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The impact of investor protection law on global takeovers: LBO vs. non-LBO transactions[*]

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Abstract: This paper examines the impact of investor protection laws on value creation in LBOs versus non-LBO takeovers. We find that value creation measured by takeover premium is significantly higher in countries with better investor protection. The value effect of investor protection laws is more pronounced for LBOs than non-LBO takeover transactions. Among LBOs, investor protection's value effect is lower for club deals than others. These results suggest that institutional context and legal environment determine the extent of value creation for takeovers around the world.

Keywords: Leveraged buyouts, Legal environment, Law, Premium, Shareholder rights, Club deals, Value effect, Investor protection

1. Introduction

Leveraged buyouts (LBO) especially cross border deals help fuel global Foreign Direct Investment (FDI) nowadays. Over the last 30 years, an explosion of leveraged buyouts sponsored by private equity groups have received considerable media attention as they evolved into a widespread phenomenon with enormous economic impact; mostly notably, in terms of deal size, wealth impact and employment. Not only has LBO deal volume increased steadily since 1995, reaching a peak of $360 billion in 2006, but it accounts for approximately 40% of total merger and acquisition deal volume that year. LBOs are playing an important role in the global market by directing capital towards companies needs critical private capital that public markets cannot provide.

The emerging importance of global LBOs highlights the importance to understand the economics of value creation in these transactions. However, LBOs as important research topic in management and finance are mired in controversies. The main contention of the debate on LBOs is the value effect of LBOs on firms (Zahra and Fescina (1991)). Even the popular press coverage (particularly in continental Europe) has skeptically referred to the private equity (PE) acquirers as "locusts"

that take advantage of public investors. In continental Europe, German politician Franz Muntefering denounced financial investors as "locusts that destroy everything and move on" (*Financial Times*, May 5, 2005) and demanded that his party take a critical position on certain practices of PE firms. Further, club deals (Marquez and Singh, 2013), which involve two or more PE firms bidding jointly on an LBO target as a consortium, have come under fire. According to the U.S. Government Account-ability Office's report to Congress in September 2008, PE bidders that strategically form syndicates in such deals collude "to avoid competition and depress sale prices." These ongoing debates highlight the general lack of understanding surrounding value creation of LBO transactions.

LBOs, after all, require tremendous amount of debt financing and executives may be under pressure in the short-term to generate cash to service debt obligations. However, according to Jensen (1986), LBOs may improve operating efficiency by reducing agency problems in corporations through active monitoring of executives. Further, Jensen (1989) shows that LBOs as an efficient form of corporate organizations are becoming increasingly prevalent in the US. Following his seminal work, many academic researches based on U.S. data show that buyout activities on average create economic value by improving target firms' operating performance, employment, patents, and corporate governance (Davis et al., 2008, Lerner et al., 2011, Guo et al., 2010). Buyout investors acquire public corporations of diversified ownership with both debt and equity as source of financing, take them private and create value through improved governance and high-powered incentives (Cao and Lerner, 2009).

Although the market has witnessed more buyout activities outside the US, the extant literature on LBOs focuses mainly on the US buyout activities. We fill this gap by linking value creation of buyout transactions to variation in institutional features across jurisdictions. The management and economics research (e.g., North, 1990; Scott, 1995) has established that institu-tional contexts are important contingent factors that affect corporate value. Nevertheless, the studies on value creation of buyout activities in association with institutional environments are limited. For example, Lerner and Schoar (2005) shows that PE investments perform better in common-law countries than in other legalities. Peer and Gottschalg (2011) show that institutional context related to politics matter for buyout activities and their subsequent performance. Seth et al. (2002) try to explain cross-border acquisitions from synergy-seeking, managerial concerns and hubris perspectives. We complement this strand of literature by raising an important question: how the value creation of LBOs can be explained by institutional environments and legal factors across different nations? One implication of this line of questioning which is of importance to managers is the impact of legal environment on manager's strategic decision making, particularly on buyout and takeovers.

La Porta et al. (1998) demonstrate that, by affecting external financing and governance, investor protection is an impor-tant determinant of firm value in international equity markets. Chacar and Vissa (2005), Chacar et al. (2010), Khanna and Palepu (1997) and Khanna and Rivkin (2001) show that unlike developed market, in the emerging market informal institu-tions matter more. These papers collectively show that formal institutional factors have smaller effect on corporate valuation or strategies. Similarly, Makino et al. (2004) and Chan et al. (2008) show institutional environments and legal factors are more important in developed market than emerging one for multinational corporations or foreign affiliates. They argue that developed economies "are more integrated in terms of market transactions, infrastructure, institutional rules and enforce-ment mechanisms, and hence, internal effects… tend to play a relatively more salient role than external factors…" (Makino et al., 2004, p. 1038). Motivated by these insights, our main conjecture in this paper is that investor protection and legal fac-tors can have greater effect on LBOs' value creation and wealth gains for target's shareholders in more developed markets. Similarly, we conjecture that institutional factors are more important for LBOs than for non-LBO takeovers, because LBOs involve much more complicated arm's length contracts and external financing.

LBO transactions are different from non-LBO takeovers in many regards and as a result, their value effect on corporations thus should be different. First, LBO transactions ideally isolate profit-driven deals from takeovers that are motivated by both profit and strategic objectives.[1] Second, LBO deals are more reliant on external financing, which provides a mechanism through which investor protection can improve takeover outcomes (Burkart et al. (2014). Finally, debt instrument as a funding source in LBOs can potentially serve as a governance mechanism to limit acquirers in diverting resources as private benefits (Burkart et al., 2014). Consequently, value effect of LBOs compared to non-LBO takeovers will be affected by both the legal environment and investor protection law in different way cross-sectional.

We use LBO transaction's takeover premium as our primary measure of value creation or wealth gains for shareholders.[2] Because investor protection improves financing capacity, safeguard against expropriation and improve corporate governance (La Porta et al. (1998)), we conjecture that LBOs are more common and corporate value effect is greater in countries with stron-ger investor protection. Furthermore, we expect such corporate effect to have a cross-sectional pattern when comparing LBOs to non-LBO takeovers. We also expect the same relationship when comparing non-club deals to club deals.[3]

Following the law, strategy management and economics literature, we use three country-level variables to measure investor protection. They are legal origin, antidirector rights index, and judicial efficiency index. We also control for other country-level or industry-level variables, such as per Capita GDP and industry concentration. In addition, we control for

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[1] This is not to imply that all mergers and acquisitions are not profit driven. There are takeovers that may be motivated by managerial private benefit. These takeovers are laden with agency issues that may destroy rather than create value.

[2] This measurement is also used in Rossi and Volpin (2004) and Bris and Cabolis (2008). Because of minority shareholders' free-riding (Hart and Grossman, 1980) as well as competition among acquirers (Burkart et al., 2014), the takeover premium is arguably an appropriate proxy for value creation in LBOs.

[3] Burkart et al. (2014) theoretically show that financing capacity and corporate governance are two important channels through which acquirers can improve takeover efficiency.

creditor rights, because PE firms rely heavily on debt financing to complete LBOs and a weak credit market environment can become a binding constraint.[4] As such, our empirical analyses will not only show relations between investor protection and LBO transaction patterns as Rossi and Volpin (2004) did for non-LBO transactions, but also provide empirical evidence illuminating the channels of corporate value effect that is posited by Burkart et al. (2014). Our research thus has several contributions to the existent literature: a clean sample of takeover cases such as LBOs, the difference-in-difference tests on cross sectional identifications with issues of endogeneity controlled, and a novel examination on the corporate effect of LBOs as well as club deals.

Our sample includes 5305 takeovers of publicly traded targets worldwide between 1995 and 2007, of which 15% (844 deals) are LBOs and 85% (4461 deals) are non-LBO takeovers. We begin the sample period in 1995 because LBOs were predominantly a U.S. phenomenon prior to 1995, and they were also rare in U.S. after the collapse of the junk bond market in the late 1980s (Kaplan and Stromberg, 2008). Deals completed after 2007 are excluded due to market disruption caused by the 2008 global financial crisis.

Consistent with the discussion above, we find that investor protection is an important source of the wealth gains for target shareholders in LBOs. The frequency of LBO takeovers and LBO premiums are positively associated with the quality of investor protection environment. In addition, the premium effect is also greater for LBOs than for non-LBO takeovers, as the former generally rely more on external financing than the latter. However, in contrast to Officer et al. (2010), our results suggest that the premium for club deals is not significantly different from that of non-club LBOs.[5]

Taken together, our empirical evidence is consistent with the view that strong investor protection improves value creation in LBOs transactions in a fashion different from non-LBO takeovers. This finding is important for the market, strategic management and regulation by highlighting the fact that value creation of LBOs may be confined by legal environment. Furthermore, such value effect is attributed to two possible reasons: increased financing capacity and improved corporate governance by limiting acquirers' ability to divert resources. Our findings also help reconcile the debate surrounding LBOs' wealth effect on shareholders. While some research and the financial press highlight the dark side of PE deals due to constraints on competition (e.g., club deals), others have shown that LBOs do create value in the equity market. The latter could possibly be due to a sampling problem whereby the investor protection regime is constant. Our findings suggest that institutional factors such as investor protection have a significant impact on the value creation of private equity through LBOs.

Our paper makes several contributions to the literature. First, compared to the M&A sample in Rossi and Volpin (2004) and Bris and Cabolis (2008), our LBO sample provides a clean test of wealth effect through two channels, namely, financing capacity and corporate governance improvements (Burkart et al. (2014)). Second, the evidence in this paper complements Lerner and Schoar's (2005) investigation on the role of legal origin on the valuation of PE-related transactions by exploring the impact of both shareholder and creditor protection on LBO outcomes. Third, the evidence in this paper complements Cao et al.'s (2015) analysis of cross-border LBOs and Castellaneta and Gottschalg (2014). Cao et al. (2015) find that cross-border LBOs tend to originate in countries with stronger creditor rights, as creditor rights facilitate the development of the PE market. In this paper, we find consistent evidence of the importance of legal institutions in understanding international differences in LBO markets. We differ from Cao et al. (2015) in this paper by comparing LBOs to other types of non-LBO strategic acquisitions. Our research therefore sheds light on the wealth creation role of PE in the sponsoring of LBOs and club LBOs, and the value of investor protection in LBOs versus non-LBO takeovers.

The rest of article is organized as follows. Section 2 provides background, discusses relevant literature on LBOs, and introduces our research design. Section 3 describes the data and provides summary statistics. Section 4 presents the empirical results and Section 5 concludes the paper.

2. Background and research design

2.1. Literature and background

Investor protection law is the important institutional factor in determining capital market activities. Among different investor protection laws, laws governing shareholder rights are extremely relevant in safeguarding external shareholders. The seminal paper by La Porta et al. (1998) develop the composite index to gauge the extent the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process, namely antidirector rights index. Various studies (La Porta et al., 1997) show that the antidirector index has positive great power to explain development of capital market either due to low external cost or easy access to external financing. Rajan and Zingales (2000) argue that legal environment is essential for corporate governance mechanism to be effective. In

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[4] Several studies show that creditor rights are an important factor affecting debt financing. For example, Qian and Strahan (2007) and Bae and Goyal (2009) find that bank loan contracts vary in terms of size, pricing, and maturity with regard to creditor rights. Similarly, Miller and Reisel (2012) find that creditor rights affect bond financing terms such as covenants. The effects of creditor rights on LBOs may be ambiguous, however: on the one hand, better creditor rights facilitate the development of the debt market; on the other hand, they impose stricter restrictions on borrowers.

[5] Not reported in this paper is the analysis using OLS regression whereby the premium is lower for club deals. This result is consistent with Officer et al. (2010). However, when we control for the endogeneity choice of club deals using 2-stage least square regression, the premium for club deals are no longer different from those of non-club deals.

the context of LBOs, investor protection law is important institutional arrangement to safeguard external shareholders' interest. One manifestation of such is positive large premium offered for target shareholders in takeover transactions.

During the 1980s, buyout sponsors on average paid a premium of 40% over the prevailing stock market price for incumbent minority shareholders of target companies. For instance, DeAngelo et al. (1984) report that from the late 1970s to the early 1980s, LBO premiums averaged over 56%. Since then, however, the market environment has changed considerably, and LBO premiums have decreased substantially, to an average of 20% in the 1990s. Since 1995, the PE industry has grown to become an important player in the capital market. According to the Private Equity Council2010's report, buyout sponsors' total purchasing power is currently estimated to be as high as US$1.5 trillion. LBO transactions have become an international phenomenon, with the markets in Europe and Asia witnessing an increasing amount of LBO activity.

LBO takeovers have also become a prominent feature of external corporate governance mechanisms for value creation. For a publicly traded target, a LBO is a going-private transaction[6] that usually involves a tender offer for a firm's common stock (i.e., a public offer of a specific purchase price at a premium typically well above the prevailing market price). A strand of empirical literature confirms LBOs' governance role. Using U.S. data from the 1980s, Lehn and Poulsen (1989) document a link between shareholder gains and free cash flow to LBO premiums. They suggest that, in line with the classic free rider problem (Hart and Grossman, 1980), shareholders in target companies may require a higher premium in order to capture the perceived incremental value created by a takeover. Opler and Titman (1993) studies the trade-off between reducing free cash flow and increasing financial distress.

LBOs are normally financed by both equity capital and debt issued on the potential target's assets and future cash flows. PE-sponsored LBOs typically involve buyout funds acquiring a controlling stake of a public or private firm, with about 25% equity capital and 75% borrowed money from creditors. In PE-sponsored LBOs, however, agency problems exist between the PE acquirers and the firm's minority shareholders. Given the structure of LBO, investor protection laws are arguably the most important factor to safeguard the interest of minority shareholders when they face aggressive and controlling shareholders such as PE acquirers. Kaplan (1989) finds that abnormal returns are higher (although not significantly so) for LBOs involving a hostile third party than for those with no such involvement.

Furthermore, the corporate effect of LBOs can vary when interacted with other firm level governance mechanisms. Jarrell and Bradley (1980) find that strong regulation designed to safeguard target minority shareholders during takeovers results in a higher final purchase price and lower returns to acquirers in U.S. In fact, following the investigations by federal prosecutors in the U.S. into possible collusion between buyout firms to avoid bidding war and paying minority unfairly low price, club LBOs have become a highly controversial issue. [7] On the positive side, club deals have the effect of curtailing capital costs and financing constraints. That is, instead of PE sponsors having to fund their acquisitions solely with their own capital, especially in large transactions, several PE sponsors can form a consortium and pool their equity capital and debt financiers. Their purpose in forming a "club" therefore, is to overcome capital constraints, achieve diversification, and/or obtain favorable debt financing. It remains unclear whether such corporate strategy of clubbing deals will be affected by institutional environments of deal nations they take place.

As summarized, the studies on US buyout activities often assume the institutional environment that PE acquirers is fixed and they tend to explain corporate effect of LBOs from internal factor such as firm or manager-specific reasons. The external factor such as investor protection of different deal nations should not be largely ignored. Researchers (Bowman and Helfat, 2001; Grant, 2010; Makino et al., 2004; Walker, Madsen, and Carini, 2002) have acknowledged that corporate effect and strategy need to be analyzed in combination with the market or environment they operate.

2.2. Research design

As one of the first few studies that examine international LBOs, we start the empirical analysis with a comprehensive and detailed sample summary statistics. We report the time series of LBO premium at the aggregate level. Here, unless otherwise specified, the takeover premium is calculated as the offer price divided by the stock price four weeks before the announcement minus one. Specifically, we calculate the monthly series of equally weighted and value-weighted premiums from 1995 to 2007 for both LBOs and non-LBO takeovers. We then use t-tests to assess whether the two series move closely over time based on their correlation coefficients, and provide cross-sectional summary statistics for the premium of LBOs, club and non-club LBOs, and U.S. and non-U.S. LBOs.

For all takeovers, we investigate LBO premium in association with legal investor protection using ordinary least squares (OLS) regressions in which the dependent variable is the takeover premium. The independent variables of interest are a LBO dummy, proxies for investor protection (UK legal origin and the indices for antidirector rights, judicial efficiency, and creditor rights), their interaction terms, and controls:

$$Premium = \alpha_0 + \alpha_1\ LBO\ Dummy + \alpha_2\ Investor\ Protection + \alpha_3\ Controls + \varepsilon. \tag{1}$$

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[6] Although LBOs include takeovers with private targets, we exclude these deals from the study because of data on premiums naturally do not exist for private targets. Private targets are studied in Cao et al. (2015).

[7] Club LBOs have even given rise to litigation. For instance, investors in companies acquired by Kohlberg Kravis Roberts & Co., Blackstone Group LP, and 11 other private equity firms filed complaints in the U.S. District Court in Manhattan accusing these private firms of forming internal "clubs" to bid collectively in buyouts, a move that can drive down the deal price. This lawsuit, however, was recently withdrawn.

Table 1

Yearly distribution of LBOs. This table presents the distribution of 844 LBOs and 4461 non-LBO takeovers over the sample period 1995–2007. The sample, obtained from Dealogic, excludes M&As that involve private targets, divisions of public companies, a deal value less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. Columns 2 and 3 present the number of LBOs and the average LBO deal value for each year, respectively. Columns 4 and 5 show the percentage of LBOs in all takeovers in terms of both number and total deal value, respectively. Columns 6 and 7 give the number of club LBOs and cross-border LBOs, respectively. Column 8 reports the percentage of U.S. LBOs among world LBOs, and column 9 shows the percentage of U.S. LBO among total U.S. takeovers.

Year	LBOs around world	Average LBO deal value ($million)	LBO percentage in all takeovers	LBO value percentage in all takeovers	CLUB LBO deal	Cross-border LBO	U.S. LBOs percentage in world LBOs	U.S. LBOs in all U.S. takeovers
1995	8	677.05	2.81%	2.48%	2	1	75.00%	3.53%
1996	6	373.32	7.59%	4.90%	3	1	100.00%	13.64%
1997	30	425.38	11.81%	10.28%	9	6	80.00%	18.46%
1998	61	323.98	11.57%	7.14%	16	18	59.02%	15.00%
1999	102	430.41	14.11%	4.66%	18	16	46.08%	15.11%
2000	81	463.98	11.74%	5.58%	12	11	38.27%	11.27%
2001	57	422.67	11.52%	6.62%	12	12	42.11%	12.06%
2002	52	522.12	14.53%	14.53%	23	14	42.31%	15.38%
2003	87	420.09	23.90%	20.19%	24	15	34.48%	30.61%
2004	69	973.29	21.63%	19.34%	30	20	37.68%	48.15%
2005	99	1140.28	21.20%	18.28%	44	15	54.55%	31.58%
2006	143	2589.80	25.77%	39.88%	41	13	58.04%	35.78%
2007	49	767.79	25.93%	25.91%	10	10	40.82%	26.67%
AVG	64.92	733.09	15.70%	13.83%	18.77	11.69	54.49%	21.33%

Table 2

Summary statistics for target industry distribution. This table gives the summary statistics for target industry distribution. The sample contains 844 LBOs worldwide and 4461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. We report the industry distributions in descending order of LBO deal frequency, together with the average deal value and average premiums for both LBOs and non-LBO takeovers.

Industry Sector	LBOs			Non-LBO Takeovers		
	Frequency in deal number (%)	Average deal value ($ Million)	Premium (%)	Frequency (%)	Average deal value ($ Million)	Premium (%)
Manufacturing	39.62	647.19	17.32	38.51	1057.89	25.42
Services	28.06	748.30	19.14	23.12	439.44	28.90
Retails	11.61	1183.56	21.59	6.08	483.53	19.06
Wholesale	6.45	504.64	16.51	5.36	374.60	31.22
Communications	3.87	2596.32	12.23	3.72	3174.77	23.89
Transportation	2.06	1751.21	14.07	2.84	907.42	22.37
Electricity and Gas	1.91	2735.77	38.41	2.79	2756.06	18.96
Construction	1.67	839.31	9.43	2.30	396.94	19.24
Real Estate	1.67	5625.16	13.74	2.45	1245.66	9.64
Mining and Agriculture	1.55	783.40	20.57	11.06	983.65	21.23

Next, we address the endogeneity problem with respect to the choice of different takeover types (LBOs versus non-LBOs) for different countries (investor protection regimes). To mitigate problems arising from endogenously determined choice, we analyze our sample using two-stage instrumental variable (IV) regressions. In the two-stage IV regressions, we use each country's FDI as the instrumental variable. In the first stage, we regress LBO dummy variable on the IV and other controls:

$$LBO\ dummy = \alpha_0 + \alpha_1 FDI + \alpha_2 Controls + \varepsilon. \tag{2}$$

In the second stage, we regress takeover premium on the predicted LBO dummy variable from the first stage, investor protection measure and other controls:

$$Premium = \alpha_0 + \alpha_1 LBO\ \widehat{Dummy} + \alpha_2\ Investor\ Protection + \alpha_3 Controls + \varepsilon. \tag{3}$$

The rationale for using the country's FDI[8] as the instrumental variable is as follows. We can expect the FDI of each country is positively related to the frequency of LBO activities. It is reasonable to assume that although each country's FDI is related to numbers of LBOs, the FDI itself does not directly affect LBO premium, thus satisfying the *exclusion restriction* needed for valid instruments.

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[8] The data of gross Foreign Direct Investment flows are obtained from the World Bank database for each country for various years. (Source: World Development Indicators).

Table 3

Summary statistics for target country distribution. This table reports the summary statistics for target country distribution. The sample contains 844 LBOs worldwide and 4461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. We report the country distributions in descending order of LBO deal frequency with the most frequent LBO deals. The table also reports the average deal value and average premium for LBOs and non-LBO takeovers.

Deal Country	LBOs				Non-LBO Takeovers			
	Frequency in deal number (%)	Frequency in total deal value (%)	Average deal value ($ million)	Premium (%)	Frequency in deal number (%)	Frequency in total deal value (%)	Average deal value ($ million)	Premium (%)
USA	42.97	63.24	1141.57	25.62	31.07	41.92	953.41	30.55
UK	18.52	16.59	769.72	11.76	13.34	16.85	847.28	18.71
France	5.20	2.53	478.97	12.79	3.84	6.44	1396.28	16.36
Germany	4.84	1.63	348.49	9.04	2.96	6.47	1701.75	13.91
Canada	4.01	2.84	622.89	22.21	8.83	6.63	567.24	21.37
Japan	3.92	1.15	206.81	9.95	6.44	3.78	526.33	10.11
Australia	1.95	0.66	239.11	13.24	5.33	3.42	488.52	21.45
Italy	1.94	0.43	366.10	2.22	1.97	1.59	757.52	8.46
Denmark	1.37	2.98	1814.44	12.84	1.41	0.82	507.00	18.86
Sweden	1.37	1.14	1112.79	21.06	1.97	1.14	521.98	24.79
Ireland	1.31	1.32	782.47	49.15	0.34	0.32	678.72	45.73
Netherland	1.20	2.48	1604.60	26.08	0.82	3.29	2836.63	30.80
Norway	0.72	0.24	255.47	12.16	1.08	1.01	751.94	28.81
Spain	0.60	1.46	1889.23	7.78	0.37	1.03	1978.76	9.61
N. Zealand	0.48	0.09	155.57	16.98	0.44	0.19	311.38	60.12
S. Africa	0.36	0.23	510.23	22.57	0.68	0.57	595.88	34.24
Belgium	0.36	0.24	530.41	21.72	0.37	0.97	1846.12	28.20
Finland	0.24	0.15	475.69	14.62	0.33	0.35	756.14	32.13
Greece	0.24	0.21	676.74	0.32	0.31	0.70	546.47	0.29
Hong Kong	0.24	0.01	26.89	10.08	1.31	0.24	377.51	36.66
Others	7.16	1.34	145.04	8.03	17.79	3.27	129.77	14.79

To test for the robustness of our results, we construct a matched sample for LBOs from non-LBOs based on propensity scores matching method that was proposed by Rosenbaum and Rubin (1983) and later used by Heckman et al. (1997). We first divide the whole sample of LBO transactions into two subsamples using investor protection measure as the divider. We then use propensity score matching methods to match each LBO transaction with non-LBO transaction. We report the univariate *t*-tests to enable comparison of the differences-in-mean of premiums between LBO and comparable non-LBO targets in the matched sample.

Next, we examine the wealth effect of LBOs via club deals. Officer et al. (2010) show that club deals are detrimental to targets' minority shareholders' wealth. Their results, on the surface lend support to the popular belief that PE acquirers are like "locusts". However, since club LBOs are different from other LBOs because clubbing practice is a deliberate decision made by PE acquirers, normal OLS regressions that are used in Officer et al. (2010) do not take into account the inherent endogeneity problem. We address this issue by using two-stage instrumental variable regressions, with country's FDI as the IV.

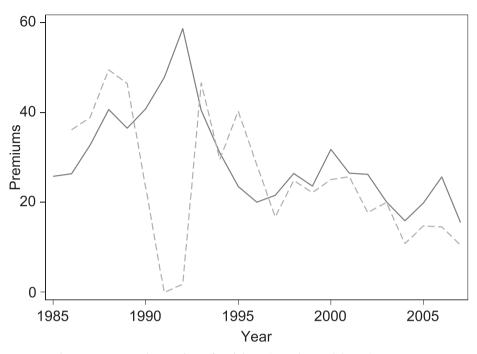$$Club\ LBO\ dummy = \alpha_0 + \alpha_1 FDI + \alpha_2 Controls + \varepsilon. \tag{4}$$

$$LBO\ Premium = \alpha_0 + \alpha_1 Investor\ Protection + \alpha_2 \widehat{LBO\ Dummy} + \alpha_4\ Controls + \upsilon. \tag{5}$$

3. Data and sample

3.1. The data

Our sample of takeover transactions around the world, taken from Dealogic and Thomson VentureXpert, includes all takeover deals completed between 1995 and 2007, from which we include publicly traded targets in the analysis. We categorize all completed takeover deals into LBOs and non-LBOs according to whether acquirers are PE groups or strategic buyers. To ensure that LBOs are PE sponsored, we require that acquirers include at least one PE firm as a financial sponsor and they have more than a 50% final stake in the target after acquisition. These data selection criteria are similar to those used in the literature (e.g., Axelson et al., 2013). We exclude deals involving private targets or divisions of public companies, as well as those worth less than $10 million[9] or with no available data on premium. We also exclude mergers of equals by requiring that

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[9] Although this cutoff point is arbitrary, our results remain the same even when we change it to $5 million.

Panel A: Average yearly premium for LBOs and non-LBO takeovers

Panel B: Average yearly premiums for club LBOs and non-club LBOs

Fig. 1. Average yearly distribution of LBO premiums and deal values. This figure illustrates the average yearly distribution of LBO premiums and deal values. The sample contains 844 LBOs worldwide and 4461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. We also include additional data (from Thomson Financials) on LBOs and other takeovers between 1985 and 1994. Panel A shows the average yearly premiums of LBOs and other takeovers from 1985 to 2007; Panel B shows the average yearly premiums of club and non-club LBOs from 1995 to 2007. The dashed line represents LBOs in Panel A and club LBOs in Panel B, and the solid line represents strategic takeovers in Panel A and non-club LBOs in Panel B, respectively. We calculate the premium as the offer price over the stock price one day prior to the announcement minus one. Panel A: Average yearly premium for LBOs and non-LBO takeovers. Panel B: Average yearly premiums for club LBOs and non-club LBOs.

Table 4

Summary statistics on premiums. This table presents summary statistics on takeover premiums. The sample contains 844 LBOs worldwide and 4461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. The table reports the summary statistics on cross-sectional premiums for LBOs versus other takeovers, for club versus non-club LBOs, and for U.S. versus non-U.S. LBOs. The last column lists the p-values of the mean differences derived from a t-test.

	Mean	Median	SD	Mean	Median	SD	p-Value
	LBOs			Non-LBO Takeovers			Difference
Premium calculated at 1 day pre-announcement	17.25	13.98	30.48	23.62	16.00	42.83	0.00
Premium calculated at 1 week pre-announcement	22.25	17.24	32.25	29.84	20.42	44.08	0.00
Premium calculated at 1 month pre-announcement	28.19	22.28	45.95	37.65	25.47	53.09	0.00
	Club LBOs			Non-Club LBOs			Difference
Premium calculated at 1 day pre-announcement	13.71	12.82	22.34	19.32	14.60	30.67	0.03
Premium calculated at 1 week pre-announcement	16.31	15.75	23.93	23.38	18.13	32.33	0.01
Premium calculated at 1 month pre-announcement	26.35	19.31	71.06	28.39	23.93	37.59	0.63
	U.S. LBOs			Non-U.S. LBOs			Difference
Premium calculated at 1 day pre-announcement	25.53	20.67	29.43	12.05	10.24	27.12	0.00
Premium calculated at 1 week pre-announcement	29.07	23.66	31.12	15.69	13.42	28.89	0.00
Premium calculated at 1 month pre-announcement	35.17	28.25	55.59	21.44	19.57	37.31	0.00

Table 5

Summary statistics on target financials. This table summarized target firms' characteristics. The sample contains 844 LBOs worldwide and 4461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. The table reports the summary statistics on deal value, earnings before interest, taxes, depreciation and amortization (EBITDA) over sales, the market-to-book ratio, and enterprise value over EBITDA (all measured at the last 12 months before the announcement date). The last column lists the p-values of the mean differences derived from a t-test.

	Mean	Median	SD	Mean	Median	SD	p-Value
	LBOs			Non-LBO Takeovers			Difference
Deal value ($ million)	948.68	191.10	2541.01	810.32	118.00	3511.20	0.83
EBITDA/sale (%)	21.63	10.40	269.16	-4.56	9.44	509.51	0.21
Market-to-book ratio	1.09	0.76	1.70	4.51	0.70	61.42	0.10
Enterprise value/EBITDA	15.13	9.66	37.17	23.79	11.51	61.94	0.00
	Club LBOs			Non-Club LBOs			Difference
Deal value ($ million)	2115.61	597.31	3755.02	676.76	173.07	2405.58	0.00
EBITDA/sale (%)	8.76	11.96	29.01	6.66	10.22	335.11	0.54
Market-to-book ratio	1.31	0.87	1.49	1.05	0.74	2.66	0.13
Enterprise value/EBITDA	16.18	11.29	31.42	14.73	9.48	38.85	0.32
	U.S. LBOs			Non-U.S. LBOs			Difference
Deal value ($ million)	1217.64	289.24	3514.48	1095.64	682.02	176.67	0.00
EBITDA/sale (%)	9.76	11.27	58.06	9.11	10.49	66.53	0.97
Market-to-book ratio	1.03	0.76	1.76	1.13	0.79	1.61	0.44
Enterprise value/EBITDA	15.48	9.88	26.44	15.16	9.65	28.70	0.88

an acquirer's assets or market capitalizations be three times greater than those of the target. Our final sample comprises 5305 takeover deals with844 LBOs and 4461 non-LBO takeovers.

To measure investor protection, we include three variables: a dummy of common law or UK legal origins,[10] an index of antidirector rights, and an index of judicial efficiency (La Porta et al., 1997, 1998). The legal origin dummy variable equals one if a country is a common law regime, and zero otherwise. The index of antidirector rights[11] is an aggregation of six different shareholder rights measured on a range from zero to six, with a higher score indicating better shareholder protection. The index is constructed by adding one: when a country allows shareholders to mail their proxies to vote, does not require shareholders to deposit shares ahead of the shareholder meeting, allows cumulative voting or the proportional representation of minorities on the board of directors, has an oppressed minorities mechanism in place, allows shareholders who represent less than 10% of share capital to call for an extraordinary meeting, or gives shareholders preemptive rights that can be waived only by a shareholder vote. The judicial efficiency index, produced by Business International Corporation, rates the efficiency and integrity of the legal environment as it affects businesses, particularly foreign firms. Its value ranges from zero to 10, with higher scores

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[10] A country's law system can be categorized into one of four legal traditions: common law or UK legal origin, French civil law, German civil law, and Scandinavian civil law.

[11] Spamann (2009) updated the antidirector rights indices and he finds that results of La Porta et al. (1997) does not hold with the revised antidirector rights indices. We also run empirical tests using Spamman's indices and the resulting coefficients change signs, which is consistent with Spamman's findings.

Table 6
Summary statistics of LBO premiums and investor protection. This table presents summary statistics on LBO premiums according to the quality of investor protection. The sample includes 844 worldwide LBOs from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. Three measures of investor protection are included: UK legal origin, being above or below the median value of the anti-director rights index, and being above or below the median value of the judicial efficiency index.

	Mean	Median	Mean	Median	Mean Difference
	UK legal origin		Other legal origin		p-Value
Premium calculated at 1 day pre-announcement	18.89	14.05	9.06	6.78	0.00
Premium calculated at 1 week pre-announcement	21.96	16.92	12.04	10.42	0.00
Premium calculated at 1 month pre-announcement	28.43	21.87	16.18	15.42	0.00
	Good anti-director rights index (above median)		Poor anti-director rights index (below median)		p-Value
Premium calculated at 1 day pre-announcement	14.14	2.65	2.65	0.96	0.00
Premium calculated at 1 week pre-announcement	16.95	5.25	5.25	3.91	0.00
Premium calculated at 1 month pre-announcement	23.25	11.86	11.86	9.25	0.00
	Good judicial efficiency index (above mean)		Poor judicial efficiency index (below mean)		p-Value
Premium calculated at 1 day pre-announcement	14.75	11.96	5.11	1.93	0.00
Premium calculated at 1 week pre-announcement	17.67	15.06	7.47	5.78	0.00
Premium calculated at 1 month pre-announcement	24.71	20.02	11.71	10.25	0.00

signaling improved judicial efficiency. La Porta et al. (1997) constructed the average index from 1980 to 1983. In addition, we use LLSV's index of creditor rights, which aggregates the various rights that secured creditors might have in liquidation and reorganization, to measure a target country's legal protection for creditors. La Porta et al. (1998) find that it is important to capture the legal environment for creditors, who are important providers of debt financing for LBOs.

3.2. Deal distributions

As our paper is one of the first few to study international LBOs, we provide comprehensive and detailed summary statistics. In Table 1, we report the yearly deal distribution of LBOs, the average deal value, the percentage of LBOs in all takeovers, the percentage of club and cross-border LBOs, and the percentage of U.S. LBOs among total LBOs worldwide and among U.S. takeovers. Overall, LBO deals have steadily increased over the last decade: in 1995, only 8LBOs involved public targets, compared to 102 deals in 1999 and 143 in 2006. The average LBO deal size has also increased dramatically, from $300 million on average before 2003 to $2.59 billion in 2006. Likewise, the percentage of LBO deals among all takeovers increased from 2.81% in 1995 to 25.77% in 2006. On average, club LBOs account for about 30% of all LBO deals, suggesting that many LBOs involve a consortium group of PE firms. Not only do the U.S. LBO deals account for approximately 42% of total LBOs worldwide, but the percentage of the U.S. LBOs among the U.S. takeovers has also increased over time, up from only 3.53% in 1995 to 35.78% in 2006. We observe similar trend for international deals. In the mid-1990s, they were quite rare but the number of cross-border deals increased steadily over time and peaked in 2004. In total, over the sample period, there are 152 such deals.

Tables 2 and 3 report the industry and country distributions of LBOs, respectively. In our sample, LBOs show strong patterns of clustering across both deal countries and industries, with the manufacturing industry being the most active, followed by the service and retail industries. Similar industrial distribution exists for non-LBO takeovers. The U.S., with over 40% of all LBO deals, remains the most active LBO country, partially due to the gigantic size of its economy and stock market. The U.K. lags just slightly behind as the second most active LBO market.

3.3. Takeover premium

We graph the time series of equally weighted premium of LBOs in panel A of Fig. 1.[12] There is a clear pattern of decrease for both LBO and non-LBO takeover premium over the sample period. From the late 1980s to the early 1990s, LBO premium dropped significantly, largely due to the breakdown of the high-yield bond market. The average of LBO premium is25% lower than those of non-LBO takeovers (17% versus 24%), a result consistent with Bargeron et al.'s (2008) finding in the U.S., in which announcement gains to target shareholders are substantially lower if acquirers are private firms (e.g., PE funds) rather than public firms. In panel B, we graph the time series of premium for club deals vs. non-club deals. As the figure shows, club deals have lower premium than non-club deals on average, 13.71% versus 19.23%.

In Table 4, we compare premium in LBO and non-LBO deals in the full sample as well as subsamples by deal types and countries. As the table shows, LBO premium are significantly lower than non-LBO premium. In the subsample of LBOs, club deals have an average premium of 13%, significantly lower than non-club LBOs of 19%. The difference in the premium is

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[12] We use the aggregate premium levels for LBOs and other M&As before 1995, taken from Thomson Financial.

Table 7

Multivariate regression for takeover premiums. This table presents the results of OLS regressions on the LBO premium. The sample includes 844 LBOs worldwide and 4461 other takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. The dependent variable is the premium (in percentage) for takeover targets measured by the offer price divided by the market price closed at one month prior to the announcement. The independent variables include the logarithm of the deal size, the logarithm of target market capitalization, the debt-to-equity ratio, EBITDA over sales, the market-to-book ratio, enterprise value over EBITDA, a cross-border dummy, the anti-director rights and creditor rights indices, a UK legal origin dummy, the judicial efficiency index, the logarithm of the gross domestic product (GDP) per capita, and target Herfindahl index. We use clustered regressions that control for year, industry, and country fixed effects and report the robust t-statistics in parentheses. ***, ** and * indicate 1%, 5% and 10% significance level, respectively.

	1	2	3	4
LBO Dummy	−9.93***	−11.75***	−6.14**	−8.95**
	(3.85)	(2.93)	(3.12)	(2.24)
Log (Market Capitalization)	−3.24***	−3.54***	−4.58***	−3.59***
	(6.51)	(6.87)	(4.51)	(4.42)
LBO Dummy*Log (Market Capitalization)		2.85*		2.94***
		(1.89)		(3.62)
Target EBITDA/Sale	0.11	0.10	0.02**	0.01
	(0.57)	(0.49)	(2.37)	(0.72)
Target Market-to-Book Ratio	−0.01	−0.01	−0.01	−0.02
	(0.46)	(0.40)	(0.14)	(0.83)
Enterprise Value/EBITDA	0.02	0.02	0.01	0.02
	(1.41)	(1.49)	(0.89)	(0.72)
Cross-Border Dummy	5.12***	5.18***	6.84***	6.96***
	(2.96)	(2.96)	(3.77)	(3.87)
Antidirector Rights Index			2.29*	2.34**
			(1.74)	(2.45)
LBO Dummy*Antidirector Rights Index				3.31**
				(2.52)
Creditor Rights Index			−3.72***	−2.97***
			(7.19)	(5.22)
LBO Dummy* Creditor Rights Index				−3.67***
				(5.73)
Judicial Efficiency Index			0.64	0.44
			(0.26)	(0.46)
LBO Dummy* Judicial Efficiency Index				3.16*
				(1.84)
Common Law Origin			10.27***	10.29***
			(3.65)	(3.80)
Log (GDP per Capita)			−0.59	−0.78
			(0.39)	(0.30)
Target Herfindahl index				−0.789
				(0.21)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Obs.	5305	5305	5305	5305
Adjusted R^2	0.06	0.07	0.09	0.11

around 5%, which is economically and statistically significant. One possible explanation is that LBOs, especially club deals, involve very large targets. When we compare U.S. with non-U.S. deals, we find that the former has significantly higher premium than the latter, 25% versus12%.

3.4. Target financials

Table 5 reports the summary statistics for targets' financials and firm characteristics. On average, LBO deal sizes differ little from those of non-LBO takeovers. Nonetheless, LBO targets have stronger cash flow (EBITDA over sales), lower market-to-book ratios, and lower enterprise value over EBITDA. These differences, being economically meaningful, support Jensen (1986)'s theory of free cash flow in the sense that LBOs can help mitigate agency problems. Among LBOs, club deals are on average three times larger than non-club deals, but no differences emerge between club and non-club deals in terms of cash flow, market-to-book ratio, or enterprise value over EBITDA.

4. Primary findings

4.1. Investor protection and takeover premium

We compare LBO premium between countries with low-quality versus those with high-quality investor protection in Table 6. In each of the three panels, we bifurcate the sample of LBOs based on different criteria: (1) those from target

Table 8

Two-stage instrument variable regression of LBO premiums in all takeovers. This table presents the two-stage treatment regression results on LBO premiums for all takeovers. The sample includes 844 LBOs worldwide and 4461 other takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. In the first stage, the dependent variable is a dummy equal to one if a takeover deal is an LBO and zero if a non-LBO takeover. The instrument is the country-level FDI. In the second stage, the dependent variable is the LBO premium, and the independent variables include the logarithm of target market capitalization, the debt ratio, EBIDTA over sales, the market-to-book ratio, enterprise value over EBITDA, anti-director rights index, creditor rights index, a UK legal origin dummy, the judicial efficiency index, Herfindahl index, and the logarithm of the GDP per capita. We use clustered regressions that control for year, industry, and country fixed effects and report the heteroskedastically robust t-statistics in parentheses. ***, ** and * indicate 1%, 5% and 10% significance level, respectively.

	First Stage Probit Regressions		Second-Step Regressions	
	1 World	2 Excluding U.S.	3 World	4 Excluding U.S.
Log (Market Capitalization)			−3.935***	−2.364***
			(11.32)	(7.49)
Target Debt Ratio			1.010	−2.207
			(1.16)	(0.78)
Target EBITDA/Sales			−0.067	−0.027
			(0.49)	(0.72)
Target Market-to-Book Ratio			0.022	0.021
			(1.12)	(1.32)
Enterprise Value/EBITDA			0.003	−0.005
			(0.34)	(0.57)
Cross-Border Dummy			6.168***	7.233***
			(5.55)	(7.02)
Antidirector Rights Index			7.456***	6.648**
			(4.81)	(3.49)
Creditor Rights Index			−4.112***	−1.093**
			(9.12)	(2.74)
Common Law Origin			0.101	−3.557**
			(0.06)	(2.70)
Judicial Efficiency Index			1.618**	2.112***
			(2.23)	(3.79)
Log (GDP per Capita)			−3.351**	−5.067***
			(2.25)	(4.45)
Target Herfindahl index			−2.545	−3.015
			(0.68)	(0.77)
LBO Dummy			−6.396***	−8.061***
			(3.43)	(2.98)
Log (Sales)	0.092***	0.098***		
	(5.48)	(4.75)		
Logarithm of FDI	0.102***	0.086**		
	(4.17)	(2.52)		
Log (GDP per Capita)	0.171**	0.181**		
	(2.23)	(2.49)		
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Obs.	5305	3236	5305	3236
P-value of Wald Test	0.00	0.00		
Adjusted R^2			0.14	0.00

countries with and without UK legal origin, (2) those above and below the median value of the antidirector rights index, and (3) those above and below the median value of the judicial efficiency index, respectively. The LBO premium is significantly higher in deals with higher levels of investor protection than in deals with lower investor protection. Their differences are significant in both the mean and median tests using t-tests and the Wilcoxon tests. The results reported in Table 6 suggest that investor protection has an important impact on LBO premium; namely, that better investor protection improves corporate value and shareholders' wealth gain as measured by shareholders' takeover premium.

Given that LBOs are different from non-LBO takeovers, we now conduct multivariate analysis of LBO premiums to capture the difference-in-difference. For the sample including all takeover deals, we conduct OLS regressions in which the dependent variable is the takeover premium, calculated as the percentage difference between the offer price and target stock price one month prior to the announcement. The explanatory variables of interest are (1) a dummy for LBOs which equals one if a deal is sponsored by PE firms and zero otherwise; (2) investor protection variables include legal origin dummy, anti-director rights index, judicial efficiency index, and creditor rights index; and (3) the interaction terms between the LBO dummy and investor protection variables. Other control variables include the logarithm of target market capitalization; the interaction term between the LBO dummy and the logarithm of market capitalization; a cross-border dummy; target firm's industry Herfindahl-Hirschman index, and the target's EBITDA/sales, market-to-book ratio, and enterprise value/EBITDA. We control for the year, industry, and/or country fixed effects for all regressions. The estimated of standard errors are clustered by the target country and reported in parentheses.

Table 9

LBO premium adjusted by a benchmark propensity score. This table reports the LBO premiums adjusted by a benchmark propensity score. The sample includes 844 LBOs worldwide and 4,461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. To report the propensity score-adjusted premiums (in percentages) for LBOs, we use all other takeovers as the treatment sample. As instruments, we use the target market cap, EBITDA over sales and the market-to-book ratio, debt ratio, enterprise value over EBITDA, and the industry and year. The matching method uses Gaussian kernel weighted average. Each bootstrap has 50 replications with no replacement. We report the robust *t*-statistic in parentheses. ***, ** and * indicate 1%, 5% and 10% significance level, respectively.

Adjusted Premium (treatment –control)	Mean	Mean	p-value ofdifference
	LBOs	Non-U.S. LBOs	
Premium calculated at 1 day pre-announcement	−8.51***	−10.71***	0.11
Premium calculated at 1 week pre-announcement	−9.58***	−12.11***	0.08
Premium calculated at 1 month pre-announcement	−14.18***	−10.30***	0.07
	UK legal origin	Non-UK legalorigin	
Premium calculated at 1 day pre-announcement	−7.79***	−12.84***	0.00
Premium calculated at 1 week pre-announcement	−10.99***	−12.98***	0.03
Premium calculated at 1 month pre-announcement	−11.41	−13.64***	0.04
	Good Anti-director rights index (above median)	Poor Anti-director rights index (below median)	
Premium calculated at 1 day pre-announcement	−8.37***	−14.90***	0.00
Premium calculated at 1 week pre-announcement	−11.40***	−13.16***	0.01
Premium calculated at 1 month pre-announcement	−11.74***	−13.15***	0.02
	Good Judicial efficiency index (above median)	Poor Judicial efficiency index (below median)	
Premium calculated at 1 day pre-announcement	−8.49***	−16.28***	0.00
Premium calculated at 1 week pre-announcement	−10.85***	−16.61***	0.00
Premium calculated at 1 month pre-announcement	−10.94***	−21.64***	0.00

As Table 7 shows, the LBO dummy has a negative coefficient in all regressions, ranging from −7% to −12%, which suggests that LBO target shareholders receive substantially lower premium than target shareholders of non-buyout takeover deals. In general, the takeover premium of small targets is lower than larger targets, but this pattern is reversed in LBOs. Consistent with the previous univariate tests, the differences in takeover premium between LBOs and non-LBO takeovers are economically and statistically significant. Likewise, the index of antidirector rights, which proxy for equity investor protection, has significantly positive coefficients: one standard deviation increase in antidirector rights is associated with a more than5% increase in takeover premium. The U.K. legal origin dummy is also positively associated with takeover premium. In particular, the coefficient of the interaction term between the LBO dummy and the antidirector rights index is positive and significant, whereas the coefficient of the interaction term between the LBO dummy and the judicial efficiency index, although positive, is marginally significant at the 10% level. The index of creditor rights and the interaction term between the LBO dummy and creditor rights, on the other hand, is negatively associated with takeover premium.

Overall, our results suggest that a strong investor protection environment in takeovers improves target corporate value and shareholders' wealth. Furthermore, consistent with the external financing channel argument, the improvement is larger for LBOs than for non-LBO takeovers. Nevertheless, the significant negative relation between premium and creditor rights is consistent with our explanation: strong creditor rights may help mitigate the conflict between creditors and shareholders. In countries with higher creditor rights index, equity shareholder's gain from wealth transfer from debtors is limited. It is also likely that acquirers' financing flexibility is reduced, especially for LBO deals.

4.2. Control for the endogeneity issue of takeover types

It is a valid concern that the choice of LBO takeovers may be endogenously determined. In order to control for this endogeneity problem, we use two-stage instrumental variable regressions. In the first stage regressions, the dependent variable is

Table 10

Two-stage instrument variable regression of LBO premiums in club deals. This table presents the two-stage results on LBO premiums for all LBOs, with the selection of club deals controlled for. The sample includes 844 LBOs worldwide from 1995 to 2007. We exclude LBOs that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. In the first stage, the dependent variable is a dummy equal to one if LBO takeover deal is a club deal and zero otherwise. The instrument is the country-level FDI. The dependent variable is the LBO premium, and the independent variables include the logarithm of target market capitalization, the debt ratio, EBITDA/sales, the market-to-book ratio, enterprise value/EBITDA, the antidirector rights and creditor rights indices, the U.K. legal origin dummy, the judicial efficiency index, Herfindahl index, and the logarithm of the GDP per capita. We calculate the inverse Mills ratio from the first stage to control for the second issues in the second stage regressions. We run regressions that control for year and industry fixed effects, cluster on country and report the heteroskedastically robust t-statistics in parentheses. ***, ** and * indicate 1%, 5% and 10% significance level, respectively.

	First-Step for Club LBOs		Second-Step Regressions	
	1 World	2 Excluding U.S.	3 World	4 Excluding U.S.
Log (Market Capitalization)			−4.000***	−1.217
			(3.75)	(0.87)
Target Debt Ratio			−1.010	−5.493
			(1.16)	(0.77)
Target EBITDA/Sale			−0.223	−0.263
			(0.78)	(0.88)
Target Market-to-Book Ratio			−1.071*	−0.673
			(1.79)	(0.65)
Enterprise Value/EBITDA			0.014	0.038
			(0.39)	(0.73)
Antidirector Rights Index			6.632***	4.173*
			(4.19)	(1.99)
Creditor Rights Index			−3.674***	−0.600
			(7.39)	(0.34)
UK Law Origin			2.278	−11.289
			(1.68)	(1.58)
Judicial Efficiency Index			4.529**	4.857**
			(2.20)	(2.35)
Log (GDP per Capita)			−14.691***	−17.636***
			(3.32)	(3.86)
Target Herfindahl index			−9.159	−11.353
			(1.10)	(1.22)
ClubDummy			1.101	0.923
			(1.53)	(0.35)
Log (Sales)	0.303***	0.340***		
	(6.58)	(4.56)		
Logarithm of FDI	0.105*	0.006		
	(1.91)	(1.63)		
Log (GDP per Capita)	−0.088	−0.180		
	(0.47)	(1.01)		
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Obs.	844	481	844	481
P-value of Wald Test	0.00	0.03		
Adjusted R^2			0.14	0.08

one if a takeover deal is a LBO and zero otherwise, and we use FDI as the instrumental variable in the first stage regression. The other independent variables include the logarithm of target sales, the target country's GDP per capita and year and industry fixed dummy.

In the second stage OLS regression, the dependent variable is takeover premium. The independent variables of interest is predicted LBO dummy from the first stage regression, and other controls include the logarithm of target market capitalization, various country-level investor protection variables, and target firm's Herfindahl index. Once again, we control for the year, industry, and/or country fixed effects for all the regression analyses. We also control for correlation in the error terms from the OLS regressions using clustering on the target countries. The heteroscedasticity robust standard deviations are reported in parentheses.

The first stage regression shows that logarithm of FDI is significantly positively related to LBO deals. Target's sales are also positively and significantly associated with deals that are LBOs. The p-value of Wald test shows that the choice of using FDI as the instrument is reasonable. Results from the second stage regression are reported in Table 8. It shows that the investor protection variables are important determinants of LBO premium. For example, the index of antidirector rights is positively and significantly associated with takeover premium. The coefficient on the judicial efficiency index is also positive and marginally significant. The coefficient on the U.K. legal origin dummy, however for one of the specifications, is negative and not statistically significant. The LBO dummy is negatively associated with takeover premium. Target Herfindahl index is negatively but insignificant. The predicted LBO dummy is negatively associated with takeover premium with estimated coefficients ranging from 6 to 8% on average.

In order to test the robustness of the above mentioned results, we construct a matched sample based on the propensity score. We first divide the whole sample of LBO transactions into two subsamples by the level of investor protection. We then use propensity score matching methods to match each LBO transaction with non-LBO transaction. Using bootstrap method, each treatment deal is matched with Gaussian Kernnel using 50 bootstrap replications. The instruments used are target's market capitalization, EBITDA over sales, market-to-book ratio, the index of anti-director rights, UK legal origin, and the judicial efficiency index, interest expenses margin, gross profit margin, and enterprise value margin. For each treatment deal, we then adjust the premium by subtracting the controlling firms' premium. We then compare the adjusted premium (premium difference between treatment sample and controlling sample) across investor protection.

As Table 9 shows, the adjusted mean and median premium is negative in all subsamples but with smaller magnitude in countries with good investor protection, e.g., common law legal origin, above median anti-director rights, or above median judicial efficiency. In countries with good investor protection, the adjusted premium of treatment group ranges from −7.79% to −11.74%, but the in countries with poor investor protection, the adjusted premium ranges from −12.84% to −21.64%. The cross-subsample comparisons of the mean of the adjusted premiums are mostly significant at either 1% or 5% level.

The difference-in-difference findings from the propensity matching methods suggest that acquirers in LBOs pay significantly lower premium than non-LBO acquirers. The differences are robust to the endogeneity concerns. The difference however is smaller in countries with better investor protection. Overall, the findings in Tables 8 and 9 suggest that investor protection improves value creation and wealth of targets' shareholders and the improvement is larger for LBOs than non-LBO transactions.

4.3. Investor protection and club deals

In this subsection, we focus solely on LBOs and analyze how investor protection environment influence LBO premium. We employ two-stage IV regressions to control for the endogenously determined choice of using club deals. In the first stage regression, the dependent variable is one if a takeover deal is club LBO and zero otherwise, and the instrument variable is each country's FDI. The other independent variables include the logarithm of target sales, the target country's GDP per capita and year and industry fixed dummy. In the second stage OLS regression, the dependent variable is LBO premium. The independent variables of interest is club LBO dummy predicted from the first stage regression, and control variables include the logarithm of target market capitalization, various country-level investor protection variables, and target firm's Herfindahl index. We control for the year, industry, and/or country fixed effects for all the regression analyses. We also control for correlation in the error terms from the OLS regressions using clustering on the target countries. The heteroscedasticity robust standard deviations are reported in parentheses.

As shown in columns 1 and 2 of Table 10, the first stage IV regression shows that logarithm of FDI is significantly positively related to a takeover deal to be a club LBO transaction. Target's sales are also positively and significantly associated with a deal to be a club LBO transaction. In the second stage regression, LBO premium is positively and significantly associated with the antidirector rights index but negatively with the creditor rights index, the UK legal origin dummy has a negative coefficient, and the judicial efficiency index have positive and significant coefficient estimate. There is a positive but insignificant association between the predicted club deal dummy and LBO premium, which suggest that Officer et al.'s (2010) finding of significantly lower LBO premium in U.S. club deals may not exist when endogeneity choice of club LBOs are being controlled for.

Table 11
Club and non-club LBO premium adjusted by a benchmark propensity score. This table reports the Club and non-Club LBO premiums adjusted by a benchmark propensity score. The sample includes 844 LBOs worldwide and 4461 non-LBO takeovers from 1995 to 2007. We exclude takeovers that involve private targets, divisions of public companies, a deal value of less than $10 million, and deals with no premium data reported or an acquirer's final stake less than 50%. To report the propensity score-adjusted premiums (in percentages) for club and non-club LBOs, we use all other takeovers as the treatment sample. As instruments, we use the target market cap, EBITDA over sales and the market-to-book ratio, debt ratio, enterprise value over EBITDA, investor protection measures and the industry and year. The matching method uses Gaussian kernel weighted average. Each bootstrap has 50 replications with no replacement. We report the robust t-statistic in parentheses. ***, ** and * indicate 1%, 5% and 10% significance level, respectively.

Adjusted Premium (treatment –control)	Mean Non-club LBOs	Mean Club LBOs	p-value ofdifference
Premium calculated at 1 day pre-announcement	-11.17***	−5.68*	0.00
Premium calculated at 1 week pre-announcement	−13.89***	−6.98	0.00
Premium calculated at 1 month pre-announcement	−16.18***	−10.59*	0.01
	Non-US non-club LBOs	Non-US Club LBOs	
Premium calculated at 1 day pre-announcement	−6.89**	−4.92	0.06
Premium calculated at 1 week pre-announcement	−8.45**	−5.88	0.07
Premium calculated at 1 month pre-announcement	−6.21*	−8.35	0.08
	US non-club LBOs	US Club LBOs	
Premium calculated at 1 day pre-announcement	−10.38**	−8.71*	0.04
Premium calculated at 1 week pre-announcement	−19.31***	−10.38**	0.00
Premium calculated at 1 month pre-announcement	−29.68***	−17.81**	0.00

For robustness check, we perform the same regression by excluding U.S. target firms. The results are similar to that of the full sample. Overall, our findings may help mitigate negative impression formed by the public on club deals. Our results show that club deals do not generate higher or lower takeover premium which is contrary to popular belief that these types of deals destroy target shareholders' wealth.

One concern with the results reported in Table 10 is the inconsistency with the findings reported by Officer et al. (2010). We therefore use difference in difference approach by using non-LBO takeovers as our control group. First, we divide LBOs into non-club deals and club deals, then for each deal, we match it with non-LBO takeovers using propensity score matching methods. The instrument for the matching includes all the independent variables used in the regression such as target characteristics and investor protection measures. We compare the mean of the treated sample and report the results in Table 11.

First, all LBOs have lower premium than non-LBO takeovers. Club LBOs have significantly lower premium than non-LBOs after we control for the potential selection of LBOs using non-LBO takeovers as the control sample. The results are consistent with Offer et al.'s finding. We also report non-US and US subsamples for non-club and club deals. The results are robust and show that club deals have lower premium than non-club LBOs. Overall, the evidence suggests that target shareholders receive lower offering price in club LBOs than non-club LBOs.

5. Conclusions

This paper examines the value effect of institutional environments such as legal investor protection on the international LBOs with the focus on its role in safeguarding or improving firm value or shareholders' wealth gains. We find that LBO premium is positively associated with equity investor protection, suggesting that better legal protection for equity investors helps to bring more wealth to target shareholders in takeovers, especially in LBOs.

We also find evidence that the premium improvement associated with investor protection is larger for LBOs than for other type of takeovers. This result is robust to the endogenous decision of takeover types. It suggests that target shareholder's wealth in LBOs is more sensitive to investor protection regimes, arguably due to its more reliance on external financing.

In the case of club LBOs, a controversial practice in the U.S. because of regulator's suspicions of collusion among PE acquirers to expropriate minority investors, we find that club LBO premium is neither higher nor lower than non-club deals when we exclude our sample to be only LBOs. Once we use difference-in-difference approach by using non-LBO takeovers as the control groups and compare club and non-club LBOs, we report the evidence consistent with Officer et al. (2010), that is, club deals have lower pricing. Therefore, our findings suggest that club deals are associated with a strategic motivation of avoid competition and over-bidding for target firms. In the regression, we find that the wealth gains for shareholders in LBOs and club LBOs depend on a target country's legal investor protection environment.

The difference-in-difference results mentioned above between LBOs and non-LBOs support Burkart et al., (2014)'s theoretical conjecture that takeovers can have greater value outcomes through improved external financing capacity and better corporate governance. Our research makes a valuable contribution to the literature by enhancing the understanding of wealth implications for minority shareholders in LBOs transactions. We also show that investor protection is particularly important for corporate value effect and shareholders.

Appendix A. Definition of key institutional variables related to institutions and LBOs

This table summarizes the definitions of the key institutional variables, which include common law legal origins, GDP per capita, the antidirector rights index, the judicial efficiency index, and the creditor rights index.

Institutional Variables	Explanations
LBO dummy	Dummy variable if a takeover transaction is in the form of LBOs, and zero otherwise.
Club LBO dummy	Dummy variable if a takeover transaction is in the form of club LBOs (several buyout groups form a syndicate of acquirers), and zero if acquirer is one buyout group alone.
LBO premium	LBO premium measured with offer price divided by target firms' pre-transaction market close price at certain date (one day, one week, one month, etc., before the announcement of the deal).
Common Law Legal Origin	Equals one if the origin of the company law or commercial code of the country is English common law and zero otherwise.
GDP per Capita	Gross national income per capita. Source: World Development Indicators (2005).
FDI	Foreign direct investment. Source: World Bank Country Database.
Antidirector Rights Index	Formed by adding one when (1) the country allows shareholders to mail their proxy votes, (2) shareholders are not required to deposit their shares prior to the general shareholders' meeting, (3) cumulative voting or proportional representation of minorities on the board of directors is allowed, (4) an oppressed minorities mechanism is in place, (5) the minimum percentage of share

Appendix A (*continued*)

Institutional Variables	Explanations
	capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10% of the sample median, or (6) shareholders have preemptive rights that can only be waived by a shareholder meeting. The range for the index is from zero to six.
Judicial Efficiency Index	Assessment of efficiency and integrity of the legal environment as it affects businesses, particularly foreign firms, based on the International Business Corporation's rating of the country's risk, which "may be taken to represent investor's assessments of conditions in the country in question." We take the averages between 1980 and 1983, scaled from zero to 10, with lower scores signaling a lower efficiency level.
Creditor Rights Index	An index aggregating creditor rights: A score of one is assigned when each of the following rights of secured lenders are defined in the laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after a reorganization petition is approved; that is, there is no automatic stay or asset freeze. Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as the government. Finally, management does not retain administration of its property pending the resolution of reorganization. The index ranges from zero (weak creditor rights) to four (strong creditor rights) and is constructed in January for every year from 1978 to 2003.

Appendix B. Institutional environment variables in sample countries

This table displays the scores of each institutional variable for each country, obtained from Andrei Shleifer's website at http://www.economics.harvard.edu/faculty/shleifer/dataset. The antidirector rights index includes the version of La Porta et al. (1997) and a revised version by Spamann (2009). The creditor rights index includes version of La Porta et al. (1998) and a revised version by Djankov et al. (2007).

	Common Law Legal Origin	Antidirector Rights	Antidirector Right (Spamann, 2009)	Judicial Efficiency Index	Creditor Rights	Creditor Rights (Djankov et al., 2007)
Argentina	0	4	3	6	1	1
Australia	1	4	4	10	1	3
Austria	0	2	4	9.5	3	3
Belgium	0	0	3	9.5	2	3
Brazil	0	3	5	5.75	1	1
Canada	1	5	4	9.25	1	1
Chile	0	5	5	7.25	2	2
Colombia	0	3	4	7.25	0	0
Denmark	0	2	4	10	3	3
Finland	0	3	2	10	1	1
France	0	3	4	8	0	0
Germany	0	1	4	9	3	3
Greece	0	2	5	7	1	1
Hong Kong	1	5	4	10	4	4
India	1	5	4	8	4	2
Indonesia	0	2	4	2.5	4	2
Ireland	1	4	4	8.75	1	1
Israel	1	3	3	10	4	3
Italy	0	1	2	6.75	2	2
Japan	0	4	5	10	2	3
Malaysia	1	4	4	9	4	3
Mexico	0	1	2	6	0	0
Netherlands	0	2	4	10	2	3
New Zealand	1	4	5	10	3	4

Appendix B (*continued*)

	Common Law Legal Origin	Antidirector Rights	Antidirector Right (Spamann, 2009)	Judicial Efficiency Index	Creditor Rights	Creditor Rights (Djankov et al., 2007)
Norway	0	4	4	10	2	2
Pakistan	1	5	5	5	4	1
Peru	0	3	4	6.75	0	0
Philippines	0	3	4	4.75	0	1
Portugal	0	3	3	5.5	1	1
Singapore	1	4	4	10	4	3
South Africa	1	5	5	6	3	3
South Korea	0	2	4	6	3	3
Spain	0	4	5	6.25	2	2
Sri Lanka	1	3	4	7	3	2
Sweden	0	3	4	10	2	1
Switzerland	0	2	3	10	1	1
Taiwan	0	3	5	6.75	2	2
Thailand	1	2	4	3.25	3	3
Turkey	0	2	4	4	2	2
UK	1	5	4	10	4	4
U.S.	1	5	2	10	1	1
Venezuela	0	1	2	6.5	3	3
Zimbabwe	1	3	4	7.5	4	4

Appendix C. Supplementary material

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.intfin.2018.11.012.

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