as long-term and intermediate maturity sub-categories for each rating class. We exclude all convertible bond issues. Because a large portion of target debt is private or unrated, we have a final sample of 49 bond issues from 18 LBO target firms.[6]

Panel A of Table 7 presents our results. The first row in panel A shows that the average bond excess return for all 49 issues is −4.91% and the median is −2.93%, and both are significantly different from zero. Thus, bondholders still suffer a significant loss in the recent decade from LBO transactions, even though it is lower than the mean of −7% that Warga and Welch (1993) find for the 1980s. Because a single firm can have multiple issues, we also compute a weighted average excess return (weighted by bonds

[5] See Bessembinder and Maxwell (2008) for a description of TRACE and its impact on the transparency of corporate bond markets.
[6] For comparison, Warga and Welch (1993) report results on 43 bond issues from 16 companies. Our sample is concentrated in the 2000 s with one bond from 1994, three from 1998, and 45 from the years after 2000.

Table 6
Relationship between convertible debt and change-in-control provision.

	CIC	Non-CIC	All issues
Straight debt	5700 (28.00%)	14,663 (72.00%)	20,363 (100%)
Convertible debt	1668 (71.62%)	661 (28.38%)	2329 (100%)

This table reports the number (percentage) of straight bond and convertible bond issues that have CIC provisions.

Table 7
Target bondholders' wealth effects.

	Mean	Median	*N*
Panel A: Entire sample			
Issues	−4.91***	−2.93***	49
Firm level (using weighted average across issues within each firm)	−1.67	−0.44	18
Firm level (using median across issues within each firm)	−1.79	−0.52	18
Panel B: Subsamples by the use of change-in-control covenants			
Issues with covenant	2.30	1.91	10
Issues without covenant	−6.76***	−5.45***	39
Difference	9.06***	7.36***	

The table presents the mean and median abnormal bondholders' return of LBO target firms. Bond abnormal returns are collected from Moody's/Mergent annual books. The covenant information is obtained from FISD. We require that firms have information both on Moody's/Mergent Bond Record and FISD. Bond CAR is the abnormal bondholders' return at issue level (49 bond issues in 18 firms). The second and the third rows show the abnormal bondholders' return at firm level. In the second row, the bond abnormal return for each firm is calculated as the weighted average of multiple bond issues within this firm. In the third row, the bond abnormal return for each firm is the median bond issue return within this firm. The difference in means *t*-test assumes unequal variances across groups when a test of equal variances is rejected at the 10% level. The significance level of the difference in medians is based on a Wilcoxon sum-rank test. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

outstanding for each issue) and median excess return for each firm. These mean and median excess returns across the firms are insignificant in both cases. When we compare our results to those in Warga and Welch (1993), expropriation appears less pronounced during the recent period than during the 1980s.

If CIC covenants are effective in protecting bondholders from expropriation in LBOs, we expect to see that bond issues with covenants suffer smaller losses around LBO announcements than do bond issues without covenants. If so, the increased use of covenants could also explain the temporal trends in bondholders' losses. Thus, we partition our sample by the existence of a CIC covenant, and analyze the bondholder wealth effects separately for the two subsamples.

Table 8
Determinants of bondholders' wealth effects.

	Dependent variable: bond abnormal return	
Covenant dummy	7.272***	5.768***
	(2.78)	(2.95)
Investment grade dummy	1.900	−2.685
	(0.99)	(−1.15)
Remaining maturity	−0.371***	−0.390***
	(−3.11)	(−3.07)
Coupon rate	0.416	0.025
	(0.92)	(0.07)
Amount of bonds outstanding	−0.008**	−0.010***
	(−2.37)	(−2.92)
Log (total assets)		0.832
		(0.98)
Log (M/B)		−4.328***
		(−2.93)
Free cash flow		10.31
		(0.43)
ROA		−32.364*
		(−2.00)
Intercept	−4.436	−0.425
	(−1.08)	(−0.05)
No. of observations	47	46
Adjusted *R*-squared	0.47	0.63

The table reports determinants for the bond abnormal return in the LBO target firms. Covenant dummy equals one when there is at least one bond issue that has change-in-control covenant within a specific firm. Investment grade dummy equals one when the bond rating is not lower than BBB- and zero otherwise. Remaining maturity is the number of years between the maturity date and the announcement date. Both the coupon rate and amount of bond outstanding are collected from FISD. Other independent variables are defined in Table 1. Heteroscedasticity-robust *t*-statistics are reported in parentheses under the estimates. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 9
Determinants of yield spreads.

	1		2	
	Stage 2	Stage 1	Stage 2	Stage 1
	Yieldspread	Covenant dummy	Yieldspread	Covenant dummy
Time to maturity	0.055	−0.016***	−0.153	−0.023***
	(0.287)	(−6.002)	(−1.087)	(−7.930)
Coupon rate	0.801***		0.475	
	(2.773)		(1.373)	
Issue proceeds/total asset	1.746		0.839	
	(1.079)		(0.573)	
Book leverage	−8.931	0.874***	0.539	1.254***
	(−1.184)	(6.682)	(0.111)	(9.813)
Log (total asset)	3.946	−0.349***	0.056	−0.262***
	(1.615)	(−27.00)	(0.059)	(−20.57)
Log (market to book)	−0.283	0.004	−0.373	−0.068***
	(−0.260)	(0.153)	(−0.380)	(−2.756)
ROA	0.238	−0.530***	−0.608	−0.477***
	(0.194)	(−4.256)	(−0.618)	(−3.898)
Free cash flow	3.389	−0.376	−5.026	0.180
	(0.298)	(−1.150)	(−0.531)	(0.557)
Industry liquidity (IV)		0.661		
		(1.324)		
Convertible debt dummy (IV)				1.130***
				(19.360)
Lambda/inverse Mills ratio	−10.872		4.197	
	(−1.171)		(1.373)	
Constant	−16.618**	1.925***	−3.869	0.971***
	(−1.995)	(16.340)	(−0.588)	(7.965)
No. of issues	4962	4962	5598	5598

The table reports the Heckman two-stage models for the determinants of yield spreads for general bond populations. We use bond issues from FISD with non-missing data for change-in-control provisions. We do not require any data from SDC. In the first stage logit regression, the dependent variable is a covenant dummy that equals 1 if the bond issue has a CIC provision and 0 otherwise. In the second regression, the dependent variable is the yield spread of the bond issue. The inverse Mills ratio from the first stage regression is included as one of the independent variable in the second stage regression.

Panel B of Table 7 reports the results. Upon LBO announcements, the mean (median) excess return for bond issues with covenant protection is +2.30% (+1.91%), while the mean (median) excess return for bond issues without covenant protection is −6.76% (−5.45%). The differences between the means and medians (9.06% and 7.36%, respectively) are both economically and statistically significant. Incidentally, the statistics for bond issues without covenant protection are very close to what Warga and Welch (1993) find for LBOs in the 1980s when there was very little covenant protection. Thus, it seems like the decline in bondholder expropriation over time is primarily due to the introduction of protective covenants. Further, the large variation in bondholders' responses across bond issues is at least partially attributable to differences in the use of covenant protection.

To control for other possible determinants of bond excess returns, we regress the bond returns against a dummy variable that indicates the presence of CIC covenants and control variables. We control for both issue characteristics and firm characteristics in our regressions. Table 8 shows the results. The significant positive effect of covenant protection on bondholders' wealth remains strong and robust. *Ceteris paribus*, a bond issue with covenant protection is associated with an excess return upon LBO announcements that is about 5.8% higher than that for a similar bond issue without protection.

We also find that the remaining maturity, defined as the number of years from announcement date to the expiration date of the bond issue, has a negative impact on bond returns. This is consistent with the expropriation hypothesis, because bond issues that mature soon are less likely to be exposed to the increased default risk following LBOs and therefore less likely to be expropriated by private acquirers. This result also supports our findings reported in Table 4, where we found the likelihood of an LBO to be increasing in long-term debt but not in short-term debt.

As an alternative analysis of the wealth effects for bondholders, we examine the effect of CIC covenants on bond yield spreads using a Heckman two-stage model. Table 9 reports that CIC covenants are associated with higher yield spreads. It is unlikely that, *ceteris paribus*, CIC covenants are detrimental to bondholders, thus driving down the bond prices. Rather, we interpret these results to mean that CIC covenants are incorporated in bonds that bondholders view as particularly risky, and although the covenants reduce the risk, it is still higher than other bonds with the same measurable characteristics.

4.5. Change-in-control bond covenants and the likelihood of being LBO targets

With effective covenant protection, bondholders can gain (or at least avoid losing) in LBO deals, thereby reducing the would-be wealth gain to the acquirer and target shareholders. Our evidence so far supports the notion that CIC covenants indeed eradicate bondholder

Table 10
CIC covenants and the likelihood of LBOs.

Dependent variable: 1 if LBO target, 0 if not a takeover target				
	1	2	3	4
Leverage	0.963	0.665	1.211*	0.901
	(1.391)	(0.925)	(1.757)	(1.253)
Debt with covenant protection/total assets	−2.560***	−1.002	−3.106***	−1.582*
	(−2.820)	(−1.132)	(−3.648)	(−1.744)
Covenant dummy		−0.941**		−0.874**
		(−2.388)		(−2.178)
Convertible debt/total assets			1.146**	0.970**
			(2.342)	(2.065)
Investment grade dummy	−0.881*	−1.065**	−0.862*	−1.035*
	(−1.775)	(−2.058)	(−1.698)	(−1.955)
Log (total assets)	−0.129	−0.089	−0.068	−0.04
	(−1.063)	(−0.752)	(−0.550)	(−0.334)
Free cash flow	2.278**	1.908*	3.044***	2.632***
	(2.358)	(1.950)	(3.182)	(2.644)
Log (M/B)	−0.098	−0.073	−0.13	−0.099
	(−0.804)	(−0.606)	(−1.085)	(−0.834)
ROA	0.101	0.123	0.076	0.096
	(0.304)	(0.310)	(0.235)	(0.253)
Constant	20.032***	19.970***	19.392***	19.426***
	(13.480)	(13.000)	(11.660)	(10.900)
Industry dummy	Yes	Yes	Yes	Yes
Number of observations	516	516	516	516
Pseudo R^2	0.16	0.17	0.17	0.18

The table reports logit regressions of the likelihood of being LBO target firms versus non-merger firms. The dependent variable equals one when firms are LBO targets and zero when they are non-merger firms. Covenant dummy is equal to one if there is at least one bond issue with covenant protection within a specific firm and zero otherwise. Convertible debt dummy is equal to one if there is at least one bond issue that is convertible and zero otherwise. Investment grade dummy equals one when the bond rating is not lower than BBB- and zero otherwise. Heteroscedasticity-robust *z*-statistics are reported in parentheses under the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

losses on average, and turn them into modest gains. Thus, if private equity investors consider bondholder expropriation to be an important determinant of their overall gain from LBOs, they will be more reluctant to target firms with covenant-protected bond issues.

In this section, we re-examine the likelihood that a firm is targeted in an LBO transaction while adding the impact of CIC covenants. We require that both LBO firms and non-LBO benchmark firms have covenant information on FISD.[7] We use two covenant variables: a covenant dummy that captures whether any of the firm's bonds have CIC covenants, and the amount of the covenant-protected debt scaled by total assets. Covenant-protected leverage might better reflect the economic consequence of acquiring a firm with covenant protection than the covenant dummy if covenants in one bond issue have little effect on sibling bond issues. Table 10 shows that, controlling for other factors, the scaled value of covenant-protected debt has a significantly negative impact on the probability of becoming an LBO target. This is in stark contrast to the positive coefficient we see for leverage in general. Moreover, the magnitude of the coefficient on the covenant protected debt is roughly twice that of leverage in general (in the first and third columns) suggesting that covenant protected debt not only removes the attractiveness of levered targets, but actually makes the total leverage effect negative. Thus, it appears acquirers consider the CIC covenants when seeking LBO targets and actively avoid potential targets where covenants limit gains from expropriation.

Interestingly, when we add the covenant dummy to the regression specification, the coefficient on the covenant dummy is negative and statistically significant as predicted, whereas the coefficient on the value of covenant-protected debt is still negative but no longer statistically significant.[8] Thus, what apparently matters to acquirers is whether a potential target has any CIC covenants, and not so much the amount of covenant protected debt. There are at least two implications of these results. First, a firm might be able to reduce the probability of being targeted by introducing covenants to just one of its bond issues. Second, bonds without CIC covenants might be partially protected from expropriation if other bonds by the same firm have such covenants, as the probability of a takeover (and, hence, expropriation) is reduced. Thus, the value of unprotected bonds will depend on the presence of covenants in other bonds. Of course, if the firm is nevertheless targeted, the bondholders in unprotected bonds will fare worse than bondholders in protected bonds, so the values of protected and unprotected bonds will differ.

We also find that the deterrent effect of CIC covenants is economically significant. In particular, when a firm adds covenant protection to one of its bond issues the chance of being targeted in an LBO is roughly cut in half (from 15.8% to 7.8%).[9] If firms with

[7] For this analysis, we do not require bond price information surrounding the LBO announcement which increases the sample size. We describe the selection of the benchmark firm sample in the Data section above.

[8] While not reported, including a covenant dummy variable in the absence of the scaled covenant protected debt variable results in a significantly negative coefficient on the dummy variable.

[9] However, given or proportion of LBOs to non-LBO benchmark firms might not represent the true proportions in the general population of firms, it is more appropriate to look at the relative increase than the absolute probabilities (see Palepu, 1986).

Table 11
Multinomial logit regressions of the likelihood of LBOs and regular takeovers versus no takeovers.

	Dependent variable: 1 if LBO target, 2 if regular takeover target, 0 otherwise							
	1		2		3		4	
	LBO target	Regular takeover target	LBO target	Regular takeover target	LBO target	Regular takeover target	LBO target	Regular takeover target
Leverage	1.311*	0.985***	1.250*	1.000***	1.566**	0.882**	1.509**	0.904**
	(1.788)	(2.601)	(1.671)	(2.579)	(2.152)	(2.351)	(2.039)	(2.324)
Debt with covenant protection/total assets	−2.592***	−0.592**	−1.460	0.140	−2.915***	−0.329	−1.935**	0.381
	(−3.001)	(−2.077)	(−1.455)	(0.521)	(−3.658)	(−1.244)	(−2.017)	(1.242)
Covenant dummy			−0.880**	−0.860***			−0.781**	−0.862***
			(−2.239)	(−4.759)			(−2.004)	(−4.689)
Convertible debt/total assets					0.981*	−0.700**	0.884*	−0.697**
					(1.948)	(−2.284)	(1.780)	(−2.409)
Investment grade dummy	−0.776*	−0.522***	−0.92*	−0.69***	−0.739	−0.540***	−0.874*	−0.712***
	(−1.686)	(−2.731)	(−1.958)	(−3.459)	(−1.577)	(−2.826)	(−1.830)	(−3.554)
Log (Total assets)	−0.156	−0.036	−0.15	−0.04	−0.091	−0.061	−0.089	−0.066
	(−1.325)	(−0.641)	(−1.242)	(−0.686)	(−0.749)	(−1.058)	(−0.737)	(−1.114)
Free cash flow	2.606**	1.080	2.630**	1.330	2.929***	0.611	2.942**	0.845
	(2.254)	(1.594)	(2.082)	(1.636)	(2.728)	(0.864)	(2.501)	(1.008)
Log (M/B)	−0.071	0.256***	−0.05	0.26***	−0.106	0.285***	−0.087	0.296***
	(−0.600)	(3.535)	(−0.445)	(3.586)	(−0.937)	(3.744)	(−0.751)	(3.788)
ROA	0.093	−0.214	0.090	−0.270	0.083	−0.215	0.086	−0.275
	(0.333)	(−1.006)	(0.272)	(−1.029)	(0.298)	(−0.966)	(0.264)	(−0.989)
Constant	67.671***	66.597***	28.19***	27.22***	30.528***	30.588***	36.432***	36.529***
	(45.020)	(32.970)	(11.190)	(15.440)	(12.620)	(22.490)	(17.690)	(25.820)
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1071	1071	1071	1071	1071	1071	1071	1071
Pseudo *R*-squared	0.11		0.12		0.12		0.13	

The table reports multinomial logit regressions of the likelihood of being LBO target firms and being regular takeover target firms versus non-merger firms. The dependent variable equals one when firms are LBO targets, two when they are regular merger target firms and zero when they are non-merger firms. Covenant dummy is equal to one if there is at least one bond issue with covenant protection within a specific firm and zero otherwise. Convertible debt dummy is equal to one if there is at least one bond issue that is convertible. Investment grade dummy equals one when the bond rating is equal or higher than BBB and zero otherwise. Heteroscedasticity-robust *z*-statistics are reported in parentheses under the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

a high probability of being targeted are more likely to adopt CIC covenants in the first place, the negative effect of CIC covenants on the probability of being targeted is even more pronounced than what is indicated here.

The regression results also show that, unlike CIC covenants, convertible debt is positively related to the probability of a takeover. This is consistent with the notion that CIC covenants are designed to protect bondholders in the case of takeovers, whereas this is not the primary objective of convertible debt. Rather, convertible debt might be used to take advantage of real options (Mayers, JFE 1998), so that convertible debt might proxy for the growth opportunities of the company. Thus, an interpretation of the results is that firms with high growth opportunities, as indicated by the presence of convertible debt, are more likely to be targeted in takeovers. Importantly, the results for CIC covenants do not change qualitatively when we control for convertible debt.

Overall, our results suggest that private equity investors consider the potential bondholder wealth expropriation to be an important source of gains in LBO transactions, and that they therefore prefer targets without CIC covenants. Thus, bondholder expropriation is not merely a side-effect of LBO deals; it is sufficiently important that it can apparently make or break a deal.

4.6. LBOs versus other takeovers

Although CIC covenants are designed to mitigate expropriation of bondholders that can occur in LBOs, these covenants likely play a role in deterring takeovers in general. Unlike the case of an LBO where the resulting new private firm has the same assets (or has shed some assets) but greater leverage, typical mergers and acquisitions involve combining the assets of the acquirer and target. Expropriation of bondholders appears to be of little concern for these transactions, and target bondholders often gain due to the coinsurance effect (Billett et al., 2004). If these debtholder gains reduce the remaining gains leftover for target and acquirer shareholders, we would expect that the probability a firm is targeted to be decreasing in its debt's potential for such gains (see Israel, 1991). CIC covenants do not distinguish between LBOs and other takeovers, and require bondholders to be paid off in either case. Given the potential for bondholder gains is likely higher, all else equal, when there is a CIC covenant, we expect that the probability of any type of takeover to be lower in presence of CIC covenants. Thus, CIC covenants are likely unappealing to acquirers even if there is no intent to expropriate bondholders.

In this section we examine whether CIC covenants deter regular takeovers, like they deter LBOs. To do so, we run a multinomial logit model, where we examine the likelihood that a firm is an LBO target or a regular takeover target versus not being a target at

all in a given year. We get our non-LBO merger target firms from the SDC Mergers and Acquisition database. We require these mergers to be completed and not be categorized as an LBO, management buyout, or going private transaction. We further require the market cap of these non-LBO target firms to be greater than $100 million in 2006 dollars. Finally, we require information on firm bonds from FISD. The resulting sample of non-LBO targets consists of 509 firms. The dependent variable is equal to 0 when firms are LBO targets, 1 when they are non-LBO targets, and 2 when they are neither merger nor LBO firms.

Table 11 shows that the results are similar across LBO targets and other targets. That is, the probability of being both LBO targets and regular takeover targets increases with leverage but decreases with the amount of leverage that is covenant-protected. Further, the presence of a covenant on any issue is more important than the amount of debt that is covenant-protected for both target types. Thus, CIC covenants deter all potential acquirers, irrespective of whether they are private or public. The relative magnitude of the coefficients on the scaled value of the covenant-protected debt can further be interpreted as evidence that CIC covenants have a stronger deterrent effect against LBOs than other takeovers.

5. Conclusion

Previous research shows that the LBOs of the 1980s involved hostile raiders heaping massive debt loads upon high cash-producing but overinvesting targets. These massive debt loads often resulted in large losses for existing bondholders (Warga and Welch, 1993). The current wave of LBOs involve less leverage and are typically friendly deals. Moreover, the use of change-in-control covenants, designed to protect against the losses experienced in the 1980s, has become commonplace. These changes raise the question of whether the current LBO wave results in different wealth effects for existing bondholders. Furthermore, variations in the use of CIC covenants allow us to examine the effectiveness of such covenants as well as overall importance of bond expropriation.

We find evidence that bondholder wealth effects depend on the existence of change-in control covenants. In particular, we find that many bondholders continue to suffer during the more recent period in spite of covenant innovations, but also that the potential for expropriation of bondholder wealth affects the behavior of both bondholders and private equity investors. Bonds of LBO targeted firms lacking covenant protection experience −6.76% excess returns, 9.06% lower than their covenant protected counterparts. We also find that CIC covenants play an important role in determining which firms are targeted for LBOs, as well as other forms of mergers and acquisitions. Thus, our results provide more direct evidence that bondholder expropriation is an important consideration in the decision to undertake an LBO, so much so that they can apparently make or break a deal.

So why are firms reluctant to adopting CIC covenants in light of the benefits that we have documented here? Smith and Warner's (1979) costly contracting hypothesis implies that there must be some costs to such covenants. While reducing the takeover likelihood via CIC covenants can be beneficial for bondholders, it is likely harmful to shareholders who could forego a takeover premium. Thus, managers who try to maximize shareholder wealth might shun CIC covenants despite their potentially favorable effect on the ability to issue bonds at decent terms.

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