Private Equity, Club Deals and Competition

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Abstract

Using a novel hand-collected dataset on leveraged buyouts, I investigate three motivations behind club formation in private equity deals: collusion; risk-sharing; and financing. Results provide support for the financing motivation of club creation, which is also the only reported explanation provided by acquirers in SEC filings. Clubs allow members to commit a lower amount of equity as percentage of deal value with respect to sole-private equity LBOs, allowing to complete larger deals. Evidence also shows that club deals do not harm the competitiveness of the takeover process. Compared to LBOs sponsored by a single private equity firm (sole deals), club deals present a higher level of competition, especially in the private phase of deal negotiation. Contrary to the collusion view, targets' stock price reactions around the acquisition announcement and takeover premia are similar in sole private equity and club deals. Finally, results do not support the hypothesis that clubs are formed because the target firms are riskier in terms of market or operational risk than targets of sole-PE deals.

JEL classification code: G30.

Keywords: leveraged buyouts, consortium, private negotiation, collusion, deal financing.

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1. Introduction

The role of private equity (henceforth PE) funds has significantly grown in recent years, having raised more than half a trillion dollars worldwide for four years in a row, from 2016 to 2019[1][2]. An important phenomenon of the leveraged buyouts (henceforth LBOs) market are club deals: on June 5th, 2021, a consortium of PE firms including Blackstone, Carlyle and Hellman & Friedman, reached an agreement to take the US medical supply group Medline private for about $34 billion, thus concluding one of the largest buyout after 2007[3].

Club deals, i.e. consortia of acquirers including at least one private equity firm, allow syndicate members to get additional benefits with respect to LBOs sponsored by single private equity firms. Clubs buy larger targets than sole PE LBOs (Officer, Ozbas, and Sensoy (2010)) and get more favorable conditions on the deal, such as lower loan spreads, longer maturities and higher leverage thanks to PE group members' reputation (Stanfield (2020), Axelson et al. (2008) and Demiroglu and James (2010)). Also, when joining a club, investors can mitigate investment restrictions that prevent them from allocating a considerable fraction of their portfolios in a single transaction (Jackson (2008)). However, financial press and government officials have repeatedly expressed some concerns about the PE collusive behavior in club deals to the detriment of target shareholders[4]

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[1]Some examples include the acquisitions of Thomson Reuters by Blackstone (with a deal value of about $13.5 billion), Envision Healthcare (with a deal value of almost $10 billion) and BMC Software (with a deal value of about $8.5 billion) by KKR.

[2]According to https://www.investmentcouncil.org/2020investment/, they have been the most active buyers during COVID 19 pandemic too, having invested $561.3 billion in 4,335 American companies.

[3]https://www.ft.com/content/3993dcba-4cbc-4564-a22e-8c36992589b2

[4]The US Department of Justice started an investigation in 2006, later abandoned once the financial crisis of 2007-2008 broke up (https://www.nytimes.com/2006/10/11/business/equity-deals-attract-eye-of-justice.html). More recently, in 2019, the 'Stop Wall Street Looting Act' (SWSLA) proposed to eliminate the tax deductibility of interests and the limited liability for shareholders, due to the concern that the high levels of leverage in the PE market may have negative social consequences.

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This paper investigates the reason why PE firms create clubs, by exploiting the information contained in the LBOs documents filed by targets with the SEC. Three motives for club creation are considered: 1) collusion, 2) risk-sharing and 3) financing. According to the collusion hypothesis, PE funds collude when creating clubs in order to pay a lower premium to target shareholders and get better conditions on the deals, thus altering competition since the very beginning of the negotiations. There is evidence in the literature that the largest PE firms pay lower premium in club deals, which is interpreted as evidence of collusion (Officer, Ozbas, and Sensoy (2010)). However, there is also evidence of above-average level of competition in clubs with respect to sole PE LBOs: Boone and Mulherin (2011) show that clubs are associated with more potential buyers, more confidentiality agreements, more indications of interest and more offers. Other researches support Boone and Mulherin (2011)'s view, even though they do not explicitly focus on club deals (e.g. Wang (2012) and Fidrmuc et al. (2012))[5]. There is also a theoretical study by Marquez and Singh (2013) showing that, when there are many interested acquirers, allowing for club enhances competition and creates value for target shareholders.

According to the risk-sharing explanation, when targets are riskier, buyers create consortia to share the risk. Marquez and Singh (2013) and Jackson (2008) support the hypothesis that creating coalitions among bidders allows to spread risk, thus making possible to bid for targets that could not otherwise be bought out. Tykvová and Borell (2012) argue that clubs tend to invest in more risky companies because they are better able to manage these risks since the higher number of involved parties allows a more intense monitoring and support during the investment phase and to benefit from different sources of information.

The last hypothesis predicts that PE form clubs to finance the deal, since larger targets require more resources to be bought out. Although there is no specific testing of this conjecture in the literature, there is indirect support to it: Officer, Ozbas, and Sensoy (2010)

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[5]Wang (2012) does not find evidence of collusion among PE firms in the UK market for secondary buyouts and Fidrmuc et al. (2012) also agree that PE buyers do not pay less for their targets: differences in premiums observed are due to differences in firms being sold.

find that targets of club deals are larger and Boone and Mulherin (2011) conclude that joint-bidding is a competitive response by PE firms when bidding for larger targets. Marquez and Singh (2013) also argue that PE firms are prevented to buy specific targets as single acquirers due to a lack of resources, thus they choose to club together.

In order to test the three hypotheses, I collect a sample of 509 LBOs with US targets from 1995 to 2019, comparing 383 sole PE LBOs with 126 club deals. I screen the SEC filings made by targets and hand-collect data about the private phase of takeovers negotiation, from the first contacts between target and buyers to the public announcement of the merger and, in some cases, the amount of equity and debt used to finance the deal. Results support the financing hypothesis as main rationale for club formation, in that club members commit less equity as percentage of deal value as they do in sole PE deals. Moreover, in 28 transactions, the filings explicitly say that the reason why bidders create consortia is the need for funds to buy the target. The competition hypothesis goes into the direction of increased competition in club deals with respect to sole PE LBOs, thus supporting Boone and Mulherin (2011)'s view that PE members do not collude. Indeed, the examination of the private takeover negotiation phase, the one happening behind closed doors, shows that there is a higher lever of competition in club deals than in sole PE transactions in terms of number of potential acquirers, number of offers made to the target and time taken to close the deal. I also show that there is no significant difference in the market reaction to sole PE and club deals, which is evidence that they are not priced differently. Also, target shareholders do not gain less when they sell their company to clubs since premium received is in line with premium received by shareholders selling their company to a single PE fund. Finally, there is no support to the hypothesis that PE create clubs for risk-sharing reasons.

This study contributes to the literature about private equity and, specifically, club deals. Previous literature has focused on positive effects of LBOs either on targets (e.g., Humphery-Jenner, Sautner, and Suchard (2017), Davis et al. (2014) and Lerner, Sorensen, and Strömberg (2011)) or on PE firms (Stanfield (2020)). As for market reaction, it has shown that PE pays

lower premium than strategic buyers (Bargeron et al. (2008) and Dittmar, Li, and Nain (2012)), even if this difference vanishes when accounting for the endogeneity implicit in the takeover process (Fidrmuc et al. (2012)). Syndication in the LBO market and its effects have also been investigated: there is evidence of collusion (Officer, Ozbas, and Sensoy (2010)) and of positive effects on competition (Boone and Mulherin (2011)). Stanfield (2020) shows that clubs offer some advantages to their members such as the possibility of exploiting each other skills and reputation, where more reputable PE members make the market perceive the transaction as less risky, thus allowing to get better terms on the deal (Axelson et al. (2008) and Demiroglu and James (2010)). A novel contribution to club deals literature is the systematic investigation of the reason why clubs are created. To this purpose, I investigate three hypothesis: finance the deal, reduce competition and share the risk of the transaction. By analyzing the 'Financing to the Merger' section of the SEC filings of club deals and sole PE LBOs, I show that, controlling for target size, there is difference neither in the total amount of equity committed to the deal by acquirers nor in the amount of debt obtained from financial institutions to leverage the deal. However, there is a significant difference in how much each club member ties to the deal: PE club members commit less equity than what sole PE firms do.

The paper also adds to the literature about competition in the market. The theoretical study by Marquez and Singh (2013) reconciles Officer, Ozbas, and Sensoy (2010)'s results of collusion among largest PE firms and Boone and Mulherin (2011)'s findings on the competitive explanation for consortia with the need for taking into account bidding costs and number of competitors. Using novel hand-collected data from the SEC filings about the private phase of takeover negotiations, I contribute to this debate by showing that club deals are characterized by a higher level of competition than sole PE deals. However, this competition is private since it occurs during the private phase of takeover negotiations, before the deal is publicly announced to the market. Also, targets of club deals receive significantly more offers by competing acquirers after the deal has been publicly announced to the market. An addi-

tional contribution to these two studies is the sample definition: my sample is not restricted to largest PE firms, as it is in Officer, Ozbas, and Sensoy (2010), and it spans a larger time period, from 1995 to 2019 (Boone and Mulherin (2011)'s goes from 2003 to 2007).

Finally, my paper provides a more granular description of the private phase of takeovers negotiations in LBO deals, from the first contacts between targets and potential acquirers, to the public announcement of the deal. Boone and Mulherin (2007) and Boone and Mulherin (2011) consider all the potential bidders involved in the negotiation and all the indications of interest received by targets. I build my dataset considering only the potential acquirers specifically identified in the filings, as distinguished between financial and strategic companies. Also, I focus on the offers received by targets with a price range or a specific price (I neglect the ones with no price or price range reported), and I consider them separately if received by non winning bidders or by winning bidders.

The rest of the paper proceeds as follows: Section 2 reviews previous literature about private equity and club deals, Section 3 describes the sample and the variables, Section 4 presents the results and Section 5 concludes.

2. Literature review

Many studies have focused on LBOs in the US market, providing comprehensive evidence of their cyclicality (Robinson and Sensoy (2016)), their main drivers, their functioning (Kaplan and Stromberg (2009)) and effects on target companies (Boucly, Sraer, and Thesmar (2011) among others) and on the private equity funds themselves (Stanfield (2020) and Humphery-Jenner, Sautner, and Suchard (2017)). Most of these researches show the positive effects of private equity investing, concluding that on average buyout activities create value by improving operating performance (Humphery-Jenner, Sautner, and Suchard (2017), Boucly,

Sraer, and Thesmar (2011)), Wilson et al. (2012)), employment (Davis et al. (2014)), innovation (Lerner, Sorensen, and Strömberg (2011)) and corporate governance (Jensen (1989)). Acharya et al. (2013) and Scellato and Ughetto (2013) also find similar improvements for European deals. However, theoretical studies and empirical evidence on club deals is scarcer.

Most of the studies look at the market reaction to club deals announcements to infer about their effects on target shareholders. Although Officer, Ozbas, and Sensoy (2010) acknowledge that it is not possible to distinguish between deliberate collusion and inadvertent reduction in bid competition due to PE firms partnering to buy the same target, they interpret lower gains for targets' shareholders as evidence of collusion. Indeed, they find that premium[6] is significantly lower in club deals relative to sole PE LBOs and other corporate takeovers, especially if institutional ownership is higher, and this discount is concentrated prior to 2006, when the Department of Justice started its informal inquiry. Since there are no significant differences in observables, a part from the fact that targets of club deals are three times larger, they conclude that it is unlikely that targets' characteristics determine this lower abnormal return. Evidence of significantly lower premium in club deals after controlling for the self-selection of targets is also documented by Cao et al. (2019) for a sample of global takeovers and for the US subsample too.

However, there are also other studies supporting the opposite view, that is club deals do not harm competition in the LBO market. Boone and Mulherin (2011) find that abnormal returns for club deals are lower only over narrow event windows, but this difference vanishes when looking at longer event windows [7], which better accounts for differences in the takeover process for different types of bidders. Following Boone and Mulherin (2007), they also study how many competitors are involved at various stages of club deals and sole PE LBOs negotiations, from the initial contacts between target and buyers to the submission of formal offers: their analysis points at joint bidding fostering competition through resources

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[6]They follow Schwert (1996) in defining premium: it is the cumulative abnormal return over an event window starting 42 days before the announcement and ending 126 days after or when the target was delisted.

[7]Completion window starts 42 days prior to takeover announcement and ends at takeover completion.

and information pooling. Finding that most of the competition happens during the private phase of takeover negotiation before the deal is publicly announced to the market is also confirmed by Boone and Mulherin (2007) for PE transactions and Aktas, Xu, and Yurtoglu (2018) for strategic mergers. Therefore, when taking into account not only the public profile of LBOs (the market reaction to their announcement), but also the private negotiation phase, conclusions are different, since it appears that competition is not dampened by clubs of bidders, it is just moved to another phase.

Boone and Mulherin (2007)'s competition measures are also used by Guo, Hotchkiss, and Song (2011) to investigate the potential collusive behavior in club deals. They find that pre and post buyout returns are higher for target companies but not significantly related to competition's measures, thus concluding that when ex-ante prospects of a deal are better, multiple firms are attracted and willing to participate. Fidrmuc et al. (2012) also conclude that observed differences in LBOs and non-LBOs premiums are due to differences in firms being acquired: more profitable and lower market-to-book firms get on average higher premiums. They acknowledge that premium determination is one part of the takeover process, which includes also selling mechanism and bidder type. When choosing how to sell their companies, managers take into account firm and deal characteristics, with more profitable firms and takeover markets with a high number of potential targets being more likely associated with auctions or controlled sales rather than with private negotiations. This choice has a feedback effect on the buyer type: private equity buyers are more likely to operate through controlled sales than auctions, having private negotiations as benchmark. However, premium is impacted by neither of these two choices and this is interpreted as evidence that PE buyers do not pay less for their targets with detriment to target shareholders.

Therefore, existing empirical evidence about premium and market reaction to LBOs and, specifically, club deals has different implications. On the one hand, lower premium and abnormal returns are interpreted as evidence of collusion among PE firms partnering to buy the same target at a significant discount; on the other hand, when taking into account other

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variables and characteristics of the takeover process, such as private negotiation phase, results seem to support another explanation, that competition is not dampened by club of PE acquirers, but it occurs prior to the public announcement to the market. This leads to the first hypothesis tested in this paper, the *collusion hypothesis*, which looks at if and how club deals alter the competitive level of negotiation process. In order to test this hypothesis, I first compute premium and measures of abnormal returns as in Officer, Ozbas, and Sensoy (2010) and Boone and Mulherin (2011) and I compare strategic takeovers' with sole PE and club deals'. I then focus on LBOs only and look at what happens during private phase of negotiations, by making use of information taken from the documents filed with the SEC by target companies. Indeed, the theoretical analysis of competition in club bidding by Marquez and Singh (2013) shows the importance of taking into account the cross-sectional differences in bidding costs and the number of potential competitors. When number of potential acquirers is low, allowing for clubs is detrimental for target shareholders since it reduces the expected values of the winning offer. However, when there are many interested bidders, clubs are beneficial for targets because value creation effect predominates. Also, when bidding costs are high and a club is already present, independent bidders are discouraged to enter the market, thus lowering competition ex-ante.

Therefore, even if club deals mathematically reduce the number of competitors taking part to the bidding process, it does not mean that club members collude to detriment of target shareholders. Indeed, joining a PE club can also be beneficial, since it allows to go after larger targets and share risk, thus solving some investment restrictions that prevent investors from investing too large a fraction of their portfolios in one transaction only Jackson (2008). This leads to the other two hypothesis tested in this paper to explain clubs formation: *risk-sharing* and *deal financing*. PE, as opposed to strategic acquirers, build their business on detecting mature and less risky targets, with agency problems, but with high potential for improvements (Eckbo and Thorburn (2013), Stowell (2017) and Dittmar, Li, and Nain (2012)). However, the risk profile of club deals may be different than that of sole

PE LBOs, even if Officer, Ozbas, and Sensoy (2010) do not find evidence of this. On the one hand, given that clubs buy larger targets thus transactions are larger in terms of deal value, it could be that risk associated with the target is higher and PE creates consortia to share it. Tykvová and Borell (2012) argue that more risky companies are more likely bought out by clubs because clubs are better equipped to deal with these risks. Indeed, they have access to a larger pool of financial resources in case targets get into financial distress, they benefit from different sources of information, thus leading to a better target selection and they can more intensely monitor during investment phase. On the other hand, the reverse could be true, meaning that the fact that multiple bidders are willing to buy the same target signals that the target firm is viewed as a lower risk investment than single PE. In this case, investors' perception also plays a role, since when investors observe that reputable PE firms take part to a large transaction, they perceive it as less risky (Jackson (2008) and Demiroglu and James (2010)). Lower riskiness translates into narrower bank and institutional loan spreads, longer maturities and higher leverage.

In order to test this hypothesis, I compute different measures of riskiness, both market risk and operational risk, to see if clubs are riskier or not than sole PE deals.

The last hypothesis, deal financing, can be explained with the fact that clubs require more funds than sole PE because their targets are three times larger than sole PE targets (Officer, Ozbas, and Sensoy (2010)). In order to test this hypothesis, I compare, where available, the percentage of equity and debt over total deal value committed in clubs and in sole PE.

3. Data and sample construction

3.1. Sample

I start retrieving a list of mergers and acquisitions from ThomsonOne Banker M&A module. The transactions of interests were announced and completed between January 1, 1995 and December 31, 2019 and have US public companies as targets. Following Officer, Ozbas, and Sensoy (2010), deal value has to be at least $1 million, the acquirer has to have an initial ownership of less than 25% and it has to close the transaction with at least 50% of the total shares in the target. Moreover, I impose a delisting event for the target within one year from the announced transaction (Officer, Ozbas, and Sensoy (2010)). I focus on leveraged buyouts, that is transactions performed by at least one private equity fund, thus excluding strategic deals[8]. I drop bankruptcies, restructurings and target companies classified as REITs, closed-ended investment funds and financial institutions (SIC codes from 6000 to 6999). I also exclude MBOs and transactions funded by individuals, spin-offs, shares repurchases and stock splits. Finally, I drop the 139 private equity transactions for which related documents are not available on the SEC website. As last step, I match the resulting sample with Compustat and CRSP databases and I am left with 509 events. Sample criteria are listed in Appendix A, with number of observations reported at each step.

Then, I classify the deals on the basis of acquirers involved, both by manually searching the deal synopsis as retrieved from ThomsonOne Banker, as in Officer, Ozbas, and Sensoy (2010), and by verifying them with the SEC filings and internet searches, as in Boone and Mulherin (2011). ThomsonOne Banker also provides a short business description of the acquirer. However, this description is usually very general and sometimes fails to identify private equity firms, especially in cases when there are groups of investors. Thus, I screen the SEC filings (DEF14A, PREM14A, SC-T-TO, DEFS14A) to collect information about

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[8]Strategic acquisitions are performed by acquirers different from private equity funds, either financial institutions or purely strategic ones.

the bidder's type, searching for corroborating information on the web when necessary. However, unlike Officer, Ozbas, and Sensoy (2010), I do not place any restriction on the top 50 PE firms, but I consider all the 300 companies listed, to have the more precise information possible. In the end, I come up with 126 club deals with complete information, that is information about private deal negotiations and financial information. This small number is due to fact that I consider as PE firms only firms that have in their business description the word 'private equity', thus excluding financial companies that have funds with investment strategies similar to PE.

After this analysis, I create two categories of acquirers: sole PE (383 deals) and clubs (126 deals). Club deals are consortia comprising at least one private equity firm, with other components being either PE firms, financial firms, institutional investors or strategic companies. Sole-PE sponsored transactions are the ones promoted by a single private equity firm.

Table 1 shows the time series of takeovers considered for the analysis. The column *Total* is the sum of *Sole PE* and *Club Deals*. As it has already been shown by Harford (2005) and Rhodes-Kropf, Robinson, and Viswanathan (2005) among others, mergers tend to happen in waves. The sample capture the first merger wave of late 1990s, followed by a slow down, then another peak is observed before the crisis of 2008, after which the market freezes for some years, till it comes back to grow in recent years. For deals sponsored by PE firms, either single PE firms or club deals, the merger wave observed before the 2008 crisis includes more deals than the first wave of late 1990s. Indeed, the highest number of club deals is observed in 2005 (11), 2006 (15) and 2007 (14). A similar trend is observed for LBOs sponsored by sole PE funds, where 2006 and 2007 have the highest number of transactions, 27 and 25 respectively. 2010 and 2011 also have 22 and 27 single PE deals. This is higher compared to the late 90s wave, with a peak of 20 single PE deals in 1999 and a peak of 8 club deals in 2000. Clubs peaked in 2015 with 8 deals, then slowed down and stayed stable thereafter (6 in 2016 and 4 in 2017, 2018 and 2019).

[Please Insert Table 1 Here]

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3.2. Negotiation Process

The negotiation process is described in the 'Background to the Merger' section of the SEC filings, from the first contacts between targets and potential acquirers to the public announcement of the takeover. It is a description of those events that led to the final merger agreement, events that are not observed by the market since they are private discussions between targets and potential bidders. They become public only when the final agreement is signed between target and bidder and the related document is filed with the SEC by the target.

The takeover process starts in two possible ways, either it is solicited by the target, meaning that the Board of Directors chooses to put the company up for sale, or it is unsolicited, meaning that an interested acquirer first approaches the target to inquire about its current situation and the possibility of buying it. Most of the LBOs in my sample are unsolicited, 68 out of 126 club deals (54%) and 233 out of 383 of sole PE (61%). The first interested acquirer that shows up during the negotiation of clubs is a member of the winning consortium in 52% cases, a financial company in 27% cases and a strategic in the remaining 21% cases. In 20% of the clubs, the deal already starts as consortium, whereas in the remaining 80% of the transactions it starts as single acquirer deal and the consortium is created later on during the negotiation. For sole PE deals, the first interested bidder is the winning PE firm in 64% of transactions, a financial company in 19% of cases and a strategic company in 17% of cases. The winning bidder is contacted by the target in 21% of the cases for clubs and in 34% of the cases for sole PE, in the remaining cases it is the winning bidder to first approach the target.

The number of interested acquirers is, on average, higher in club deals than in sole PE (7.08 versus 4.4), with more financial than strategic bidders (5.46 versus 1.64 in clubs and 3.32 versus 1.13 in sole PE). Moreover, on average, each club has 2.74 participants, most of which are PE funds (1.91), but there are also financial and strategic members (0.63 and

0.19). In some transactions there are other bidding consortia involved, different from the winning one: in 33 club deals, there is at least another consortium involved (1 in 26 deals, 2 in 5 deals, 3 and 5 in one deal); in 45 sole PE deals, there is also another consortium involved (1 in 36 deals, 2 in 8 deals and 3 in 1 deal). In 81 sole PE transactions the PE fund uses portfolio companies to conclude the buyout; the same happens for 2 club deals, where one of the PE fund makes use of one of its portfolio company.

Clubs are formalized towards the end of the negotiations, meaning that members of the club first enter the process alone, then choose to create a consortium with other companies. On average, clubs are formalized 5.38 months after the beginning of the takeover process (going from a minimum of 0, when the first interested acquirer is the winning consortium, to a maximum of 34), whereas the winning PE fund first enters the negotiation 5.31 months after the beginning of the process (going from a minimum of 0, when the first interested acquirer is also the winning one, to a maximum of 27). There are a few cases (7) where some members of the club withdraw before the deal is closed, meaning that they are part of the consortium but then choose to withdraw for unspecified reasons. Time taken to conclude the deal is higher in clubs than in sole PE (an average of 12 versus 11 months).

Clubs targets receive on average more offers (i.e. price revisions from winning bidders) and indications of interest (from non-winning bidders) than sole PE's and the final price is equal to the maximum price offered during the negotiation in 50% of the cases in clubs and in 61% of the cases in sole PE. Minimum and maximum prices offered during negotiation by winning bidder are equal to 26.08 and 29.28 per share, on average, in clubs and to 17.44 and 20.02 per share, on average, in sole PE, thus being higher in clubs. In 9 clubs, members first make offers as separate bidders, then choose to create a club and bid together, whereas in 62 clubs members make their first offers together. In the latter case, they enter the process alone, but their first offer, with a specified price, is made as consortium. As for the number of competing bids, that is bids made after the deal is publicly announced to the market, it is higher in clubs than in sole PE, even if for most of the deals there is no information available.

89 sole PE and 7 club deals are tender offers; 34 sole PE and 13 clubs involve hedge funds, meaning that a hedge fund shows up at some point of the negotiations as a potential acquirer.

The last piece of information is about the reason why clubs are created: since this paper investigates the reason why clubs are created, I screen the SEC filings to see if they mention this reason. 28 club deals explicitly say that the consortium is created for financing needs, that is the target is too big and buyers do not have the financial resources to buy it alone, whereas the other 98 clubs do not mention any reason.

3.3. Variables and univariate analysis

All the variables discussed below are winsorized at the 1st and 99th percentile and they are defined in Appendix B.

The main variable is the binary variable accounting for acquirer type, *Club*, which takes the value of one for club deals (126) and 0 for sole PE (383). Moreover, given the investigation of the US Department of Justice of 2006 and the findings by Officer, Ozbas, and Sensoy (2010) that the discount in premium for target shareholders of club deals is concentrated before 2006 in targets with low institutional ownership, I also create the dummy *Club post 2006*, taking the value of one if the club occurs after 2006 (79 deals) and zero otherwise (47 deals).

Table 2 reports summary statistics for premium, abnormal returns and controls used in the multivariate analysis for sole PE and club deals.

Premium is used as measure of wealth effects, as in Boone and Mulherin (2007), Alexandridis et al. (2013) and Aktas, Xu, and Yurtoglu (2018). It is computed as the ratio of the offer price to the target stock price four weeks before the announcement date, as reported in ThomsonOne, and it is restricted between 0 and 200 (as in Officer (2003)).

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In order to look at the market reaction to deals announcement, I follow Officer, Ozbas, and Sensoy (2010) in computing four specifications of abnormal returns, using daily data from CRSP [9]. *CAR(-2,+2)* is the cumulative abnormal return over an event window starting 2 days before the announcement date and ending 2 days after, *Runup(-42,-1)* is the cumulative abnormal return from 42 days before the announcement till the day immediately preceding it, *Markup(0,+126)* is the cumulative abnormal return from the announcement day up to 126 days after (0,+126) and *Total Return(-42,+126)* is the sum of *Runup* and *Markup*. For estimating market model parameters, I make use of an estimation window starting 379 days before the acquisition and ending 127 days before it (-379,-127) and I require a minimum of 20 daily returns over this period (as in Officer, Ozbas, and Sensoy (2010) and Schwert (1996)).

Abnormal returns are higher for sole PE LBOs than for club deals, with differences being significant both in mean and median values. *CAR* has a mean (median) value of 27.10% (21.09%) for sole PE deals and of 19.71% (13.80%) for club deals, thus being consistent with Officer, Ozbas, and Sensoy (2010) and Boone and Mulherin (2011). *Runup* has a mean (median) value of 32.22% (28.57%) for sole PE and of 26.24% (20.71%) for clubs. This difference is of specific relevance since it is computed during the three months preceding the LBO public announcement, thus signaling that the market is aware that some private negotiation is taking place and it incorporates this news into its target valuation. Although most of the reaction is concentrated in *CAR* and *Runup*, average *Markup* is 8.45% higher for sole PE deals (median *Markup* is 6.7% higher) and *Total Return* is higher for sole PE too.

As it can be expected, targets of club deals are bigger in terms of assets, have more leverage, a higher percentage of institutional ownership and a better performance with respect to the market in the year preceding the deal announcement (as in Officer, Ozbas, and Sensoy (2010) and in Boone and Mulherin (2011)). Also, *Deal Value* is significantly higher for club deals (with an average difference of $1,710 million and a median difference of $526 million).

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[9]All the data used refer to trading days.

Last, level of liquidity in the market for LBOs is higher for sole PE (*Industry M&A Liquidity*).

[Please Insert Table 2 Here]

Table 3 reports summary statistics for clubs composition (Panel A) and competition, risk and financing variables (Panel B) used to test the three hypothesis for club creation, comparing sole PE LBOs with club deals. *Club Members* is the number of firms taking part to the consortium, distinguished in *PE Members*, *Financial Members* and *Strategic Members*. Mean number of club participants is 2.74 (median is 2), most of which are PE firms, a few of them are strategic, with financial in between.

Panel B includes three groups of variables, corresponding to the three hypothesis tested to explain club creation. I build competition measures by exploiting hand-gathered data from the SEC documents filed by targets. 'Background to the merger' section of the filings report information about the private phase of LBOs negotiations before the public announcement starting from the first contacts between target and bidders to the public announcement. Similar measures have been used by Boone and Mulherin (2011) and Boone and Mulherin (2007), when showing that much of the competition happens during private phase of takeover negotiation.

Total Participants include all the companies that at some point of the private negotiation were interested in the target. Some of them asked for information [10], went through the due diligence process and presented a formal bid to the target with price range. Some others only asked for information or were interested in the target but then withdrew without bidding. They are distinguished between *Strategics* and *Financials*, with the latter including both private equity firms and financial companies, such as investment banks and asset management companies, since the filings do not distinguish them, labeling them generically as financials. In club deals, there are significantly more *Tot Participants* involved in the process

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[10]Companies that ask for information are potential acquirers that had some contact with the target, inquiring about targets' financials, operations, market share, products.

(7.08 for clubs versus 4.39 for sole PE), both *Financials* and *Strategics*, even if *Financial* companies are more than *Strategic* ones. These results are in line with Boone and Mulherin (2011), who also find that the average number of potential bidders with which the target and its investment bank were in contact is higher for clubs than for sole PE. *Losers*, that is companies that took part to the process either bidding or just asking for information, are significantly more in club deals (4.32 versus 3.36).

Indications of Interest is the number of offers that targets received from non winning bidders. They are higher in club deals, meaning that there are more bidders in club deals, the mean difference is not significant though (only the median difference is significant). *Offers* are formal offers by winning bidder, that is the number of proposals made to the target by the single PE firm in case of sole PE sponsored deals or by club members in case of club deals. [11] Therefore, this variable counts the number of price revisions made by winning bidder. Similar to Boone and Mulherin (2011), targets of club deals receive more *Offers* than in sole PE sponsored transactions (2.08 versus 1.77), meaning that winning clubs revise their proposal in terms of price more than sole PE acquirer. I consider *Indic Interest* and *Offers* only when bidders indicate either a price or a price range.

In 50% of the club deals, final price of the deal is equal to the maximum price discussed during the private phase of negotiation. In the remaining cases, the final price is at some point in between minimum and maximum price discussed. In sole PE LBOs, 61.36% of the deals are concluded with final price equal to the maximum price.

Clubs also take more *Time* to conclude than sole PE, where *Time* is the number of months needed to close the transactions, from the initial contacts between target and first participant or from the date when the Board of Directors deliberated to put the company up for sale, to the public announcement of the deal.

Finally, *Competing Bid*, is a dummy variable equal to one if target received at least one

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[11] In case of clubs, since the consortium formalization happens towards the end of the deal and in most cases winning members made single offers before the club was created, I also consider those offers in the variable.

offer from competing potential acquirer after the public announcement to the market. 15 clubs and 22 sole PE targets received at least a competing offer, whereas 11 clubs and 29 sole PE did not (for the remaining transactions there are no data).

Overall, these results suggests that club deals do not harm the competition of takeovers, they only move it before the public announcement to the market, during the private phase of negotiations. These results are in line with Boone and Mulherin (2011), who show that competition is higher in clubs than in sole PE deals.

As for risk measures, I compute both operating measure (*Cashflow Volatility*) and market measures (*PD*, *Beta*, *Returns Volatility* and *Residuals Volatility*). From the operating point of view, sole PE are riskier than club deals (average of 4% versus 3%), but only the median difference is significant. From the market point of view, sole PE are significantly riskier than club deals in terms of *Returns Volatility* and *Residuals Volatility* (average of 0.0330 versus 0.0289 and 0.0313 versus 0.0269, respectively), whereas they are less risky in terms of *Beta* and *PD* than club deals (differences in *PD* are not significant though). Therefore, descriptive statistics about risk do not allow us to conclude that clubs are more or less risky than sole PE, further analysis is needed.

The last block of variables includes financing measures. This information is hand-collected from the 'Financing of the Merger'/'Sources and Amount of Funds' section of the SEC filings. Unfortunately, financing commitments are not available for all the deals: there are 368 deals whose documents report the total amount of debt and equity committed by bidders, 112 of them are club deals and 256 are sole sponsored LBOs. For 63 club deals, documents also report the split of equity contributed by each participant.[12] Therefore, I collect the total amount of equity and debt committed by bidders to the deal and, for clubs, the amount of equity committed to the deal by each member.

Equity (%) is the total amount of equity committed to the deal by the acquirers. *Equity PE1 (%)* is the amount of equity committed to the deal by the single PE firm in sole PE

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[12]It is not compelling for firms filing the document to disclose the amount of equity and debt used to finance the deal, therefore some of them do not do it. This is the reason why data are incomplete.

LBOs (thus equal to total equity)[13] and by the highest PE contributing member in club deals. *Debt (%)* is the amount of debt obtained from investment banks or financial institutions to finance the deal. *Equity contribution (%)* is the amount of equity committed to the deal by each club member. All these values are computed in percentage of deal values, which is the sum of equity and debt minus cash on hand of the target. Deal value is retrieved from the SEC filings when available, otherwise the deal value reported in ThomsonOne is used.

Sole PE firms contribute more equity than clubs to the deal, with a mean of about 46.10% for sole PE and 40.27% for clubs. This 6% difference is statistically significant. Officer, Ozbas, and Sensoy (2010) find an average equity contribution of 33.7% for sole PE and 38.2% for clubs.

When looking at the split of equity contributed to the deal by each member of the club, there are only 63 cases where information is available. These data are used to compare the amount of equity contributed by the single PE firm to the PE firm member of the club that contributed the highest amount of equity (leading PE). Mean equity contribution is significantly higher for sole PE deals (about 45.89%) with respect to clubs, where the leading PE committed to the deal only the 30.21% of total equity (median is 39.84% for sole PE and 21.47% for clubs). *Debt (%)* used to finance the transaction is not significantly different between clubs and sole PE. Mean and median *Equity contribution (%)* is significantly higher in sole PE LBOs than in club deals, being equal to 20.93% and 15.50% in clubs. Thus, average total equity committed to the deal is significantly different between clubs and sole PE, as it is the amount of equity committed to the deal by each contributing member and, specifically, by the highest contributing member. Overall, this means that need for funds is an important driver of club formation.

[Please Insert Table 3 Here]

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[13]The reason why mean and median values for *Equity (%)* and *Equity PE1 (%)* for sole PE deals do not coincide is that in 19 deals *Equity (%)* also includes equity committed to the deal by management and cash on hand provided by the target.

4. Empirical Analysis

In previous univariate analysis I have provided preliminary evidence that club deals are associated with a higher level of competition than sole PE deals and PE members contribute less when taking part to clubs than when sponsoring sole PE deals. Also, results for risk measures are inconclusive.

In this section, I test more specifically for the three hypothesis that could explain clubs creation: competition, risk sharing and financing. I show that competition is not dampened in club deals and the risk profile of clubs and sole PE targets is not significantly different. Financing is the main explanation to club deals, in that single members of clubs contribute less than sole PE as percentage of total deal value. Last, the market does not really distinguish sole PE from club deals, but PE pays lower premium to target shareholders than strategic takeovers.

4.1. Do club deals dampen competition in the market for LBOs?

Collusion hypothesis explains clubs creation with the aim of reducing competition during takeovers negotiations by PE members. According to Officer, Ozbas, and Sensoy (2010), PE firms create clubs to reduce competition in the market for LBOs, thus paying lower premium to target shareholders. However, this difference vanishes over longer event windows and it is not related to competition measures (Boone and Mulherin (2011)).

I combine Officer, Ozbas, and Sensoy (2010) and Boone and Mulherin (2011)'s approaches to test the hypothesis that clubs impact the competitive side of LBOs. First, I analyze the market reaction over different event windows around the announcement date of sole PE LBOs and club deals, then I analyze the private phase of takeovers negotiations.

If PE members of the club really colluded with detriment to target shareholders, they should pay lower premium and the abnormal returns should be lower too. Also, there should

be a significant difference in the private negotiation phase of club deals with respect to sole PE transactions, in terms of participants involved in the bidding process, offers received from the winning club and indications of interest from competitors. Also, it should take less to conclude the deal, since competition is harmed since the beginning.

Table 5 reports the results from OLS regressions of takeover premiums paid to target shareholders (Column 1) and CARs over different windows around the merger agreement (Columns from 2 to 5) on PE variables and factors known to affect premiums and market reactions. I consider four measures of abnormal returns computed over different event windows: *CAR* is the shortest one (2 days before and 2 days after the announcement date), *Runup* considers the 2 months before and markup the six months after the announcement, *Total Return* sums up *Runup* and *Markup*[14].

There are no appreciable differences between sole PE LBOs and club deals, in that *Club* coefficient is never significant. This result is in line with Boone and Mulherin (2011), who do not find any significant difference in abnormal returns of club deals and sole PE deals. Officer, Ozbas, and Sensoy (2010) find that clubs have lower abnormal returns than sole PE, however they restrict their sample to prominent PE firms, thus excluding smaller deals, which are included in Boone and Mulherin (2011) and in my analysis.

[Please Insert Table 4 Here]

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[14]I run the same OLS regressions on a larger sample comparing the 509 LBOs with 3,898 strategic mergers with the same characteristics as the LBOs of interest and I find that strategic mergers pay a higher premium with respect to LBOs, but there is no incremental difference for club deals with respect to strategic mergers. This is in line with the literature about market reaction to takeovers announcement, comparing LBOs (both sole-sponsored LBOs and club deals) with strategic mergers. Bargeron et al. (2008) find that abnormal returns in public acquisitions are 63% higher than in LBOs and 35% higher than in private acquisitions, after controlling for the method of payment and the targets' characteristics. These lower abnormal returns are due to the existence of operating synergies between targets and bidders in corporate takeovers, which are absent in LBOs. Since PE firms cannot exploit these synergies with their targets, they pay systematically lower premiums. The same conclusion is reached by Dittmar, Li, and Nain (2012) when observing that financial buyers (PE firms and groups of investors) are more skilled than corporate buyers at selecting targets with high potential for improvement but can only benefit from the common value component of a takeover, which can be identified with a general undervaluation of target firms. Corporate buyers are able to exploit the private value component of takeovers too, which is derived from synergies with target firms.

Now, I investigate if there is a difference in the private competition profile of takeovers negotiation between sole PE and club deals. Indeed, even if the absence of differences in the market reaction to sole PE and club deals suggests that competition is not altered as a result of a club, it may be that competition is altered during the private phase of negotiations. Results from OLS regressions in Table 5 show that the process leading to the merger agreement sees a higher number of *Tot participants* involved, both *Financials* and *Strategics*, in club deals than in sole PE LBOs. Financial companies taking part to negotiations are almost double than strategic companies in club deals. Of course, there are also more non-winning participants, where *Losers* are firms that took part to the competitive process but did not win it (they are computed as the difference between *Total Participants* and winning members of the club). Club deals also take more time to conclude (*Time*), as number of months from the beginning of the takeover process to the public announcement of the deal. Clubs' targets receive significantly more price revisions by actual acquirers (*Offers*) than sole PE deals and more *Indic Interest* from competitors, even if this variable is not significant.

Column 8 is a probit regression for the probability that final price paid to target shareholders is equal to the maximum price offered by acquirers during the private phase. If firms really colluded to pay lower price to target shareholders, I should observe a negative and significant coefficients on *Club* variable. Yet, this coefficient is not significant.

Last column of Table 6 investigates the competition level after the public announcement of the LBOs, by comparing the number of offers received by sole PE and clubs targets. Although the sample size drops due to the lack of observations, we can see that targets of club deals receive significantly more *Competing Bids*, that is bids from other interested acquirers, controlling for target size.

Given that I am dealing with discrete count of events, in unreported analysis I run the same regressions with a Poisson and a negative binomial model to allow for overdispersion in the dependent variables and results are the same as in simple OLS regressions. Finally, results are also robust to the inclusion of control variables.

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Taken together, this is evidence of higher competition in club deals with respect to LBOs sponsored by single PE firms. Indeed, there are significantly more participants involved, both financial and strategic, the acquiring club revises more often its initial offer and clubs take more time to conclude the merger agreement. Also, the probability that final price paid to target shareholders is equal to the maximum price discussed is not significantly higher. Not only competition in the private phase is higher for clubs than for sole PE, but it is higher ex-post too, after the public announcement, which is another proof supporting the evidence that club deals are not detrimental to target shareholders in that they do not reduce competition. Therefore, we can conclude that PE firms do not create clubs to collude in order to get better terms or lower prices. These results are consistent with Boone and Mulherin (2011), who show that LBOs do not inhibit competition among bidders and consortia among PE firms do not have a collusive effect with detriment to target shareholders and with Guo, Hotchkiss, and Song (2011) too, who conclude that PE firms bid jointly when target companies have better ex-ante prospects, thus being more attractive investments.

[Please Insert Table 5 Here]

4.2. Target risk

The second explanation for club creation is risk-sharing, meaning that PE firms decide to club together to share target risk. Univariate analysis shows that target risk differs between sole PE and club deals, but different measures go into different directions. Here, I investigate whether risk can explain the clubbing decision.

Target risk is proxied both by an operating measure as in Officer, Ozbas, and Sensoy (2010) and Furfine and Rosen (2011) (*Cashflow Volatility*) and by market measures (*PD*, *Beta*, *Residuals Volatility*, *Returns Volatility*). Results from multivariate analysis show that none of the risk measures computed is significantly different between club deals and sole

PE. These results are in line with Officer, Ozbas, and Sensoy (2010), who find no significant difference between risk level of sole PE and club deals. Therefore, target risk is not what drives PE firms to create consortia to buy targets.

[Please Insert Table 6 Here]

4.3. Deal financing

Given the above findings that club members do not collude and risk is not significantly different between sole PE and club deals, I turn to the financing explanation as the main reason for club creation, that is PE firms create clubs because they need more resources than what they have as single acquirers. According to the financing hypothesis, PE funds choose to club together with other companies when buying larger targets because they could not buy them out as stand-alone acquirers. As it has already been shown in descriptive statistics (Table 2) and in line with Officer, Ozbas, and Sensoy (2010), club's targets are three times larger than sole PE's targets, thus meaning that deals are larger and more resources are needed to conclude them. Therefore, I analyze the financing profile of LBOs, comparing the total amount of funds used to finance the deals, as the sum of debt and equity, and the amount of equity committed to the deal by each contributing member of clubs.

Dependent variables are: *Equity (%)* is the total amount of equity committed to the deal by all the acquirers (the sole PE fund or the club as a whole); *Debt (%)* is the total amount of debt used by bidders to fund the deal, thus being equal to the total deal value less *Equity (%)*; *Equity PE1 (%)* is the amount of equity committed to the deal by the single PE fund or by the highest contributing member of club deals; *Equity contribution (%)* is the amount of equity committed to the deal by each PE firm taking part to clubs.

Table 7 reports the results of OLS regressions of *Club* dummy on financing variables and target size. Column 1 and 2 are not significant, thus meaning that, controlling for target

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size, the percentage of equity (*Equity (%)*) and debt (*Debt (%)*) used to finance the deal is not significantly different between sole PE and clubs, which is consistent with Officer, Ozbas, and Sensoy (2010). However, there is a significant difference when looking at highest contributing PE club member, *Equity PE1 (%)*: in club deals the leading PE firm committed significantly less than the single PE firm in sole PE deals as percentage of total deal value (Column 3). This is evidence that PE firms do need more resources than what they have as single acquirers to buy larger targets, thus financing need is behind club creation.

I also perform an additional and complementary analysis to support the hypothesis that clubs are created for financing needs. I consider the PE firms that performed at least two deals during the sample period and run an OLS regression to see if there is a difference in the amount of equity contributed to the deal when the PE firm acts as single buyer and when it is part of a club. Results are reported in column 4 of Table 7 and confirm that PE firms contribute less equity when participating to clubs than when sponsoring LBOs as single buyers (*Equity Contribution (%)*). This is further evidence that clubs are created for financing reasons.

Overall, these results show that, controlling for target size, there is no significant difference in the total amount of debt and equity. The difference is observed in the amount of equity contributed by the single PE firm, which is lower in case of clubs than in sole PE transactions. This supports the hypothesis that club deals are actually created because firms need more resources than what they actually have to conclude the LBOs.

[Please Insert Table 7 Here]

4.5. Additional Analysis and Robustness Checks

Since Officer, Ozbas, and Sensoy (2010) find that abnormal returns for target companies are concentrated in targets of club deals with low institutional ownership before 2006, I verify this result in my sample, adding a dummy variable *Club post 2006* equal to one for club deals occurred after 2006 (Table 8). Results confirm the ones discussed above, that is lower *Premium* for *PE* and even lower for *Club post 2006*, but no difference in abnormal returns. However, when focusing on the LBOs subsample, there is no difference between sole PE and clubs and between clubs after and before 2006. This result is in line with Boone and Mulherin (2011), who also do not find evidence of this discount.

[Please Insert Table 8 Here]

5. Conclusion

Using a novel dataset of hand-collected data about the private phase of LBOs negotiations, I shed light on the reason why club deals are created. Evidence provided shows that financing the deal is the main reason why PE firms agree to club with other acquirers to buy a given target. When taking part to club deals, PE funds commit a significantly lower amount of equity as percentage of deal value than what they do in sole PE transactions. Indeed, controlling for target size, there is no significant difference in the total amount of equity used to finance the deal, but there is a significant difference in the amount of equity committed by each club member, which means that PE firms are not able or not willing to carry out the transaction as sole acquirers.

Also, club deals do not harm the competitive process of takeover negotiations with detriment to target shareholders. On the contrary, the opposite holds true, since they are characterized by a higher number of potential acquirers, more offers are received by clubs' targets, more time is needed to reach an agreement and price is not likely to be the highest discussed during the private negotiations. Last, club deals' targets receive significantly more offers by competing acquirers after the deal is publicly announced to the market. Moreover, no appreciable difference exists in the market reaction to sole PE and club deals, thus meaning that investors do not distinguish single sponsored LBOs from club deals. Thus, the paper also contributes to the debate about the potential collusive behavior of PE firms when taking part to clubs showing that, once all the LBOs process is taken into account in the analysis, club deals are not detrimental to target shareholders.

Finally, there is no empirical support to the hypothesis that clubs are created to share the risk of the transaction among acquirers, since none of the risk measures (either market or operational risk) computed are significantly different between sole PE and club deals.

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Table 1: Time series of LBOs.
The table reports the time series of LBOs by year of announcement. *Total* is the sum of *Sole PE* sponsored LBOs and *Club Deals*.

	Total	Sole PE	Club Deals
1995	3	3	0
1996	7	7	0
1997	17	16	1
1998	14	10	4
1999	25	20	5
2000	22	14	8
2001	8	5	3
2002	6	3	3
2003	17	11	6
2004	14	8	6
2005	25	14	11
2006	42	27	15
2007	39	25	14
2008	14	12	2
2009	13	11	2
2010	26	22	4
2011	33	27	6
2012	21	19	2
2013	22	20	2
2014	16	10	6
2015	17	9	8
2016	30	24	6
2017	27	23	4
2018	25	21	4
2019	26	22	4
Total	509	383	126

Table 2: Summary statistics for premium, market reaction and controls.

Summary statistics for targets of LBOs are displayed below. Variables are winsored at 1% and 99% level. Last two columns of each panel report the p-value for mean and median differences (ttest for mean values and non-parametric k-sample test for the equality of medians).

	Sole PE				Club deals					
	Mean	Median	Std dev	N	Mean	Median	Std dev	N	ttest (p-value)	P-value median
Premium and Abnormal Returns										
Premium	36.23	30.92	27.27	375	32.80	27.49	25.69	125	0.217	0.121
CAR (%)	27.10	21.09	25.76	371	19.71	13.80	22.59	116	0.005	0.006
Rumup (%)	32.22	28.57	29.64	371	26.24	20.71	24.00	116	0.048	0.006
Markup (%)	28.09	23.25	32.95	371	19.64	16.55	29.03	116	0.013	0.001
Total return (%)	60.32	52.17	57.81	371	45.88	34.60	49.80	116	0.015	0.002
Controls										
Size	604.1777	220.297	1188.288	383	1806.974	626.481	3397.71	126	0.000	0.000
Leverage	0.2526	0.2118	0.2421	382	0.2103	0.1688	0.2010	126	0.077	0.411
Cash	0.1759	0.0954	0.2019	383	0.1545	0.0864	0.1645	126	0.281	0.857
Tobin Q	1.5591	1.2885	0.8971	365	1.4685	1.2821	0.6639	122	0.308	0.979
Capex	0.0490	0.0321	0.0522	383	0.0492	0.0312	0.0545	125	0.971	0.757
R&D	0.0404	0	0.0735	383	0.0299	0	0.0559	126	0.143	0.411
BHAR	-0.0467	-0.1339	0.5465	350	-0.1343	-0.1545	0.3478	120	0.100	0.526
Institutional ownership (%)	55.8432	56.4078	29.2445	375	67.9698	73.6801	28.6500	124	0.000	0.000
Deal Value ($million)	1,060	494	1,540	256	2,150	1,020	2,770	112	0.000	0.000
Industry M&A liquidity	1.4916	1.1502	1.2445	383	1.2938	1.1068	0.8224	126	0.096	0.700

Table 3: Summary statistics for competition, risk and financing.
The table reports summary statistics for LBOs. Panel A is about club composition and Panel B is about competition, risk and financing measures used to investigates the main rationales behind club formation. Variables are defined in the appendix and winsored at 1% and 99% level.

Panel A: Club composition

	Mean	Median	Std dev	N
Club members	2.74	2	1.39	126
PE members	1.91	2	0.91	126
Financial members	0.63	0	1.07	126
Strategic members	0.19	0	0.43	126

Panel B: Competition, risk and financing

	Sole PE				Club deals				P-value ttest	P-value median
	Mean	Median	Std dev	N	Mean	Median	Std dev	N		
Competition measures										
Tot Participants	4.3969	3	3.8532	383	7.0873	6	4.1319	126	0.000	0.000
Financials	3.3029	2	2.9626	383	5.4444	5	3.1763	126	0.000	0.000
Strategics	1.0966	0	1.7316	383	1.6429	1	1.9656	126	0.003	0.000
Losers	3.3681	2	3.8216	383	4.3254	3	4.0315	126	0.016	0.017
Offers	3.2559	3	1.4389	383	3.5556	3	1.3300	126	0.039	0.173
Indic Interest	1.7650	1	2.2142	383	2.0556	2	2.0911	126	0.195	0.048
Time	11.0444	9	7.3563	383	12.1270	10	7.0348	126	0.148	0.144
Price HI	0.6136	1	0.4876	383	0.5000	0.5	0.5020	126	0.024	.
Competing Bid	0.3804	0	0.4860	51	0.5769	1	0.5038	26	0.045	0.045
Risk measures										
Cashflow volatility	0.0404	0.0245	0.0512	372	0.0334	0.0193	0.0648	124	0.218	0.038
PD	0.0138	0	0.1118	383	0.0179	0	0.1266	126	0.728	0.244
Beta	0.8308	0.8296	0.5515	383	0.9427	0.9772	0.5646	126	0.0501	0.004
Returns volatility	0.0330	0.0285	0.0158	383	0.0289	0.0249	0.0152	126	0.011	0.004
Residual volatility	0.0313	0.0274	0.0157	383	0.0269	0.0222	0.0151	126	0.005	0.001
Financing measures										
Equity (%)	46.1002	39.9760	26.2058	256	40.2770	38.7711	21.4361	112	0.039	0.365
Equity PE1 (%)	45.8943	39.8434	26.3928	256	30.2156	21.4788	23.5107	63	0.000	0.000
Debt (%)	53.6158	59.4997	26.0811	256	57.9424	60.4765	21.7554	112	0.125	0.650
Equity contribution (%)	45.8906	39.8434	26.3988	256	20.9359	15.8306	1.5033	110	0.000	0.000

Table 4: Value effects.

The table reports results of OLS regressions for premium and abnormal returns in sole-PE and club deals. *Club* is a dummy variable equal to one for club deals; controls are defined in Appendix B. All the regressions have industry fixed effects and year fixed effects; standard errors are clustered at industry level. Coefficients denoted with *, **, *** are significant at the 1%, 5% and 10% level, respectively.

	Premium	CAR	Runup	Markup	Total return
Club	-2.6516	-0.0369	-0.0072	-0.0378	-0.0450
	(3.6220)	(0.0313)	(0.0391)	(0.0369)	(0.0720)
Size	0.8784	-0.0360*	-0.0294	-0.0421	-0.0715*
	(1.6073)	(0.0178)	(0.0175)	(0.0267)	(0.0421)
Leverage	8.6667	0.0839	0.1161**	0.0644	0.1804
	(8.3708)	(0.0575)	(0.0503)	(0.0783)	(0.1180)
Cash	-18.2801**	-0.0366	-0.1336	-0.0653	-0.1989
	(8.2072)	(0.0861)	(0.0851)	(0.1187)	(0.1778)
TobinQ	-2.8232	-0.0417	-0.0868***	-0.0493	-0.1360*
	(3.2561)	(0.0314)	(0.0314)	(0.0481)	(0.0757)
Capex	9.2206	-0.1021	0.0505	-0.2790	-0.2284
	(32.7164)	(0.1752)	(0.2188)	(0.2351)	(0.4105)
R&D	53.4139**	0.2877	0.7915**	0.3564	1.1479***
	(26.1086)	(0.1963)	(0.3402)	(0.2456)	(0.4052)
BHAR	-4.2447	-0.0353	-0.1373***	-0.1080**	-0.2453***
	(4.7261)	(0.0307)	(0.0271)	(0.0425)	(0.0660)
Cashflow volatility	46.3161*	0.1614	0.0851	0.4307	0.5159
	(27.0369)	(0.4225)	(0.4007)	(0.8752)	(1.2392)
Institutional ownership	-16.9068*	-0.0802	-0.0961	-0.0375	-0.1336
	(8.5008)	(0.0541)	(0.0657)	(0.0790)	(0.1203)
Dividends	-1.4015	-0.0682**	-0.0820**	-0.0781**	-0.1601***
	(2.9335)	(0.0311)	(0.0315)	(0.0306)	(0.0574)
M&A market liquidity	3.3351	-0.0058	0.0305	-0.0160	0.0145
	(3.2768)	(0.0344)	(0.0315)	(0.0555)	(0.0852)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	430	421	421	421	421

Table 5: Competition.

The table reports results of OLS regressions for competition in sole PE and club deals. Dependent variables are computed starting from the 'Background to the merger' section of the SEC filings and they proxy for the competitive level of the private phase of deals negotiations. They are taken in logarithms and winsored at 1% and 99% level. *Tot Participants* is the number of companies that take part to the merger negotiation, distinguished between *Financials* and *Strategics*. *Losers* is *Tot Participants* minus actual acquirers; *Time* is the number of months needed to conclude the deal (from the beginning of the process till public announcement); *Offers* is the number of price revisions made by acquirer; *Indic Interest* is the number of proposals made by bidding firms that lost the competition; *Price HI* is a dummy variable equal to one if the final price agreed between the parties is equal to the maximum price discussed during the private phase and *Competing Bid* is a dummy variable equal to one if the target has received at least one offer from another bidder different from the winning one. All the regressions have industry and year fixed effects; standard errors are clustered at industry level. Coefficients denoted with *, **, *** are significant at the 1%, 5% and 10% level, respectively.

	Tot Participants	Financials	Strategics	Losers	Time	Offers	Indic interest	Price HI	Competing Bid
Club	2.4743***	1.8782***	0.5954**	0.8289	1.8491**	0.2463*	0.2396	-0.2271	0.3181*
	(0.5466)	(0.3820)	(0.2362)	(0.5381)	(0.9028)	(0.1401)	(0.2815)	(0.1566)	(0.1669)
Size	0.3703**	0.3500**	0.0296	0.3203	-0.7263**	0.1180***	0.0164	-0.0321	0.0158
	(0.1745)	(0.1301)	(0.0928)	(0.1923)	(0.3362)	(0.0409)	(0.1303)	(0.0537)	(0.0840)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	509	509	509	509	509	509	509	500	77

Table 6: Target risk.

The table reports results of OLS regressions for target risk in sole-PE and club deals. Each column considers a different measure of risk (*Cashflow Volatility*, *Leverage*, *PD*, *Beta*, *Residuals Volatility*, *Returns Volatility*). All the regressions have industry and year fixed effects; standard errors are clustered at industry level. Coefficients denoted with *, **, *** are significant at the 1%, 5% and 10% level, respectively.

	Cashflow Volatility	PD	Beta	Residuals Volatility	Returns Volatility
Club	0.0022	0.0166	0.0081	0.0015	0.0018
	(0.0062)	(0.0167)	(0.0548)	(0.0016)	(0.0015)
Size	-0.0091***	0.0032	0.1169***	-0.0037***	-0.0033***
	(0.0031)	(0.0034)	(0.0230)	(0.0007)	(0.0007)
Leverage	0.0227	0.0741*	-0.0740	0.0168***	0.0178***
	(0.0178)	(0.0384)	(0.1105)	(0.0026)	(0.0024)
Cash	0.0248	0.0156	0.1966	0.0043	0.0049
	(0.0191)	(0.0157)	(0.2080)	(0.0029)	(0.0034)
TobinQ	0.0128**	-0.0038	0.0673***	-0.0021*	-0.0018
	(0.0051)	(0.0029)	(0.0232)	(0.0013)	(0.0011)
BHAR	-0.0024	-0.0238	-0.0861**	0.0007	-0.0005
	(0.0040)	(0.0163)	(0.0423)	(0.0023)	(0.0019)
Institutional ownership	-0.0165	-0.0485	0.4701***	-0.0083***	-0.0072***
	(0.0110)	(0.0340)	(0.0891)	(0.0026)	(0.0022)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	438	439	439	439	439

Table 7: Financing.

The table reports results of OLS regressions for equity and debt financing of sole PE and club deals. *Equity (%)* is the percentage of equity over total deal value committed by the buyers to the deal; *Debt (%)* is the percentage of debt over total deal value used to finance the deal (it is thus equal to total deal value minus equity); *Equity PE1 (%)* is the percentage of equity over total deal value committed to the transaction by the highest contributing member to the club and by the sole PE firm for sole PE LBOs and *Equity Contribution (%)* is the percentage of equity over total deal value committed to the transaction by each club member. All the regressions have industry and year fixed effects; standard errors are clustered at industry level. Coefficients denoted with *, **, *** are significant at the 1%, 5% and 10% level, respectively.

	Equity (%)	Debt (%)	Equity PE1 (%)	Equity Contribution (%)
Club	0.9778	-2.8895	-10.3783**	-0.1000**
	(3.4505)	(3.2331)	(3.9418)	(0.0501)
Size	-5.5074***	5.4648***	-5.5571***	-0.0688***
	(1.1372)	(1.0710)	(1.2252)	(0.0192)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	368	368	319	196

Table 8: Value effects after and before 2006.

The table reports results of OLS regression for premium and CARs, distinguishing between club deals occurred after and before 2006. *Club* is a dummy variable equal to one for club deals; and *Club post 2006* is a dummy variable equal to one for club deals concluded after 2006. All the regressions have industry and year fixed effects; standard errors are clustered at industry level. Coefficients denoted with *, **, *** are significant at the 1%, 5% and 10% level, respectively.

	Premium	CAR(-2,+2)	Runup(-42,-1)	Markup(0,+126)	Total return(-42,+126)
Club	-2.9606	-0.0425	-0.0140	-0.0222	-0.0362
	(6.4442)	(0.0585)	(0.0692)	(0.0642)	(0.1263)
Club post 2006	0.4578	0.0083	0.0100	-0.0230	-0.0130
	(5.4161)	(0.0547)	(0.0609)	(0.0675)	(0.1179)
Controls	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	430	421	421	421	421

1 APPENDIX A: Sample Criteria

Table: Sample criteria.
The table specifies the criteria that have been used to create the sample of LBOs, with number of observations at each step. Data have been downloaded from ThomsonOne Banker M&A module.

Criterion	N
Deals announced between 1995 and 2019	1,071,204
Target is from the USA	283,158
Target is a public company	43,744
Exclude targets with SIC codes from 6000 to 6999	31,303
Deal value of at least $1 million	25,400
Acquirer owns at least 50% of target shares after transaction	6,975
Deals status is completed	6,911
Acquirer owns less than 25% of target shares as of 6 months before the deal announcement	6,376
Exclude bankruptcies and debt restructurings	6,122
Targets that are in Compustat	5,305
Exclude MBOs, spin-offs, shares repurchases, stock splits and transactions funded by individuals	5,188
Exclude transaction for which there are no filings	4,458
Exclude strategic mergers	509

2 APPENDIX B: Variables Definitions

	Dummy, control and risk variables
PE	Dummy variable equal to one if the acquirer is either a single PE firm or a club
Club	Dummy variable equal to one if the acquirer is a group of bidders including at least one PE firm
Club post2006	Dummy variable equal to one if the club occurs after 2006
Size	Logarithm of total assets
Leverage	Ratio of total debt (long plus short) to total assets
TobinQ	Ratio of market value of assets to book value of assets, where market value of assets is the sum of book value of assets and the market value of common equity less the sum of the book value of common equity and balance sheet deferred taxes (as in Officer, Ozbas, and Sensoy (2010) and Kaplan and Zingales (1997)).
Cash	Cash divided by total assets
Cashflow volatility	Standard deviation of ROA for the 3 years preceding the transaction
BHAR	Stock performance in excess of market return over the year preceding the takeover starting from 3 days before the announcement, computed from daily returns.
PD	Probability of default.
Beta	Beta from market regression (as in ?)
Residuals volatility	Residuals volatility from market regression (as in Liu, Whited, and Zhang (2009))
Returns volatility	standard deviation of target's stock return computed starting from daily returns in the 12 months preceding the takeover
Institutional ownership	Percentage of target's shares owned by institutional investors that are required to file a 13F statement as reported in Thomson Financial's 13F Holdings database (as in Officer, Ozbas, and Sensoy (2010)).
Industry M&A liquidity	Deal value (as retrieved from ThomsonOne) scaled by total assets, computed by industry and year (as in Harford and Uysal (2014)).
Capex	Capital expenditures to total assets
R&D	Research and development expenditures to total assets
Dividends	Dummy variable equal to one if target pays dividends
CAR (-2,+2)	Abnormal return over an event window going from 2 days before the announcement to 2 days after it. Estimation window goes from 379 days before the announcement to 127 days before it (I follow Officer, Ozbas, and Sensoy (2010)).
Runup (-42,-1)	Abnormal return over an event window going from 42 days before the announcement to the day before it.
Markup (0,+126)	Abnormal return over an event window going from the announcement day to 126 days after it.
Total return (-42,+126)	Sum of *runup (-42,-1)* and *markup (0,+126)*.
Premium	Ratio of the offer price to the target stock price four weeks before the announcement date, as reported in ThomsonOne. Following Officer (2003), it is restricted between 0 and 200.

	Competition variables
Total participants	Number of companies, either financial or strategic, taking part to the private phase of takeover negotiation. These companies may or may not have made an offer to buy the target. Some of them just requested information about the target without submitting written proposals to buy target, others made formal bids. In order to be considered, they need to be identified in a specific way in the filings, with numbers or letters or other specific words. [15]. Generic firms are not considered.
Financials	Number of financial companies taking part to the private phase of takeover negotiation. Most of the SEC filings do not distinguish between PE and financial companies, labeling them as financial, thus I consider them as financial and use only variable only.
Strategics	Number of strategic companies taking part to the private phase of takeover negotiation.
Losers	Number of companies that took part to the private phase of takeover negotiation, but did not end up acquiring the target. For clubs, it is the difference between *Total participants* and *members*. For sole PE deals, it is *Total participants* less the winning PE firm.
Time	Number of months between the beginning of the private phase of takeover process and the public announcement of the deal. The public announcement is the date reported in ThomsonOne, the beginning of the deal is retrieved from the SEC filings. It is the date when the Board deliberated to explore the possibility of selling the company if it started the process (*target for sale* equal to one) or the date when one of the participant contacted the target to inquire about the possibility of a business combination (*target for sale* equal to zero).
Offers	Number of offers made to the target by the winning bidder. They are considered only if they specify a price or a price range.
Indications of interest	number of indications of interest made to the target by participants to the bidding process other than winners. They are considered only if they specify a price or a price range. Differently from *offers*, each competitor is considered only once, even if it revised its initial offers changing the price or other conditions.
Price HI	Dummy equal to one if the final price agreed when the deal is announced to the market is the same as the maximum price discussed during the private phase. I keep track of the price range of the offers made to the target by the winner (minimum price and maximum price) and I compare it with the final price.
Competing bid	Number of competing offers received by target from interested acquirers other than winning ones after the public announcement is made to the market.

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[15]Due to privacy reasons, non winning firms can not be named in the filings, thus they are identified with letters, numbers (or colors in few cases).

	Financing variables
Equity (%)	Total amount of equity committed to the deal by the sole PE firm for sole PE sponsored LBOs or by the club in case of club deals. It is computed as percentage of the deal value as retrieved from the SEC filings ('Financing of the Merger/Sources and Amount of Funds' section). Where the deal value is not specified in the document, it is replaced with the value reported in ThomsonOne.
Debt (%)	Total amount of debt used to fund the transaction. It is computed as percentage of the deal value as retrieved from the SEC filings ('Financing of the Merger/Sources and Amount of Funds' section). Where the deal value is not specified in the document, it is replaced with the value reported in ThomsonOne.
Equity PE1 (%)	Amount of equity committed to the deal by the sole PE firm for sole PE sponsored LBOs and by the highest contributing private equity member for club deals. It is computed as percentage of the deal value as retrieved from the SEC filings ('Financing of the Merger/Sources and Amount of Funds' section). Where the deal value is not specified in the document, it is replaced with the value reported in ThomsonOne.
Equity contribution (%)	Amount of equity committed to the deal by each private equity club member. It is computed as percentage of the deal value as retrieved from the SEC filings ('Financing of the Merger/Sources and Amount of Funds' section). Where the deal value is not specified in the document, it is replaced with the value reported in ThomsonOne.