UNDER THE HAMMER:

DO PRIVATE EQUITY INVESTORS REALLY ACQUIRE TARGET FIRMS FOR LESS?

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Abstract:

In this paper we address a key issue associated with recent private equity involvement in mergers and acquisitions of why private equity buyers are paying on average lower premiums for their targets relative to strategic buyers. We show that private equity versus strategic buyers are interested in different types of targets. In line with previous literature, however, the target observable characteristics do not explain the large differences in premiums. We show that accounting for the private sale process design provides additional information for the premium analysis. The main argument is that target management with superior information designs the sale process so that it fits a given company situation including specificity and liquidity of the assets for sale, deal initiation, potential bidding competition and buyer type. Using the information on whether the target is sold in private negotiation, informal auction or controlled auction, we show that the differences in premiums between private equity versus strategic buyers accrue only for the case of informal auctions where strategic buyers tend to pay higher premiums for low profitable targets with many intangible assets, high cash levels and R&D expenditures.

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1 Introduction

In the last few years, private equity firms have become increasingly important M&A players. They have increased in numbers, average fund size as well as deal numbers and deal size (Cumming, Siegel and Wright, 2007). In the process, private equity firms have significantly enriched the M&A bidder pool and have become a serious alternative to strategic acquirers. Interestingly, these private equity bidders offer on average significantly lower takeover premiums. Despite extensive coverage in the press, this phenomenon has only recently started to attract attention in the academic literature (Bargeron et al., 2008, Officer et al., 2008, Boone and Mulherin, 2009 and Dittmar et al., 2009). So far, however, we still do not have a satisfactory explanation to the puzzling question of how private equity firms manage to overbid strategic acquirers, if on average they pay lower premiums. Even more puzzling is the fact that the low private equity premiums are usually paid as a result of competitive auctions with many bidders whereas strategic buyers more often buy in private negotiations without competing bids (Officer et al., 2008).

Bargeron et al. (2008) attribute the lower takeover premiums to private equity bidders being more selective in the price they are willing to pay for targets than public bidders. They argue that managers of public bidders have an empire-building mentality and are willing to overpay for a target firm because they do not bear the full costs of their decisions. At the same time, Bargeron et al. (2008) show that in contrast to ownership structure of bidders, observable target or transaction characteristics cannot explain the big differences in premiums paid. Dittmar et al. (2009) analyze bidding competition faced by corporate buyers. Even though premium differences for private equity versus strategic buyers are not the main focus on the paper, in line with previous empirical evidence they show that premiums paid by corporate buyers following competition from financial buyers are on average lower relative to premiums after competition with other corporate buyers. Moreover, they confirm that observable target and deal characteristics cannot explain the difference in the premiums offered. As a result, Dittmar et al. (2009) point to the nature of the competition and in particular to the fact that financial buyers are able to pick 'good deals' as key determinants of the difference in premiums offered. In this paper, we pursue a similar idea. In a plain private equity versus strategic buyer setting, we use information on the private takeover process and propose that a particular choice of

how a company is being sold may reveal unobservable characteristics and provide an alternative explanation to the puzzle of lower premiums paid by private equity buyers.

The selling process usually starts by either a prospective buyer approaching a target or by a management decision to offer their company for sale. In general, the selling company management and its financial advisor arrange an auction or negotiate the deal privately with an exclusive buyer (Hansen, 2001). Moreover, auctions may either be formally structured (we denote them as controlled) or informal. An informal auction usually emerges as a result of unexpected competition or of a 'go-shop' clause in the contract that allows the target company to perform a 'market check'. As a rule of thumb, sellers usually prefer to use auctions whereas buyers prefer negotiated sales as for sellers auctions are usually more profitable (Bullow and Klemperer, 2009). Boone and Mulherin (2007) are the first to analyze in detail the private takeover process that evolves prior to the public announcement of the takeover bid. They show that about half of targets are auctioned among multiple bidders and that the public takeover activity analyzed in the literature so far reflects only the top of the iceberg of actual takeover competition. We use this information on the takeover process to analyze differences in premiums between private equity and strategic buyers and in contrast to Boone and Mulhering (2007) we also distinguish controlled versus informal auctions.

After a deal is initiated, the selling firm management has to decide on the design of the sale process taking into consideration the overall firm situation. The management has superior knowledge about the firm, its prospects and potential and takes into account all relevant firm characteristics, deal initiation, preferred potential buyer (or at least its type) and also the overall pool of potential bidders.[1] In this sense, the design of the sale process is determined endogeneously together with the preferred identity of the buyer and depends on the superior knowledge of the selling firm management. Therefore, we propose that the sale process type (negotiation versus informal auction versus controlled auction) reflects more than observable target and deal characteristics and its inclusion into the analysis could therefore contribute to explaining differences in premiums paid by strategic versus private equity buyers.

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[1] Target management decides about the sale design also in the case when a potential buyer approaches the target and initiates the deal: management can either negotiate privately, go shop or hire a financial advisor to organize a controlled auction. In our data set, controlled auctions constitute 20% of all buyer initiated deals.

Choosing the right buyer is part of the process. In fact, Elliot Williams of Mirus Capital advises (Williams, 2007, p.1): '… [The selling company] should understand that selling to a private equity firm is not the same as selling to a strategic buyer. Every aspect of the deal [is] affected by the type of buyer including the negotiating process, price, tax and legal implication and most importantly the future prospects of the company.' It is therefore important to recognize the differing nature of the private equity versus strategic buyers. Strategic buyers are usually other firms in the industry who are likely to pay higher premium because they redeploy the assets of the target firms close to their best use (Shleifer and Vishny, 1992). Strategic buyers can also afford to pay more because they buy specific assets and will benefit from synergies between their organization and the target firm. In contrast, private equity buyers are naturally industry outsiders who cannot manage the bought targets well themselves and so face agency costs as they have to hire specialist to run the assets for them. They fear overpaying for the target because as outsiders they do not have the knowledge to value the assets precisely (Shleifer and Vishny, 1992) and are expected to pay less than is the value of the target firm's assets in best use. At the same time, sale to a private equity buyer allows the incumbent management to continue to manage and partially own the company and profit from further growth in the company value (Williams, 2007 and Dittmar et al., 2009). In contrast, strategic acquisitions often integrate acquired assets with existing operations of the new owner and usher in periods of cost cutting. These differences in nature between strategic versus private equity buyers highlight the importance of the buyer identity in the sale process. Moreover, these differences may also indicate that different target firms prefer a different type of buyer or vice versa which results in segmented bidding where private equity and strategic buyers usually do not compete for the same target.

Using a sample of 205 private equity deals of listed US targets over the period from 1997 to 2006 matched with comparable deals by strategic buyers this paper makes several important contributions. First, we show that firm characteristics of targets that eventually end up with strategic versus private equity buyers differ significantly. This indicates that the sale process is segmented in the sense that private equity firms versus strategic buyers end up purchasing different types of targets.[2] We

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[2] In this paper, though, our aim is not to specify the source of this segmentation as coming from the target firm or the buyer.

show that more profitable, manager initiated deals with high leverage end up more frequently with a private equity buyer. Also, in line with Shleifer and Vishny (1992), we show that targets of strategic buyers have higher market to book ratio, more intangible assets, high R&D expenses and high cash levels. This confirms that strategic buyers are interested in targets with more specific assets that might potentially result in higher synergies whereas private equity buyers target firms with more generally redeployable assets. Moreover, the differing tastes of the two buyer types are also reflected in the fact that private equity buyers usually compete in bidding predominantly with other private equity firms and strategic buyers compete with other strategic buyers. On average, 92% of all bidders are also private equity bidders in case a private equity firm wins the bidding. Similarly, the fraction of private equity bidders when strategic buyers win is only 4%. These significant differences in observable characteristics, however, still explain only a small fraction of the sizable difference in premiums. This means that the relation between premiums, firm characteristics and buyer type is more complex and analyzing observable firm characteristics is not enough.

Therefore as a second step, we draw on hand-collected detailed information on the private takeover process from proxy or solicitation statements filed with the SEC (as in Boone and Mulherin, 2007, 2008) to confirm our conjecture that different firms are sold in a different manner and therefore analyzing the differences in premiums for private equity versus strategic buyers through the additional dimension of the sale process provides important insights. To start with, the sale process indeed does reflect observable firm characteristics: better performing firms with lower market to book and lower leverage tend to be sold via controlled rather than informal auction or private negotiation. Private equity buyers are more likely to buy targets in controlled auctions when the target is offered for sale by the target firm's management. Strategic buyers, in contrast, are more likely to buy a target company in an informal auction or private negotiation. In addition, however, exploiting the information on the private takeover process, we show four important patterns: (i) In controlled auctions, private equity versus strategic buyers pay comparable premiums and the two types of buyers target firms with similar observable characteristics. Controlled auctions are predominantly initiated by the target management and won by private equity buyers. Also they are associated with high bidder competition and low premiums. (ii) Negotiations are also homogeneous in terms of average premium across the two buyer

types even though in this case target characteristics are slightly different: private equity targets' stock performance is poorer and have lower market to book ratio and more tangible assets. Negotiations are typically buyer initiated. (iii) Informal auctions are the only sale process type with significant differences in premiums and target observable characteristics across the two buyer types. Thus, informal auctions are the main source of the differences documented for the overall sample: private equity buyers pay 44% premium above the price 8 weeks before the deal announcement versus 70% paid by strategic buyers. The difference of 26% is statistically significant at the five percent level. Moreover, strategic buyers pay high premiums for unprofitable firms with high R&D spending, high cash levels and high fraction of intangible assets. This again indicates high target asset specificity and high potential synergies for strategic buyers. In contrast, private equity buyers target better performing firms with low market to book ratio, less cash and high leverage that management offers for sale. Importantly, these target characteristics account for the large differences in premiums. (iv) At last but not least, the two buyer types deploy different bidding strategies: strategic buyers pay the most in informal auctions whereas private equity buyers pay the most in negotiations.

The remainder of the paper is organized as follows. Section 2 discusses our data collection and the resulting sample. Section 3 presents our results and Section 4 concludes our paper.

2   Sample

2.1   Sample selection

As the main focus of this paper is a comparison of acquisitions by private equity versus strategic buyers, our data collection starts by searching for takeovers by private equity firms in the US. We search through all takeovers of public US targets within the Securities Data Corporation (SDC) database over the period from January 1997 through December 2006 where acquirers seek to fully own the target company. As a first step, we use the "acquirer is a leveraged buyout firm" flag, "acquirer is a financial sponsor" flag and "acquirer is an investor group" flag. Then, for each of the deals we also read the short acquirer description and deal synopsis to check that the acquirer is indeed a private equity firm. We also require that target firms have data available on CRSP and Compustat. This process results in a sample of 205 attempted

takeovers by private equity investors of which 197 were completed and 8 were withdrawn. We include withdrawn transaction to avoid biasing our sample in any way. 51 acquisitions involve private equity consortia.

The sample of 205 private equity takeovers is then matched firm by firm with takeovers by strategic acquirers based on the year of announcement, target industry and target size. Our matching procedure involves the following steps: (i) For every transaction in the private equity sample we search for a set of takeovers by strategic buyers where the target company has the same first three SIC code digits as the private equity target. In this list, we attempt to find a matching transaction that has been announced in the same year and has a similar transaction value, using a +/- 25% error range. (ii) If there is no comparable transaction found in the same year and/or with the same transaction value, the same search is applied within targets with the same first two SIC code digits. (iii) If again there is no match found in step (ii), we look for targets with the same first SIC code digit. (iv) Finally, if we still do not have a match we look for a transaction that is closest to the +/- 25% transaction value range. (v) In a rare occasion that this process still renders no results, we repeat the search in (i) for the two years around the transaction date.

We consider the matching procedure to be a very important feature of our research design. Matching on industry is important due to the fact that private equity bidders are typically interested in firms coming from particular industries with stable cash flows and substantial fixed assets that can serve as collateral for the loans used to finance the acquisition. Boone and Mulherin (2008), for example, report that more than half of the private equity takeovers occur in only four industries. Matching on size is also important. Typically, strategic buyers are able to target larger companies (Bargeron et al., 2008) and the same is the case for private equity club deals (Officer et al., 2008 and Boone and Mulherin, 2008). Finally, frequent observations of tougher deal competition after 2006 in the popular press highlight the importance of matching in time (Officer et al., 2008).

As a result of the matching procedure, our sample consists of 410 takeovers of listed US targets. Table 1 Panel A shows that the mean (median) deal size of the strategic buyers sample is $541 million ($142 million) and is comparable to the deal size of the private equity buyers of $654 million ($139 million). The differences in means are statistically insignificant. Target total assets are also comparable across the two subsamples. The premium offered to the target shareholders relative to the stock

price four and eight weeks before the deal announcement confirms the previous findings that private equity buyers offer lower premiums (Bargeron et al., 2008, Officer et al., 2008 and Boone and Mulherin 2008). Private equity versus strategic buyers pay on average 38.3% and 50% (42.5% and 54.4) above prevailing stock prices four (eight) weeks before the deal announcement, respectively. This shows that strategic buyers pay for their targets almost 31% (28%) more based on the four (eight) week premium. These numbers are in line with Bargeron et al. (2008) but are not directly comparable as their study relies on target announcement returns. A potential drawback of cumulative abnormal returns (CARs) around the deal announcement as a measure of gains to target shareholders is that it reflects other information in the public domain that may potentially bias the measure such as probability of the deal success and information revealed during the run-up period. In fact, Bargeron et al. (2008) document that public bidders tend to stick to their deals and not walk away even when prices shoot up which may partially explain their larger gap in CARs for private versus public buyers. Also, Boone and Mulherin (2009) argue that longer event windows accounting for run-up periods better reflect differences in takeover process across different types of bidders. Our primary premium measure is defined as price paid by the buyer in the transaction relative to the target stock price eight weeks before the deal announcement. The period of eight weeks before the announcement should account for the differences in information revelation due to different sale designs. In fact, our data suggest that the run-up period is indeed related to the sale process. For example, stock prices appreciate by 33% and 14% percent from eight weeks up to one day before the announcement for targets sold in informal auctions to strategic versus private equity buyers, respectively. The difference of 19% is statistically significant at the five percent level. A potential drawback of our direct premium measure is that it is not adjusted for a benchmark return. However, our industry/size/time matched pairs of private equity and strategic deals should elevate this problem.

Table 1 further shows that private equity targets are more profitable which is mostly due to a lower fraction of targets with losses (30% versus 42%). Stock performance of private equity targets is somewhat better but the difference is not statistically significant. Private equity buyers purchase firms with lower market to book, higher leverage, lower cash levels and higher tangible assets. These differences indicate that strategic buyers are interested to acquire firms with better growth

prospects which despite relatively poor past performance still have high book to market ratio and high fraction of intangible assets. Our research and development variable does not capture the growth nature of the strategic buyer targets perhaps because of low coverage of the variable (we have information on R&D only for 267 firms in our data set). Another explanation might be that 'research intensive' is a too narrow term and does not capture the wider meaning of a 'growth firm.' Private equity buyers, in contrast, target firms with low market to book ratio and relatively better performance indicating that these targets are attractive buys with limited growth opportunities but high resale value. The high fraction of tangible assets indicates lower asset specificity of these firms and their suitability for private equity buyers. All these statistics indicate that the two groups of target firms are significantly different in many aspects.

2.2   Company sale process

For all takeovers in our sample we are able to retrieve the proxy or solicitation statements from the EDGAR database of the SEC.[3] These filings usually contain a "background to the merger" section that describes the initiator of the takeover (target management or an interested buyer) and whether the company was sold in a private negotiation with one buyer or an auction with multiple bidders competing for the target. In general, takeovers that are not arranged in a private negotiation involve two types of auctions: informal or controlled auction (Boone and Mulherin, 2008). In an informal auction, the target management contacts multiple potential buyers but the bidding evolves in a less structured setting than that of a controlled auction. A controlled auction is more structured where the company sale process is pre-determined by the target and its financial advisor and follows multiple planned rounds (see Hansen, 2001). One should note here that even though management initiated controlled auctions are more frequent, in 24 percent of all controlled auctions in our sample, the transaction is initiated by the buyer. Usually, shortly after the decision to sell is made a financial advisor is retained who serves as the 'auctioneer'. The advisor, drawing on knowledge of the selling company, draws up a preliminary list of potential bidders and contacts these bidders to obtain information on their interest of making a

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[3] Statement DEFM14A or comparable in the case of a merger, and SC14D9 or comparable in the case of a tender offer.

potential bid. The contacted parties who show interest receive a very cursory description of the selling company and are offered a more in depth information memorandum provided they sign a confidentiality agreement. Then the number of bidders is further reduced in submission of preliminary non-binding offers ('letters of intent') and final sealed binding bids. The final bids are then considered by the selling company and the best bid is chosen depending on valuation, financing structure and future plans of the bidder.

In the whole population of deals, we have slightly more controlled auctions (40%) and less informal auctions (31%) and private negotiations (29%). Once we distinguish a buyer type (Panel A of Table 1), the frequencies become more biased towards controlled auctions for private equity deals (50% versus 25% and 25%) and towards informal auctions for strategic buyer deals (37% versus 33% in negotiation and 30% in controlled auction)... From Table 1 we also see that private equity buyers face fiercer competition both in terms of number of bidders contacted (32 versus 15) and bidders with confidentiality agreement (14 versus 6). In addition, the fraction of private equity bidders is remarkably high for the targets eventually bought by private equity buyers and low for targets bought by strategic buyers. What is more, the fragmentation increases from 79% (8%) of bidders contacted to 89% (3%) of bidders signing the confidentiality agreement for the private equity (strategic) group. As invitation to participate in bidding is a decision of the target firm, but agreement signing is buyer driven, these numbers indicate that the market segmentation is preferred by both parties and their strategies seem to match. Finally, Table 1 Panel A also shows that private equity deals are more often management rather than buyer initiated. Panel B shows that the eight week premium is significantly larger for buyer (54.5%) versus management initiated deals (42.8%) which indicates that it is important to control for deal initiation throughout our analysis. Buyer initiated deals are slightly larger and biased towards negotiations whereas management initiated deals are mostly organized in controlled auctions. Overall, all auction types are relatively populated across both initiator and buyer types. The most frequent are management initiated deals sold to private equity investors in controlled auctions (81 deals). Relatively infrequent are management initiated deals sold in negotiations to both private equity (21) and strategic buyers (17).

Importance of the sale process as a determinant of bidding premiums for private equity versus strategic buyers is obvious in Table 2. Overall, the eight week

premium is the highest (60%) for informal auctions. This highlights that it is important to distinguishing informal from controlled auctions. In Boone and Mulherin (2007), the premium differences are not significant when comparing auctions (both informal and controlled auctions together) versus negotiations. When also considering the buyer type dimension, we see that the generally high premium in informal auctions is due to a very high premium paid by strategic buyers (70%) with private equity buyers paying significantly less (44%). The difference of 26% is significant at the five percent level. Bottom of Panel A shows average premiums across both initiator and buyer types. Interestingly, when controlling for buyer type, initiator identity matters only for private equity deals in negotiations: the average premium is 65% versus 31% for private equity versus firm management initiated deals, respectively (the difference is significant at the five percent level). Overall, this part of the table shows that premiums are affected by buyer type rather than initiator identity. From a different point of view, Panel A of Table 2 also shows that private equity and strategic buyers employ different bidding strategies: for strategic buyers, informal auctions have the highest average premium which indicates that strategic buyers offer higher premium only when they face more competition (in an informal auction relative to private negotiation) probably as a result of 'price check' by the target firm. In contrast, private equity buyers pay more in private negotiations, especially when they initiate the transaction. This suggests that private equity buyers engage in pre-emptive pricing as suggested by Fishman (1988). They offer high price in order to prevent potential bidding competition. These patterns of average premiums across the auction types suggest that private equity buyers adopt different strategies relative to strategic buyers. They also show that the sale process strongly affects premiums paid for both types of buyers and therefore may provide some additional important information that is not reflected through the other target and deal characteristics.

Therefore, we analyze the characteristics provided in Table 1 through an additional layer of sale process type in Panel B of Table 2. Panel B provides averages of the observable characteristics across negotiations, informal and controlled auctions, but for each of these groups it also provides average values for the two buyer types. The main observation is that informal auctions are different in two ways relative to controlled auctions and negotiations. First, firms sold in informal auctions have different characteristics relative to controlled auctions and to some extent also to informal auctions. They are performing more poorly, have higher market to book and

more cash and R&D expenditures. In contrast, firms sold in negotiations are very similar to firms sold in controlled auctions. In fact, the only significant differences concern deal initiation and competition. Second, informal auctions are characterized by significant differences between private equity and strategic targets. The most striking difference is in performance of the two types of targets with targets sold to strategic buyers having significantly lower accounting performance and past stock market performance (the one-tail test is significant at the ten percent level). Interestingly, the run-up return from eight weeks to one day before the announcement of the deal is more than double for strategic versus private equity targets (14% versus 33%). In addition, strategic buyer targets in informal auctions are less levered, have more cash and face less competition. Finally, they are more often sold as a result of an initial approach by the buyer.

3 Results

3.1 Targets of private equity versus strategic buyers

As a first step, Table 3 shows that private equity versus strategic buyers acquire targets with different characteristics. All five models in the table regress a private equity dummy on a set of target and deal characteristics.[4] These regressions confirm the univariate results that targets of private equity buyers have better accounting performance, lower market to book ratio, higher leverage, more tangible assets, less cash and are less research intensive. These characteristics are significant even when we control for the fact that private equity deals are more often management initiated and that they are less frequently sold in negotiations or informal auctions. Overall, the results confirm the prediction based on Shleifer and Vishny (1992) that private equity buyers buy targets with more generally redeployable assets such as tangible assets. In contrast, strategic buyers buy targets with more specific assets characterized for example by high R&D expenditures. The higher cash levels for strategic buyer targets are in line with this explanation as recent empirical literature documents high correlation between cash levels and R&D expenditures (Bates et al., 2009 and Brown and Petersen, 2009).[5]

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[4] The private equity dummy is set equal to one in case the target is acquired by a private equity buyer and zero in case it is acquired by a strategic buyer.

[5] For our data, cash is highly and significantly correlated with intangible assets, market to book ratio and R&D expenses.

In line with Bargeron et al. (2008) and Dittmar et al. (2009), Table 4 shows that these observable target and deal characteristics are not enough to explain the large differences in premiums for private equity versus strategic buyers. The coefficient for the private equity dummy in Model 6 confirms that the premium paid by private equity buyers is on average by 11.9% smaller and this difference is significant at the five percent level. Once we control for club deals in Model 7, the difference becomes 13.8% and remains significant at the five percent level. This shows that contrary to Officer et al. (2008) club deals increase rather than decrease the low premium paid by private equity buyers. When we control for the observable target and deal characteristics in Model 8, the coefficient for the private equity dummy drops slightly to 10.6% with statistical significance at the ten percent level. The coefficients for observable characteristics in Model 8 show that higher profitability and better stock performance over the last year are associated with lower premiums. Market to book, leverage, asset tangibility, cash and R&D are not significantly different from zero.[6]

3.2. Choice of sale process

As a next step, we model the sale process choice using multinomial logistic regressions. In particular, we regress the sale process type (negotiations, informal and controlled auctions) on a set of observable target firm and deal characteristics. Controlled auction is the omitted category. Thus, in Table 5 we report two sets of coefficients: for informal auctions and negotiations. These coefficients show how our explanatory variables affect the probability of being sold through an informal auction or negotiation relative to the probability of being sold in a controlled auction. In addition, we show a column with differences in the two coefficients that indicate the effect of our explanatory variables on the probability of being sold in an informal auction relative to negotiation. The results in Table 5 confirm our conjecture that observable target and deal characteristics affect the sale design. The effect of the explanatory variables is the largest for informal versus controlled auctions: higher profitability and stock performance decrease while higher market to book increases the probability that a firm would be sold in an informal auction relative to a controlled auction. Higher leverage in turn increases the probability of negotiations relative to controlled auctions. Buyer type and deal initiation seem to be very important in the

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[6] We do not report all specifications, but the results are available upon request.

decision about the sale type: management initiated deals are the most probable to be sold in controlled auctions, then in informal actions. Private equity buyers are most likely to put in the winning bid in controlled auctions. In summary, these results confirm our suggestion that the management decision about how to sell their company reflects each firm's particular situation including their firm characteristics, deal initiation, preferred buyer type and perhaps the potential buyer pool. This implies that information on the sale process type may provide additional important insights for our analysis of premium differences.

3.3. Premium regressions

Table 6 shows results of eight week premium models with a set of dummy variables corresponding to the three sale process types. As the three dummy variables add up to unity, we exclude the constant term. In line with our univariate analysis, Model 11 confirms that informal auctions are associated with the highest average premium. The private equity dummy still remains relatively large and significant at the ten percent level. However, the framework of Model 11 allows us to distinguish whether private equity buyers pay lower premiums consistently across all three sale process types or the sale process selection would result is sorting out the targets and consequently the differences in premiums would vary across the three sale process types. In order to test this, we include interaction terms between the private equity dummy and the individual dummies for negotiation, informal and controlled auction in Model 12. The results show that private equity buyers pay lower premium only in informal auctions. Controlling for the impact of other variables, private equity buyers pay on average 17.3% less in informal auction than strategic buyers. The premium differences for private equity versus strategic buyers in negotiations and controlled auctions are not statistically significant. Further investigation reveals that these differences in premiums for private equity versus strategic buyers in informal auctions drop substantially when we differentiate also the effect of target firm profitability across the three sale process types. In particular, Model 13 including interaction terms between a loss dummy (equal to one in case operating earnings are negative and zero otherwise) and the three sale process dummy variables shows that allowing different effect of profitability across the three sale process types results in an insignificant private equity coefficient. This shows that target profitability explains the premium differences in informal auctions better than buyer type. Interestingly, loss making

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firms attract higher premiums. Model 14 further indicates that these high premiums are paid by strategic rather than private equity buyers. In this model we differentiate premiums in a three way partition: sale process type, profitability and buyer type. When putting all the interaction terms together, we see that for profitable firms, private equity buyers pay 6.7% lower premium relative to strategic buyers and this difference is not statistically significant. For loss making firms, strategic buyers pay 33.1% more while private equity buyers pay only 6.3% more relative to profitable target firms. This analysis shows that exceptionally high premiums are paid for loss making targets bought by strategic buyers and that premiums paid by private equity buyers (for both profitable and non-profitable firms) are comparable to premiums paid by strategic buyers for profitable targets. In this context, it is also important to highlight that loss making firms have low market to book, high cash levels, R&D expenses and more intangible assets and fit the profile of targets with specific assets that are interesting for strategic buyers due to higher potential synergies.

4 Conclusions

In this paper we address the issue of premium differences between private equity and strategic buyers in mergers and acquisitions. We point to the different nature of private equity versus strategic buyers: strategic buyers are usually operating in the same industry and therefore are interested in buying specific assets could be redeployed close to their best use. In line with this argument we show that targets of strategic buyers have high market to book ratio, R&D expenditures and more intangible assets. Private equity buyers are in contrast usually industry outsiders and so naturally are interested in targets with less specialized assets that have higher general resale value and so are more liquid. Our analysis reveals that target and deal characteristics differ between private equity and strategic buyers but these differences still cannot explain why private equity buyers pay lower prices than strategic buyers. Therefore, we propose to use unique information on the private sale process design to shed additional information on the premium analysis. The main argument is that target management with superior information designs the sale process so that it fits a given company situation including specificity and liquidity of the assets for sale, deal initiation, potential bidding competition and buyer type. Using the information on whether the target is sold in private negotiation, informal auction or controlled auction, we show that the differences in premiums between private equity versus

strategic buyers accrue only for the case of informal auctions where strategic buyers tend to pay higher premiums for low profitable targets with many intangible assets, high cash levels and R&D expenditures. In controlled auctions and negotiations, the difference is premiums for strategic versus private equity buyers is not statistically significant. Also, controlled auctions attract targets with better performance but lower market to book ratio that are management initiated and face higher bidding competition. Informal auctions are usually a result of buyer initiation. In summary, using information on the private takeover process we are able to show that private equity buyers pay significantly lower premium only in informal auctions and the difference in premium is accounted for by target firm characteristics. Strategic buyers pay more for firms with specific assets with potential for high synergies.

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TABLE 1: SUMMARY STATISTICS

PANEL A	Private equity buyer			Strategic Buyer			Difference in means
	mean	st.dev.	median	mean	st.dev.	median	
Transaction value	654	(1,917)	139	541	(1,509)	142	113
Target total assets	493	(1,100)	144	399	(1,521)	93	94
Four week premium	38.3%	(36.5%)	31%	50.0%	(54.9%)	40%	-11.7%[b]
Eight week premium	42.5%	(49.2%)	39.5%	54.4%	(59.1%)	41.6%	-11.9%[b]
Runup 8weeks to 1 day	13.0%	(56.9%)	11.0%	20.3%	(51.5%)	14.8%	7.2%
Profitability	-0.03	(0.28)	0.03	-0.10	(0.45)	0.02	-0.06[c]
Loss	30.2%	(46.0%)	0.0%	42.0%	(49.5%)	0.0%	11.7%[b]
Stock performance	13.6%	(72.9%)	0.0%	9.6%	(68.7%)	-2.3%	-4.0%
Market to book	1.12	(0.89)	0.97	1.42	(1.20)	1.03	0.30[a]
Leverage	0.21	(0.26)	0.14	0.15	(0.20)	0.05	-0.06[a]
Cash	0.15	(0.19)	0.07	0.22	(0.25)	0.10	0.07[a]
Tangible assets	0.29	(0.24)	0.23	0.23	(0.21)	0.15	-0.06[a]
R&D	0.06	(0.14)	0.01	0.89	(6.75)	0.06	0.82
Fraction sold in							
negotiation	24.9%			33.2%			8.3%[c]
informal auction	25.4%			37.1%			11.7%[b]
controlled auction	49.8%			29.8%			-20.0%[a]
Bidders contacted	32	(44)	16	15	(25)	4	17[a]
out of which PE bidders	79%	(27%)	100%	8%	(19%)	0%	71%[a]
Bidders with agreement	14	(19)	5	6	(12)	2	8[a]
out of which PE bidders	89%	(21%)	100%	3%	(13%)	0%	86%[a]
Man.-initiated deal	63.4%	(48.3%)	100%	42.4%	(49.5%)	0%	21.0%[a]

PANEL B	Buyer initiated deal			Management initiated deal			Difference in means
	mean	st.dev.	median	mean	st.dev.	median	
Transaction value	764	(2,119)	182	450	(1,262)	113	314[c]
Target total assets	589	(1,728)	129	319	(804)	101	270[b]
Four week premium	48.0%	(43.9%)	40%	40.5%	(49.1%)	31%	7.5%
Eight week premium	54.5%	(55.6%)	47%	42.8%	(53.2%)	36%	11.7%[b]
Fraction sold in							
negotiation	42.0%			17.5%			24.5%[a]
informal auction	37.8%			25.3%			12.5%[a]
controlled auction	20.2%			57.1%			-36.9%[a]

TABLE 2: SALE TYPE SUMMARY STATISTICS

PANEL A: Eight-week premium	Negotiation	Informal auction	Controlled auction	neg. vs inf.	neg. vs control.	inf. vs control.
All deals	46%	60%	41%	-14%[c]	5%	19%[a]
PE deals	51%	44%	37%	7%	14%	7%
Strategic buyer deals	43%	70%[b]	47%	-27%[b]	-4%	23%[b]
Man. initiated PE deals	**31%**	42%	38%	-11%	-7%	-4%
PE initiated deals	**65%**	47%	34%	18%	31%[b]	13%
Man. initiated strat.-buyer deals	40%	68%	43%	-28%	-2%	25%[c]
Strategic buyer initiated deals	43%	72%	55%	-29%[b]	-12%	17%

PANEL B: Other characteristics	Negotiation			Informal auction			Controlled Auction			neg. vs inf.	neg. vs control.	inf. vs control.
	Total	PE buyer	Strat. buyer	Total	PE buyer	Strat. buyer	Total	PE buyer	Strat. buyer			
Transaction value	574	555	588	776	1,051	588	475	502	430	-202	99	301
Runup 8 week to 1 day before ann.	11.9%	8.0%	15.0%	25.1%	13.8%	32.8%[b]	13.1%	15.3%	9.4%	-13%[b]	-1%	12%[c]
Profitability	-0.01	0.04	-0.04	-0.02	0.06	-0.07[a]	0.04	0.05	0.02	0.01	-0.04	-0.06[b]
Loss	37%	37%	37%	43%	31%	51%[b]	30%	26%	36%[d]	-6%	7%	13%[b]
Stock performance	10.4%	-4.0%	21.2%[b]	3.0%	13.1%	-3.9%[d]	19.2%	22.6%	13.5%	7%	9%	-16%[c]
Market to book	1.23	0.96	1.44[a]	1.48	1.28	1.61[d]	1.13	1.12	1.15	-0.24[c]	0.10	0.34[c]
Leverage	0.20	0.22	0.19	0.18	0.26	0.13[a]	0.17	0.18	0.14[d]	0.02	0.04	0.12
Cash	0.16	0.15	0.17	0.24	0.17	0.29[a]	0.17	0.15	0.20[d]	-0.08[a]	-0.01	0.08[a]
Tangible assets	0.28	0.33	0.24[a]	0.24	0.26	0.23	0.26	0.28	0.22[d]	0.03	0.02	-0.02
R&D	1.20	0.04	1.90	0.41	0.07	0.60	0.11	0.08	0.15	0.69	1.00	0.30[c]
Bidders contacted	1.1	1.1	1.1	15.6	19.3	12.6[d]	48.0	55.3	35.4[b]	-15[a]	-47[a]	-32.4[a]
Fraction of PE bidders contacted				39%	59%	17%[a]	53%	66%	25%[a]			-14%[b]
Bidders with confidentiality agreem.	1.0	1.0	1.0	4.5	6.7	3.1[a]	22.6	25.3	17.9[b]	-4[a]	-22[a]	-18.1[a]
Fraction of PE bidders with agreem.				38%	81%	6%[a]	58%	76%	15%[a]			-20%[b]
Man.-initiated deal	32%	41%	25%[c]	43%	54%	36%[b]	76%	79%	70%[d]	-11%[c]	-44%[a]	33%[a]
Number of transactions	113	50	63	124	50	74	152	97	55			

TABLE 3: PRIVATE EQUITY VERSUS STRATEGIC BUYERS

Dependent variable: Private equity dummy	Model 1	Model 2	Model 3	Model 4	Model 5
Loss	-0.539[b] (0.220)	-0.415[c] (0.227)	-0.462[b] (0.220)	-0.025 (0.301)	-0.490[b] (0.224)
Stock performance	0.040 (0.146)	0.047 (0.148)	0.054 (0.146)	-0.008 (0.236)	0.005 (0.142)
Market to book	-0.339[b] (0.138)	-0.255[c] (0.134)	-0.282[b] (0.135)	-0.209 (0.165)	-0.314[b] (0.132)
Leverage	1.272[a] (0.429)				1.355[a] (0.433)
Cash		-1.022[b] (0.502)			
Tangible assets			0.910[c] (0.474)		
Research & development				-2.181[b] (1.037)	
Management initiated deal	0.874[a] (0.210)	0.853[a] (0.208)	0.874[a] (0.209)	1.020[a] (0.265)	0.683[a] (0.223)
Informal auction					-0.537[b] (0.273)
Private negotiation					-0.584[b] (0.263)
Constant	-0.086 (0.262)	0.197 (0.239)	-0.189 (0.299)	-0.212 (0.317)	0.292 (0.291)
Number of observations	407	407	407	267	407
X^2	35.67	35.15	32.54	26.04	38.78

TABLE 4: EIGHT WEEK PREMIUM AND TARGET CHARACTERISTICS

Dependent variable: eight week premium	Model 6	Model 7	Model 8
Private equity	-0.119[b]	-0.138[b]	-0.106[c]
	(0.055)	(0.059)	(0.056)
Club deal		0.068	0.104
		(0.079)	(0.074)
Management initiated deal			-0.111[c]
			(0.058)
Transaction value			-0.029
			(0.021)
Loss			0.215[a]
			(0.069)
Stock performance			-0.186[a]
			(0.059)
Market to book			0.001
			(0.030)
Constant	0.544[a]	0.544[a]	0.670[a]
	(0.043)	(0.043)	(0.136)
Number of observations	389	389	387
R^2	1.2%	1.4%	12.1%

TABLE 5: AUCTION PROCESS CHARACTERISTICS

Dependent variable: sale process type	Model 9			Model 10		
	Negotiation	Informal	Coeff. difference	Negotiation	Informal	Coeff. difference
Private equity	-0.540[b]	-0.597[b]	-0.058	-0.510[c]	-0.518[b]	-0.008
	(0.274)	(0.264)		(0.269)	(0.262)	
Manag. initiated deal	-1.871[a]	-1.348[a]	0.523[c]	-1.872[a]	-1.338[a]	0.535[c]
	(0.278)	(0.268)		(0.278)	(0.268)	
Transaction value	-0.119	0.099	0.218[b]	-0.094	0.118	0.212[b]
	(0.101)	(0.095)		(0.100)	(0.093)	
Loss	0.153	0.616[b]	0.463	0.286	0.556[c]	0.269
	(0.293)	(0.285)		(0.299)	(0.292)	
Stock performance	-0.245	-0.438[b]	-0.193	-0.244	-0.376[c]	-0.133
	(0.161)	(0.214)		(0.162)	(0.203)	
Market to book	0.105	0.256[c]	0.151	0.169	0.230	0.060
	(0.149)	(0.140)		(0.148)	(0.143)	
Leverage	1.123[c]	0.519	-0.604			
	(0.575)	(0.576)				
Cash				-1.056	0.632	1.689[b]
				(0.753)	(0.626)	
Constant	1.229[b]	-0.226	-1.455[b]	1.339[b]	-0.358	-1.697[a]
	(0.577)	(0.586)		(0.591)	(0.597)	
Number of observations	407			407		
χ^2	81.25			83.71		

TABLE 6: EIGHT WEEK PREMIUM AND SALE PROCESS TYPES

Dependent variable: eight week premium	Model 11	Model 12	Model 13	Model 14
Private equity	-0.098[c]		-0.059	
	(0.056)		(0.052)	
Club deal	0.106			
	(0.075)			
Management initiated deal	-0.103[c]	-0.102[c]	-0.103[c]	-0.109[c]
	(0.061)	(0.061)	(0.060)	(0.061)
Transaction value	-0.031	-0.023	-0.024	-0.023
	(0.021)	(0.021)	(0.021)	(0.021)
Loss	0.203[a]	0.199[a]		
	(0.068)	(0.069)		
Stock performance	-0.177[a]	-0.173[a]	-0.180[a]	-0.173[a]
	(0.057)	(0.055)	(0.055)	(0.053)
Market to book	-0.005	-0.007	-0.007	-0.010
	(0.031)	(0.032)	(0.034)	(0.035)
Negotiation	0.649[a]	0.557[a]	0.660[a]	0.615[a]
	(0.143)	(0.147)	(0.143)	(0.144)
Negotiation x PE		0.036		0.054
		(0.105)		(0.122)
Negotiation x Loss			0.029	0.031
			(0.127)	(0.189)
Negotiation x Loss x PE				-0.021
				(0.249)
Informal auction	0.758[a]	0.760[a]	0.693[a]	0.701[a]
	(0.147)	(0.152)	(0.142)	(0.141)
Informal x PE		-0.173[c]		-0.067
		(0.101)		(0.087)
Informal x Loss			0.258[b]	0.331[b]
			(0.122)	(0.155)
Informal x Loss x PE				-0.268
				(0.234)
Controlled auction	0.652[a]	0.615[a]	0.585[a]	0.595[a]
	(0.133)	(0.142)	(0.133)	(0.141)
Controlled x PE		-0.066		-0.066
		(0.070)		(0.066)
Controlled x Loss			0.302[a]	0.283[b]
			(0.100)	(0.128)
Controlled x Loss x PE				0.032
				(0.190)
Number of observations	387	387	387	387
R^2	51.1%	51.7%	51.5%	52.0%

F-test			profit	loss
informal = negotiation	1.95		0.16	2.64
informal = controlled	2.86[c]		3.78[c]	0.19