

Do Private Equity Consortiums Impede Takeover Competition?

March 2008

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Abstract

We analyze the impact of the growing presence of private equity bidders on the level of competition in corporate takeovers in the United States. In particular, we address the question as to whether the joint bidding by private equity consortiums facilitates collusion in the corporate takeover market. We study a sample of 870 takeovers of publicly traded targets in the 2003 to 2007 period. We find that both single private equity bidders and private equity consortiums are associated with significantly greater levels of takeover competition than other types of bidders. And while we find some evidence that target abnormal returns are lower in private equity consortium deals for narrow event windows around the initial takeover-related announcement date, we also find that these results do not hold for longer event windows that better account for differences in the takeover process across types of bidders. We interpret the evidence to be inconsistent with the argument that the formation of consortiums by private equity bidders facilitates collusion in the corporate takeover market. We also study the impact on takeover competition of recent contractual innovations such as go-shop provisions and staple financing that are used in private equity deals.

JEL Classification: G34; D44

Keywords: takeover auctions; private equity; joint bidding; consortiums; staple financing

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Abstract

We analyze the impact of the growing presence of private equity bidders on the level of competition in corporate takeovers in the United States. In particular, we address the question as to whether the joint bidding by private equity consortiums facilitates collusion in the corporate takeover market. We study a sample of 870 takeovers of publicly traded targets in the 2003 to 2007 period. We find that that both single private equity bidders and private equity consortiums are associated with significantly greater levels of takeover competition than other types of bidders. And while we find some evidence that target abnormal returns are lower in private equity consortium deals for narrow event windows around the initial takeover-related announcement date, we also find that these results do not hold for longer event windows that better account for differences in the takeover process across types of bidders. We interpret the evidence to be inconsistent with the argument that the formation of consortiums by private equity bidders facilitates collusion in the corporate takeover market. We also study the impact on takeover competition of recent contractual innovations such as go-shop provisions and staple financing that are used in private equity deals.

Do Private Equity Consortiums Impede Takeover Competition?

Private equity bidders have become important participants in the U.S. corporate takeover market in recent years. In the period between 2003 and 2007, as we report in detail below, the fraction of winning bids by private equity firms has risen five-fold from six percent to 30 percent of corporate takeovers. Much of this increase has been driven by the growing incidence of takeovers in which the winning bidder is two or more private equity firms bidding jointly as a consortium.

The heightened presence of private equity bidders in the takeover market has been accompanied by regulatory scrutiny. The U.S. Department of Justice has launched an inquiry into the effects of private equity bidding on takeover competition (Berman and Sender (2006)). A particular concern in the inquiry is whether the joint bidding by private equity consortiums represents a collusive practice that dampens takeover competition and reduces the price paid to target shareholders (Sorkin (2006)).

The current scrutiny of private equity consortiums in corporate takeovers reflects a general regulatory distrust of joint bidding. For example, concerns about the collusive effects of joint bidding for offshore oil properties led to regulatory restrictions on the bidding practices of major oil companies (Hendricks and Porter (1992)). One possible outcome of the current regulatory inquiries of private equity bidding would be a similar inhibition of the use of consortiums in corporate takeovers.

In spite of the regulatory concerns, the role of joint bidding in corporate takeovers is not necessarily to foment collusion. As noted by Moody and Krivant (1988, p.284) in their study of offshore oil auctions, although joint bidding “can serve as a forum for conspiracy,” it can also reduce information costs and thereby enable greater competition

relative to a setting that does not allow joint bidding. Hence, the effect of joint bidding by private equity consortiums on takeover competition is an empirical question.

In this paper, we address this empirical question on the relation between private equity bidding and takeover competition. Our specific focus is on how the level of competition and the prices paid in takeovers are affected by the joint bidding by private equity consortiums. As part of our analysis, we also study the impact on takeover competition of recent contractual innovations used in private equity deals such as go-shop provisions and staple financing. Our detailed treatment of the competition associated with private equity bidding and our focus on private equity consortiums distinguishes our research from the seminal work on leveraged buyouts (DeAngelo, DeAngelo, and Rice (1984), Lehn and Poulsen (1988)) and the more recent analysis of private versus public acquirers (Bargeron, Schlingemann, Stulz, and Zutter (2007)).

Our analysis begins with the straightforward question as to the relation between private equity consortiums and the level of takeover competition. To measure takeover competition, we use merger documents from the U.S. Securities Exchange Commission (SEC) to estimate the number of potential bidders contacted by the target, the number of potential bidders receiving confidential information, and the number of bidders making both non-binding and binding offers. If joint bidding has collusive effects in corporate takeovers, then there should be a negative relation between these measures of takeover competition and private equity consortiums as compared with other categories of bidding firms. In contrast to this prediction of the collusion hypothesis, we find a significant, positive relation between private equity consortiums and takeover competition.

The second part of our analysis studies the prices paid in corporate takeovers using conventional event study analysis of target abnormal returns. Our aim is to determine whether the prices paid by private equity consortiums differ from other types of winning bidders. If the joint bidding of private equity consortiums facilitates collusion, then private equity consortiums should be associated with lower takeover prices than those paid by other types of bidders in comparable deals. Tests of this hypothesis are complicated by the fact the heightened competition that we document for private equity bidders entails a lengthier process with greater information leakage and more protracted information revelation vis-à-vis takeovers by other categories of bidders. Because of differences in the takeover process across types of bidders, we estimate target abnormal returns for both narrow windows around the initial takeover-related announcement as well as for more extended event windows that more fully capture the information revealed during the takeover process.

While we find some evidence of lower target abnormal returns in private equity consortium deals for narrow event windows, we find no evidence of any difference in target abnormal returns between private equity consortiums and other types of bidders in longer event windows. Because the longer event windows appear to better account for the differences in the takeover process across the different types of bidders, we conclude that the prices paid by private equity consortiums are comparable to the prices paid by other types of bidders. We interpret the evidence to be inconsistent with the argument that the formation of consortiums by private equity bidders facilitates collusion in the corporate takeover market.

The remainder of the paper proceeds as follows. Section I describes our sample. Section II reports the results on the relation between private equity bidding and the level of takeover competition. Section III studies target abnormal returns. Section IV provides a summary and offers some concluding comments.

I. The Sample

A. Forming the Sample

Our analysis employs a sample of corporate takeovers from the 2003 to 2007 period. This period enables an estimation of the effects of the recent growth of private equity bidders and private equity consortiums. These recent years are also the point of focus in the ongoing inquiry by the U.S. Department of Justice (Sorkin (2006)).

We form our sample from the mergers and acquisitions database of the Securities Data Corporation (SDC). We begin with all mergers and acquisitions announced between January 1, 2003, and December 31, 2007. We require that the targets come from the New York Stock Exchange, the American Stock Exchange, NASDAQ, or the small-cap market. We include those deals in which the bidder was seeking 100 percent of the target. We further restrict the sample to takeovers with a deal value of at least \$50 million and where the price of the target on the day prior to the takeover announcement is \$5 or more. We also exclude REITs, spin-offs, joint ventures and bankruptcies. Finally, we drop any other takeovers without sufficient information on target value and returns from CRSP.

These screens provide a sample of 1,104 deal announcements. But through a review of news stories on LexisNexis, we determine that some of these announcements are by multiple bidders for the same target. After accounting for multiple bidders, we

have 983 unique targets with takeover announcements on SDC in the 2003 to 2007 period. We then drop 75 deals reported as still pending at the end of 2007, leaving 908 targets.

A final data requirement is that a given target has takeover documents available on the EDGAR filings of the SEC. These documents are used to estimate the level of competition in a takeover. Because of this requirement, we lose a total of 38 announced takeovers, comprised mostly of cases where the target quickly rebuffs the bidder before any filings are made at the SEC. After the screening based on SEC documents, the sample entails 870 takeovers from the 2003 to 2007 period.

B. Sample Characteristics

Table 1 reports the distribution of the sample of 870 takeovers over time. Takeovers are classified by the year of takeover announcement. For the full sample, the number of takeovers per year generally rises over time. The greatest number is 222 deals announced in 2006.

Table 1 also reports the distribution of the sample across four bidder categories, determined from LexisNexis and SEC EDGAR documents. Private Equity Single is a winning bidder that is a single private equity firm. Private Equity Consortium is a winning bidder that is two or more private equity firms. Other Private is a winning bidder that is a private firm other than a private equity firm. Public Bidder is a winning bidder that is a publicly traded corporation. The public bidder category includes both U.S. and non-U.S publicly traded bidders and includes deals in which the reported bidder in SDC is a subsidiary of a publicly traded corporation.

The data in Table 1 highlight the growth in private equity bidding during the sample period. In 2003, the 8 total bids by single private equity firms and private equity consortiums make up only 6 percent of the takeovers. But by 2007, the 53 bids by single private equity firms and private equity consortiums make up 30 percent of the takeovers. For the full sample period, private equity deals make up 19 percent of the sample, compared with 7 percent for other private bidders and 74 percent for public bidders.

For the 94 single private equity deals, there are 56 separate private equity bidders. For the 70 private equity consortium deals, there are 102 distinct private equity players involved. In total, there are 135 private equity firms involved in the bidding in our sample. The five most frequent private equity bidders, each being the winning bidder more than ten times in the sample, are Apollo, Blackstone, Carlyle, KKR and Texas Pacific.

The consortium deals, by definition, have a minimum of two private equity firms as bidders. The mean (median) number of bidders in consortium deals is 2.84 (2). The largest number of bidders in a winning consortium is 10.

Table 2 reports some basic statistics on target and deal characteristics for the full sample and by bidder category. The first variable is target value, measured 64 days prior to the initial takeover-related announcement for a given target. For the full sample, the mean target value is \$1.79 billion and the median target value is \$0.47 billion.

The target values for single private equity bidders are below average: the mean value is \$1.16 billion and the median is \$0.44 billion. By contrast, the target values for private equity consortiums are above average: the mean value is \$3.32 billion and the

median value is \$1.11 billion. The other private bidders have below average target values while the public bidders have roughly average target values.

The second variable reported in Table 2 is the fraction of takeovers in which the method of payment is all cash. For the full sample, 61 percent of the deals are all cash. Private equity firms (single and consortium) and other private bidders pay all cash in the preponderance of deals. By contrast, 49 percent of the takeovers by public bidders are all cash.

The third variable in Table 2 is the fraction of withdrawn deals, as determined from LexisNexis news stories. The data indicate that 2.9 percent of the announced deals in the full sample are not completed. Roughly 1 percent of the deals announced by single private equity firms are withdrawn. More than five percent of the consortium and other private deals are withdrawn, while 2.6 percent of the deals with public bidders are withdrawn.

Table 3 reports the distribution of the sample of target firms across industries. We use the grouping of 30 Fama-French industries (provided on Ken French's website) as our base. In our sample, four of those industries have no takeover activity. Hence, Table 3 reports data for 26 industries.

The distribution in Table 3 indicates a clustering of takeover activity by industry. This is particularly evident for the deals where private equity firms are the winning bidder. More than half of the private equity deals, 97 out of 164, occur in four of the 26 industries: Services, Retail, Health and Meals. Four of the industries have no private equity transactions and twelve other industries have less than five private equity

transactions. Seventeen of the 25 industries have fewer than 25 percent of the deals where a private equity firm is the winning bidder.

II. Measuring Takeover Competition

A primary question in our analysis is the effect that private equity bidding and private equity consortiums have on the level of takeover competition. To estimate takeover competition, we use information on the takeover process garnered from SEC EDGAR documents (for prior analysis of takeover competition, see Boone and Mulherin (2007)). For each takeover in our sample, we estimate five measures of competition. Contact is the average number of potential bidders with which the target and its investment bank were in contact. Confidential is the average number of potential bidders that engaged in a confidentiality agreement with the target. Indication of Interest is the average number of potential bidders expressing a non-binding offer for the target. Private reports the average number of bidders that submitted a private binding offer for the target. Public reports the average number of bidders that submitted a formal offer that was announced in the financial media. Note that although the SEC documents report the number of potential bidders at the various stages of the takeover process, the documents usually do not report the identity of the non-winning bidders as part of the confidentiality agreements used in the bidding process.

An example of our classification of takeover competition comes from the acquisition of DoubleClick as reported in the SEC DEFM14A filing dated May 27, 2005. The target and its investment bank contacted 70 potential bidders. Fifty of these potential bidders signed confidentiality agreements and 18 potential bidders gave non-binding

indications of interest. Two bidders made binding private offers and a consortium of Hellman & Friedman Capital Partners and JMI Equity was the winning bidder. The other private bid was made by an unnamed private equity group.

A. Takeover Competition in the Full Sample

Table 4 reports the estimates of takeover competition garnered from SEC documents. Panel A reports the results for the full sample. For the representative takeover, the target firm and/or its investment bank contact roughly 14 potential bidders. On average, 6 potential bidders sign agreements enabling the sharing of confidential information. The mean number of bidders making a non-binding offer for the target is 2.5. The average number of bidders making a binding private offer is 1.3 and the average number of public offers is 1.1.

Panel A of Table 4 also reports the data by bidder category. The results indicate that private equity firms are involved in takeovers with above-average levels of competition. In takeovers in which a single private equity firm is the winning bidder, on average, the target contacts 32 potential bidders, signs confidentiality agreements with 13 potential bidders, receives indications of interest from roughly 4 bidders, receives binding private offers from 1.5 bidders and receives formal public offers from 1.1 bidders.

A striking result in Panel A of Table 4 is that private equity consortiums are also associated with above-average levels of takeover competition. Indeed, the level of competition in deals in which private equity consortiums are the winning bidders is as great or greater than that for single private equity deals. Although the formation of a consortium would appear to arithmetically reduce the level of competition, the use of

consortiums actually is associated with more bidding than the average deal. Hence, combined with the results on target value in Table 2, the data indicate that consortiums are a competitive response by private equity firms when bidding for larger targets.

Because private equity firms primarily make cash bids and because takeover competition may be related to the method of payment, Panel B of Table 4 reports the results for the all cash subsample of 534 takeovers. In this stratification of the data, both single private equity firms as well as private equity consortiums continue to be associated with above-average levels of takeover competition.

In results not reported in the tables, we also estimated data on when consortiums were formed. We find that in 53 of the 70 cases (76 percent) where private equity consortiums were the winning bidder, the consortium was formed at the contact stage of the bidding. In the other cases, the consortium was formed later in the bidding process, suggesting that in these cases the numbers reported in Table 4 slightly overweight the full extent of takeover competition in consortium deals. But in results not reported in the tables but available upon request, we find that accounting for the stage at which consortiums are formed does not alter the conclusion that consortiums deals have an above average rate of takeover competition.

Panel A of Table 5 reports regression analysis that formally tests the relation between private equity bidders and takeover competition for the full sample. The five regressions in the table sequentially employ one of the measures of takeover competition. To capture the effect of private equity bidding, two dummy variables are employed. Private Equity Single is a dummy variable equal to one for deals where the winning bidder is a single private equity firm and Consortium is a dummy variable equal to one

where the winning bidder is a private equity consortium. The regressions also include two control variables that account for target size and method of payment.

The regression results in Panel A of Table 5 confirm that private equity bidders, including private equity consortiums, are associated with greater levels of takeover competition. The coefficient on the dummy variable for single private equity bidders is positive and significant in the first four regressions, and is positive but not significant in the final regression. More importantly, the coefficient on the consortium dummy variable is positive and significant in all of the regressions of takeover competition. As a whole, the results are inconsistent with the hypothesis that private equity consortiums are associated with any collusive inhibition of takeover competition.

B. The Private Equity Sample

To clarify the marginal impact of private equity consortiums on takeover competition, we repeat the regression analysis of takeover competition for the subsample of the 164 deals where the bidder was either a single private equity firm or a private equity consortium. The regressions include a consortium dummy variable as well as a control variable that accounts for target size.

The results for the private equity subsample are reported in Panel B of Table 5. The results indicate that consortium deals are no less competitive than single private equity deals. As in the analysis of the full sample, these results are inconsistent with the hypothesis that private equity consortiums are associated with collusive impediments to bidding in corporate takeovers.

Given the results that private equity bidders do not appear to impede the level of competition in corporate takeovers, we look further into the factors that affect the bidding in private equity deals. One recent innovation in private equity bidding is the go-shop provision. This contractual feature enables the target to continue to actively seek other bidders once a merger agreement has been signed, in contrast to the standard no-shop provision that prohibits active solicitation of bidders once an initial agreement has been reached. While go-shop provisions have been the subject of debate in the legal literature (e.g., Sautter (2008), there has been little or no empirical analysis of their impact on takeover competition. Using SEC EDGAR documents, we find the occurrence of a go-shop provision in 40 of the 164 private equity deals in our sample. We employ this data to estimate the effect of go-shop provisions on takeover competition.

Another recent innovation in private equity deals is staple financing. This is a financial practice in which the investment bank of the target firm offers the option of debt financing to any potential bidder in the takeover. Recent theoretical research by Povel and Singh (2007) argues that option of staple financing should increase the level of competition in a private equity deal. We test this prediction with data garnered from SEC EDGAR documents. In our sample of 164 private equity deals, we find 29 cases where staple financing was offered. We use this data to estimate the effect of staple financing on takeover competition.

The regression analysis of the effects of go-shop provisions and staple financing on takeover competition is reported in Panel C of Table 5. The dependent variables in the regressions are the five measures of takeover competition. The explanatory variables are a dummy variable that takes a value of one for deals with a go-shop provision and a

dummy variable that takes a value of one when staple financing was offered. The regression also includes a control variable for target size.

For go-shops, the results in Panel C of Table 5 indicate that the use of such a provision has a positive and significant effect on the number of firms that are contacted in a private equity deal. However, none of the other measures of competition is significantly affected by the use of the go-shop provision. Hence, the go-shop provision does not appear to affect the number of substantive bids received in a private equity deal.

The results for staple financing in Panel C of Table 5 suggest a positive effect on takeover bidding. While staple financing appears to not have a significant effect on the number of potential bidders contacted, the coefficient on the staple financing dummy variable is positively and significantly related to the number of firms signing confidentiality agreements, the number of firms making non-binding offers and the number of firms making binding private offers for the target firm. These results are consistent with the prediction of Povel and Singh (2007) that staple financing increases the competitiveness of the bidding in private equity deals.

III. Abnormal Returns to Target Firms

The second major question in our analysis is the effect that the bidding by private equity consortiums has on the prices paid in corporate takeovers. If private equity consortiums are engaged in collusion, then the prices paid in consortium deals should be measurably lower than the prices paid for comparable targets that are acquired by other types of bidders. We address this question by estimating the abnormal returns to target firms acquired by private equity consortiums vis-à-vis other types of bidders.

A. The Takeover Process and the Estimation of Abnormal Returns

In estimating abnormal returns to takeover targets, an important choice is the length of the event window. Narrow windows such as the $(-1,+1)$ period have the benefit of being less dependent on the model used to generate expected returns (Fama (1991)). However, lengthier windows such as the $(-63,+126)$ window employed by Schwert (2000) better capture the leakage of takeover information prior to a formal merger announcement as well as the evolution of the likely success of a deal over the extent of the full takeover process.

If pre-takeover information leakage, as well as the evolution of the takeover process, are similar across types of bidders, then the implementation of our research design would not be sensitive to the choice of event window. However, the results on takeover competition reported in the prior section provide evidence that the takeover process and the related information revelation about target firms vary significantly across the types of bidders in our sample. In particular, the greater number of possible bidders contacted in private equity deals, much of which occurs well before a formal public announcement of a takeover deal, certainly alludes to a different information environment across bidder type.

Further evidence of differences in the characteristics of the takeover process across types of bidders is reported in Table 6. Panel A reports data on the length of the sample takeovers in calendar days for the 841 completed deals in the sample. The period used to estimate the length of the takeover spans the time from the private initiation of the

takeover to the completion of the deal. For a prototypical depiction of this time period, see Figure 1 in Boone and Mulherin (2007).

The information to construct Panel A of Table 6 is obtained from SEC EDGAR documents and from LexisNexis. Data are reported for four intervals. Private to Initial is the average number of calendar days between the private initiation of the takeover and the first public announcement that the target is possibly the object of a takeover. Initial to Merger is the average number of calendar days between any initial announcement and the formal public announcement of the merger. Merger to Complete is the average number of calendar days between the formal public announcement of the merger and the completion of the takeover. The Full Takeover Period is the average number of calendar days from the private initiation of the takeover to the completion of the takeover.

An example of the full takeover process comes from the acquisition of DoubleClick that evolved over the 2004 to 2005 period. As reported in the SEC DEFM 14A filing dated May 27, 2005, the board of directors of the target firm privately initiated the sales process by hiring an investment bank on September 14, 2004. The first public information on the deal occurred on October 31, 2004, when the target announced that it was considering strategic alternatives including a possible sale of the company. The formal merger announcement occurred on April 25, 2005. The deal was completed on July 13, 2005.

As reported in Panel A of Table 6, for the full sample, the average takeover lasts 359 calendar days, or roughly a year between private initiation and completion. The average number of days between the private initiation of the takeover and the initial takeover-related announcement is 194 days. The average number of days between the

initial takeover-related announcement and the formal public merger announcement is 29 days. The average number of days between merger announcement and takeover completion is 136 days.

Looking across bidder type in Panel A, takeovers in which private equity firms are the winning bidder take longer to complete. This is driven by the fact that both single private equity firms and private equity consortiums have a longer interval, on average, between the private initiation of the deal and both the initial takeover-related announcement as well as the formal public announcement of the merger. In effect, the data indicate that the greater competition associated with private equity deals comes at the cost of taking a longer period of time. The lengthier time between the private initiation of the deal and the public announcement of the takeover suggests that there is a greater chance of leakage of information about takeovers involving private equity firms.

Panel B Table 6 reports evidence that corroborates this conjecture about information leakage. The table reports the fraction of takeovers with early announcement dates, defined as those deals shown in LexisNexis to have an announcement for sale by the target, an earlier bid by a third party, a takeover rumor or other takeover-related activity prior to the announcement of the formal takeover offer. For the full sample, 20.3 percent of the takeovers have an early announcement date. Deals with private equity firms as the winning bidder have a much greater fraction of early announcement dates. Thirty-five percent of the deals with single private equity bidders have early announcement dates and 50 percent of the deals with private equity consortiums have early announcement dates.

This evidence of greater leakage prior to private equity deals is consistent with prior research on going private transactions (Lehn and Poulsen (1989)) and suggests that care must be taken in comparing the abnormal returns in private equity deals with returns in deals by other types of bidders. To account for the differences in the takeover process across the bidder types in our sample, we estimate target abnormal returns for three different event windows where day 0 is the initial takeover-related announcement for a given target as determined from LexisNexis: (a) the narrow (-1,+1) window, (b) the (-63,+126) window used by Schwert (2000), and (c) the window that goes from 63 days prior to the initial announcement to the completion of the takeover.

B. Basic Event Study Analysis

Our model for estimating abnormal target returns follows conventional practice (e.g., Schwert (2000)). For each target, we estimate a market model over the 253 days ending on day -127 prior to the initial announcement. The market is proxied by the CRSP value-weighted index. For the three different event windows, we use the market model parameters to estimate cumulative abnormal returns for the target firms. For the (-1,+1) window and the (-63,+126) window, there are 864 takeovers with data available to perform the estimation. For the (-63, completion) window, there are 835 completed takeovers with data available on CRSP.

The results of the basic event study analysis are reported in Table 7. Panel A reports the evidence for the (-1,+1) window. The mean (median) target return is 18.8 percent (16.5 percent) which is comparable in magnitude to prior research (see, e.g., Table 3 in Andrade, Mitchell, and Stafford (2001)). Panel A also reports the target returns

by bidder category. The most notable result is that the target returns for private equity consortiums appear measurably below average. The mean return for private equity consortiums is 12.8 percent, as compared to 16.4 percent for single private equity bidders, 21 percent for other private bidders, and 19.6 percent for public bidders.

As documented in Table 6, however, a potential issue with the narrow (-1, +1) window is that for private equity consortium bids, the initial takeover-related announcement is much less likely to be the formal public merger announcement. Hence, the lower observed returns to targets of private equity consortiums may stem from the uncertainty of whether a rumored deal would actually come to fruition.

To account for the differences in the evolution of the takeover process across bidder types, Panel B of Table 7 reports target returns over the lengthier (-63,+126) window. For the full sample, the mean (median) target returns are 20.4 percent (20.4 percent), comparable in magnitude to that reported in Schwert (2000). But in contrast to the narrow (-1,+1) window, the target returns for private equity consortium bidders in the (-63,+126) window are not measurably different than for the other types of bidders. The mean return for consortium bidders is 16.6 percent, as compared to 17.9 percent for single private equity firms, 17.9 percent for other private firms and 21.4 percent for public bidders.

Panel C reports target abnormal returns for the window from day -63 to the completion of the takeover. The results are comparable to those for the (-63,+126) window. The mean (median) target abnormal return for the full sample is 21.2 percent (21.3 percent). Across bidder types, the target returns are also similar to those reported for the (-63,+126) window. The comparability of the (-63,+126) window and the (-63,

completion) window indicates that, consistent with Schwert (2000), the (-63,+126) window appears to provide an accurate estimate of the information revealed by the occurrence of the sample takeovers. Moreover, the differences across bidder types between the narrow (-1,+1) window and the longer event windows suggest that it is important to consider the takeover process when comparing the effects of private equity consortiums with other types of bidders.

To more formally model the effects of private equity consortiums, Table 8 reports regression analysis of target abnormal returns. There is one regression for each of the three event windows. Explanatory variables include dummies for both single private equity bidders and private equity consortiums. There are also control variables for target size, cash deals, whether the deal had an early announcement, and whether the deal was withdrawn.

The results for target returns in the (-1,+1) window are reported in the first column of Table 8. In the regression, the coefficient on the consortium dummy variable is negative and significant, confirming the lower mean returns reported in Table 7. Consistent with prior research (Schwert (2000), Huang and Walkling (1987)), target size has a negative and significant effect on target returns and the use of cash has a positive and significant effect on target returns. Confirming the effects of differences in the takeover process, the coefficient on the Early Announcement dummy variable is negative and significant.

The second column in Table 8 reports regression results for target returns estimated over the (-63,+126) window. In this regression, the coefficient on the consortium dummy is negative but no longer statistically significant. Hence, after more

completely capturing the information revealed over the takeover process, target abnormal returns are no different for private equity consortium bidders vis-à-vis other types of bidders. In a related result, the coefficient on the Early Announcement dummy variable is negative but not measurably different from zero, suggesting that the (-63,+126) window captures the differential flow of information during the takeover process.

The third column of Table 8 reports the regression results for target returns estimated over the window from day -63 to deal completion. The results are similar to those for the (-63,+126) window. In particular, the coefficient for the consortium dummy is negative but not statistically significant.

In sum, we have compared the abnormal returns to target firms acquired by private equity consortiums with the returns to targets acquired by other types of bidders. While we find some evidence of lower target returns in consortium deals for the narrow (-1,+1) window, these results do not hold for longer event windows. Because the longer event windows appear to better account for differences in the takeover process across the different types of bidders, we interpret the evidence to indicate that the abnormal returns to targets in private equity consortium deals are comparable to the returns to targets acquired by other types of bidders. This evidence is inconsistent with the hypothesis that the use of consortiums facilitates collusion in takeover bidding.

C. Robustness Analysis

We next gauge the robustness of our results to analysis that controls for the characteristics of takeover targets as well as for the type of bidder in the transaction. Because the basic event study analysis suggests that the longer event windows more

completely capture the information revealed during the takeover process, our robustness analysis focuses on target abnormal returns estimated over the (-63,+126) window.

Our first set of robustness tests considers whether target characteristics, as proxied by the industry of the target firm, might influence our results. As reported in Table 3, private equity deals tend to cluster in particular industries. To account for this clustering, we report three different regressions. In the first regression, we include industry dummy variables in the regression specification. In the other two regressions, we follow Dewenter's (1995) analysis of domestic and foreign bidders and limit the analysis to subsamples of industries. The two subsamples are from industries in which there is a measurable presence of private equity deals: (a) the 720 takeovers with available data that come from the nine industries that had at least five winning private equity bidders and (b) the 281 takeovers with available data that come from the eight industries that had at least 25 percent of the targets with a private equity firm as the winning bidder.

The results of the robustness analysis that control for industry clustering are reported in Table 9. In all three regressions, the coefficient on the Consortium dummy variable remains negative but insignificant. Hence, the finding that private equity consortiums are not associated with collusive bidding is robust to controls for industry clustering.

As another set of robustness tests, we focus on the subsample of deals associated with private bidders, including single private equity firms, private equity consortiums, and other private firms. This analysis is motivated by recent research by Barger, Schlingemann, Stulz, and Zutter (2007) which argues that target returns are systematically different for public and private bidders as well as by Fuller, Netter and

Stegemoller (2002) which argues that public versus private status may affect the potential operating synergies in a merger.

We use regression analysis of four subsamples to measure the robustness to controls for bidder type. The first subsample contains 221 deals with available data that were bought by private firms, including 163 private equity bidders and 58 other private companies. The second subsample is 278 takeovers with available data where a private equity firm is involved in the bidding process either as the winning bidder or as another participant in the bidding process. This compares 163 deals with winning private equity bidders to 115 other takeovers where SEC EDGAR documents indicate that private equity firms made bids but were not the winning bidder. The third and fourth subsamples study only the 163 private equity deals with available data. This analysis arguably is the cleanest test of the incremental effect of a private equity consortium on target returns. In the two regressions using these subsamples, we suppress the PE single dummy since we have only private equity deals. The fourth regression adds variables accounting for go-shop provisions and staple financing to estimate the effect of these contractual and financial innovations on target returns. All regressions use target size, method of payment, the early announcement dummy and a withdrawn dummy as control variables.

The results of the analysis that controls for the type of bidder are reported in Table 10. In the first regression, the coefficient on the consortium dummy is positive and insignificant. In the second regression, the coefficient on the consortium dummy is negative and insignificant. In the third and fourth regression, the coefficient on the consortium dummy is positive and insignificant. Hence, there is no evidence in these regressions of collusive bidding by private equity consortiums.

The fourth regression in Table 10 also estimates the effect of go-shop provisions and staple financing on target returns. The coefficients on the Go-Shop dummy variable and the staple financing dummy variable are both negative and insignificant. Hence, we find no measurable effect of either innovation on target returns.

In results not reported in the tables, we did further analysis to see if any of the cross-sectional variation in the returns to targets acquired by private bidders was related to the potential operating synergies in a given deal. To gauge potential operating synergies, we used LexisNexis and SEC EDGAR documents to determine whether the private bidder in the transaction was an operating company, including cases where the bidder was an operating company within the portfolio of a private equity company or where a private equity firm jointly bid with a separate operating company. For the 58 other private bidders, we found 51 (or 88 percent) were operating companies. For the 93 single private equity bidders, we found 24 cases (26 percent) with operating companies. For the 70 consortium bidders, we found 13 cases (19 percent) with operating companies. To model potential operating synergies, we re-ran regression (1) in Table 10 with a dummy variable equal to one for deals involving operating companies. We found that the coefficient on the operating company dummy was -0.034 but not significant. Moreover, the inclusion of the operating dummy variable did not alter the sign and statistical insignificance of the dummy variables for both the single private equity and consortium variables.

As a whole, the robustness analysis in this section confirms the findings from the basic event study analysis. The abnormal returns to target firms acquired by private equity firms are not significantly different than the returns to targets acquired by other

types of bidders. These results are inconsistent with the hypothesis that the use of private equity consortiums facilitates collusion in takeover bidding.

IV. Summary and Conclusion

The heightened presence of private equity bidders in recent years raises questions as to the effect of private equity on the corporate takeover market. A particular concern is whether the joint bidding by private equity consortiums has facilitated collusion in the corporate takeover market to the detriment of the shareholders of target firms.

We address these issues about private equity bidding with a sample of 870 takeovers of publicly traded targets from the 2003 to 2007 period. Our analysis compares the level of competition and the prices paid in private equity deals with the competition and pricing in deals with other types of bidders. We find that both single private equity firms and private equity consortiums are associated with significantly greater levels of takeover competition than other types of bidders. And while we find some evidence that target abnormal returns are lower in private equity consortium deals for narrow event windows around the initial takeover-related announcement date, we also find that these results do not hold for longer event windows that better account for differences in the takeover process across types of bidders. We interpret the evidence to be inconsistent with the hypothesis that the joint bidding by private equity consortiums facilitates collusion in the corporate takeover market.

As part of our analysis of private equity bidding, we have also estimated the effects of recent contractual innovations such as staple financing. We find some evidence

that the use of staple financing is associated with enhanced takeover competition. These results are consistent with the model of Povel and Singh (2007).

A natural follow-up question to our findings is why we do not find collusive effects of bidding consortiums in the corporate takeover market. Some guidance on this query is provided by auction theory. A general method for a seller of any asset to counter the negative effects of a bidding cartel is by the use of a reserve price (McAfee and McMillan (1992)). For corporate takeovers, such a policy is enabled by the board of directors of the target firm having the option to “just say no” if the price offered by a private equity consortium or any other bidder is considered to be too low due to bidding collusion or any other reason. From a policy perspective, our results together with auction theory indicate that the emphasis of takeover law should not be on impeding any particular bidding groups from participating in a takeover bid. By contrast, legal and regulatory policymakers should instead focus on ensuring that the takeover market is an unimpeded and competitive process, a policy that appears to be the aim in the Delaware courts (Allerhand and Aronstam (2007)).

Beyond the corporate takeover market, our findings have relevance to more general regulatory policies on joint bidding. In settings as diverse as offshore oil sales (Hendricks and Porter (1992)) to spectrum auctions (Salmon (2003)), there appears to be a regulatory assumption that the role of joint bidding is to facilitate collusion. Our results indicate that this is not always the case and that joint bidding can actually heighten competition in an auction by better enabling bids on higher valued assets.

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Table 1. Sample by Year

This table reports the number of takeovers per year in the sample period of 2003 to 2007. Takeovers are classified by year of takeover announcement. Data are reported for the full sample and by the type of winning bidder. *Private Equity Single* is a winning bidder that is a single private equity firm. *Private Equity Consortium* is a winning bidder that is two or more private equity firms. *Other Private* is a winning bidder that is a private firm other than a private equity firm. *Public Bidder* is a winning bidder that is a publicly traded corporation or its subsidiary.

Year	Full Sample	Private Equity			Public Bidder
		Single	Consortium	Other Private	
2003	128	6	2	11	109
2004	161	9	7	5	140
2005	181	16	16	12	137
2006	222	30	25	20	147
2007	178	33	20	11	114
Total	870	94	70	59	647

Table 2. Sample Statistics

This table reports summary statistics on size and deal characteristics for the sample of 870 takeovers. Data are reported for the full sample and by the type of winning bidder. *Private Equity Single* is a winning bidder that is a single private equity firm. *Private Equity Consortium* is a winning bidder that is two or more private equity firms. *Other Private* is a winning bidder that is a private firm other than a private equity firm. *Public Bidder* is a winning bidder that is a publicly traded corporation. *Target Size* is the equity value (stock price*shares outstanding) in billions of dollars measured 64 days prior to the initial takeover-related announcement for a given target. *% All Cash* is the fraction of takeovers in which the method of payment is all cash. *% Withdrawn* is the fraction of deals that are announced but are never completed.

	Private Equity				
	Full Sample	Single	Consortium	Other Private	Public Bidder
Target Value (\$ Bil)					
Mean	\$1.79	\$1.16	\$3.32	\$1.23	\$1.77
Median	\$0.47	\$0.44	\$1.11	\$0.18	\$0.46
% All Cash	61%	98%	99%	93%	49%
% Withdrawn	2.9%	1.1%	5.7%	5.1%	2.6%
Number of Obs	870	94	70	59	647

Table 3. Industry Classification by Type of Winning Bidder

This table reports the industry classification of the target firms for the sample of 870 takeovers. Data are reported for the full sample and by the type of winning bidder. Industry classifications are determined using the 30 industry grouping of Fama-French (from Ken French's web site). Four of the 30 industries contain no takeover activity in our sample including: Beer and Liquor, Tobacco Products, Mining, and Coal. Hence, the table reports data for 26 industries. *Private Equity Single* is a winning bidder that is a single private equity firm. *Private Equity Consortium* is a winning bidder that is two or more private equity firms. *Other Private* is a winning bidder that is a private firm other than a private equity firm. *Public Bidder* is a winning bidder that is a publicly traded corporation. % PE is the percent of the deals in an industry where a private equity firm or consortium is the winning bidder.

Industry	Private Equity				Public	% PE
	Full Sample	Single	Consortium	Other Private		
Aircraft	2	1			1	50%
Autos	4				4	0%
Books	9	1	1	1	6	22%
Business Equip.	74	4	6	4	60	14%
Chemicals	9	1	1	2	5	22%
Clothes	11		1		10	9%
Construction	16	3		3	10	19%
Elec. Equip.	5			1	4	0%
Fabricated Prod.	17	2		1	14	12%
Financial	240	7	5	17	211	5%
Food	11		1	2	8	9%
Games	14	2	3	2	7	36%
Health	95	11	6	3	75	18%
Household	2				2	0%
Meals	20	13	4	1	2	85%
Oil	35		1	2	32	3%
Other	6	3		1	2	50%
Paper	4		1		3	25%
Retail	44	13	10	1	20	52%
Services	152	20	20	7	105	26%
Steel	14	1			13	7%
Telecom.	27	1	4	6	16	19%
Transportation	17	4		3	10	24%
Textiles	1				1	0%
Utilities	19	2	5	1	11	37%
Wholesale	22	5	1	1	15	27%
Total	870	94	70	59	647	19%

Table 4. Takeover Competition

This table summarizes the level of competition for the sample of 870 takeovers. Panel A reports the takeover competition for the full sample and by bidder category (defined in Table 1). The table reports five measures of takeover competition. *Contact* is the average number of potential bidders with which the target and its investment bank were in contact. *Confidential* is the average number of potential bidders that engaged in a confidentiality agreement with the target. *Ind of Interest* is the average number of potential bidders expressing a non-binding offer for the target. *Private* reports the average number of bidders that submitted a private binding offer for the target. *Public* reports the average number of bidders that submitted a formal offer that was announced in the financial media. Panel B reports the takeover competition for the all cash subsample.

Panel A. Full Sample

Measure of Competition	Full Sample (N = 870)	Private Equity			Public Bidder (N = 647)
		Single (N = 94)	Consortium (N = 70)	Other Private (N = 59)	
Contact	13.7	32.3	33.7	13.8	8.7
Confidential	5.9	13.3	10.8	5.4	4.4
Ind of Interest	2.5	3.9	4.3	2.3	2.1
Private	1.3	1.5	1.8	1.3	1.2
Public	1.1	1.1	1.2	1.1	1.1

Panel B. All Cash Subsample

Measure of Competition	Full Sample (N = 534)	Private Equity			Public Bidder (N = 318)
		Single (N = 92)	Consortium (N = 69)	Other Private (N = 55)	
Contact	18.8	32.8	34.2	14.5	12.2
Confidential	7.8	13.4	10.8	5.5	5.9
Ind of Interest	2.9	3.9	4.3	2.3	2.5
Private	1.4	1.5	1.8	1.3	1.3
Public	1.1	1.2	1.2	1.1	1.1

Table 5. Regression Analysis of Takeover Competition

This table reports regression analysis of the level of takeover competition for each of the five measures of competition. Panel A contains the full sample of 870 takeovers and Panels B and C report analysis of the subsample of 164 private equity deals. *Contact* is the average number of potential bidders with which the target and its investment bank were in contact. *Confidential* is the average number of potential bidders that engaged in a confidentiality agreement with the target. *Ind of Interest* is the average number of potential bidders expressing a non-binding offer for the target. *Private* reports the average number of bidders that submitted a private binding offer for the target. *Public* reports the average number of bidders that submitted a formal offer that was announced in the financial media. *PE Single* is a winning bidder that is a single private equity firm. *Consortium* is a winning bidder that is two or more private equity firms. *Target Size* is the natural log of the equity value of the target 64 days prior to the initial takeover-related announcement date. *Cash* is a dummy variable equal to 1 for acquisitions in which the payment is all cash. *Go Shop* is a dummy variable equal to one if the bidder allowed the target to continue to actively solicit interest from third parties after the signing of the merger deal. *Staple* is a dummy variable equal to one for deals with staple financing in which the target's investment bank offered financing to potential bidders. (p-values are reported in parentheses.)

Panel A. Full Sample

Variable	Contact	Confidential	Ind of Interest	Private	Public
Intercept	2.936 (0.000)	2.618 (0.000)	1.591 (0.000)	0.316 (0.004)	0.094 (0.162)
PE Single	1.225 (0.000)	0.877 (0.000)	0.398 (0.000)	0.100 (0.015)	0.065 (0.162)
Consortium	1.446 (0.000)	0.860 (0.000)	0.546 (0.000)	0.261 (0.000)	0.073 (0.010)
Target Size	-0.156 (0.000)	-0.153 (0.000)	-0.094 (0.000)	-0.017 (0.033)	-0.004 (0.375)
Cash	0.659 (0.000)	0.429 (0.000)	0.230 (0.000)	0.110 (0.000)	0.028 (0.083)
Adjusted R ²	0.255	0.203	0.142	0.077	0.014
Model <i>p</i> -value	0.000	0.000	0.000	0.000	0.029
Obs	870	870	870	870	870

Panel B. Private Equity Sample: Effect of Consortiums

Variable	Contact	Confidential	Ind of Interest	Private	Public
Intercept	3.661 (0.000)	3.964 (0.000)	2.516 (0.000)	0.910 (0.004)	0.234 (0.210)
Consortium	0.122 (0.582)	-0.010 (0.958)	0.170 (0.218)	0.190 (0.013)	0.044 (0.325)
Target Size	-0.066 (0.349)	-0.157 (0.011)	-0.117 (0.008)	-0.047 (0.051)	-0.010 (0.467)
Adjusted R ²	0.000	0.044	0.032	0.035	0.000
Model <i>p</i> -value	0.619	0.027	0.028	0.021	0.554
Obs	164	164	164	164	164

Panel C. Private Equity Sample: Effect of Go-Shops and Staple Financing

Variable	Contact	Confidential	Ind of Interest	Private	Public
Intercept	4.924 (0.000)	4.083 (0.006)	2.326 (0.003)	0.762 (0.019)	0.265 (0.166)
Go Shop	1.304 (0.000)	-0.124 (0.572)	-0.341 (0.027)	-0.100 (0.254)	0.059 (0.259)
Staple	0.334 (0.193)	0.510 (0.034)	0.615 (0.000)	0.239 (0.013)	0.030 (0.592)
Target Size	-0.185 (0.006)	-0.171 (0.006)	-0.100 (0.022)	-0.031 (0.204)	-0.013 (0.383)
Adjusted R ²	0.154	0.055	0.122	0.038	0.000
Model <i>p</i> -value	0.000	0.007	0.000	0.027	0.328
Obs	164	164	164	164	164

Table 6: Characteristics of the Takeover Process

This table reports characteristics of the takeover process for the sample firms. Panel A shows the length of the sales process for the sample of 841 completed takeovers. Four time intervals are reported. *Private to Initial* is the average number of calendar days between the private initiation of the takeover and the initial news announcement that the firm is potentially the subject of a takeover. *Initial to Merger* is the average number of calendar days between any initial announcement and the formal public announcement of the takeover. *Merger to Complete* is the average number of calendar days between the formal public announcement of the takeover and the completion of the takeover. *Full Takeover Period* is the average number of calendar days from the private initiation of the takeover to the completion of the takeover. Panel B shows the fraction of all takeovers that have an early announcement date, defined as deals with an announcement for sale by the target, an earlier bid by a third party, a takeover rumor or other takeover activity prior to the formal takeover offer announcement. Data are reported for the full sample and by the type of winning bidder. *Private Equity Single* is a winning bidder that is a single private equity firm. *Private Equity Consortium* is a winning bidder that is two or more private equity firms. *Other Private* is a winning bidder that is a private firm other than a private equity firm. *Public Bidder* is a winning bidder that is a publicly traded corporation.

Panel A: Length of the Takeover Process (completed deals)

Time Interval	Private Equity				
	Full Sample (N = 841)	Single (N = 92)	Consortium (N = 63)	Other Private (N = 56)	Public Bidder (N = 630)
Private to Initial	194	226	211	179	189
Initial to Merger	29	51	61	58	20
Merger to Complete	136	131	147	162	133
Full Takeover Period	359	407	419	400	343

Panel B: Takeovers with Early Announcement Dates

	Private Equity				
	Full Sample (N = 870)	Single (N = 94)	Consortium (N = 70)	Other Private (N = 59)	Public Bidder (N = 647)
% of Takeovers with Early Dates	20.3%	35.1%	50.0%	23.7%	14.7%

Table 7. Target Returns

This table reports mean and median values of target returns for the sample of 864 takeovers with target return data during the estimation period. Target abnormal returns are cumulative abnormal returns estimated using a market model for the 253 trading days ending 127 trading days prior to the earliest announcement of a takeover for the target firm, including rumor dates, which is used as day 0. The market index is the CRSP value-weighted index. Data are reported for the full sample and by bidder category. *Private Equity Single* is a winning bidder that is a single private equity firm. *Private Equity Consortium* is a winning bidder that is two or more private equity firms. *Other Private* is a winning bidder that is a private firm other than a private equity firm. *Public Bidder* is a winning bidder that is a publicly traded corporation. Panel A reports the (-1,+1) window and Panel B reports the (-63,+126) window for the 864 takeovers with available data, and Panel C reports the (-63,Completion) window for the 835 takeovers that are not withdrawn and completed by the end of 2007.

Panel A. -1,+1 Window

	Private Equity				
	Full Sample (N = 864)	Single (N = 93)	Consortium (N = 70)	Other Private (N = 58)	Public Bidder (N = 643)
Mean	18.8%	16.4%	12.8%	21.0%	19.6%
Median	16.5%	14.0%	13.2%	19.1%	16.6%

Panel B. -63,+126 Window

	Private Equity				
	Full Sample (N = 864)	Single (N = 93)	Consortium (N = 70)	Other Private (N = 58)	Public Bidder (N = 643)
Mean	20.4%	17.9%	16.6%	17.9%	21.4%
Median	20.4%	22.7%	17.5%	19.3%	20.7%

Panel C. -63,Completion Window

	Private Equity				
	Full Sample (N = 835)	Single (N = 91)	Consortium (N = 63)	Other Private (N = 55)	Public Bidder (N = 626)
Mean	21.2%	17.5%	19.6%	18.2%	22.1%
Median	21.3%	22.5%	18.8%	26.6%	21.3%

Table 8. Regression Analysis of Target Returns

This table reports regression results of target returns for the sample of 864 takeovers with target return data during the estimation period. Target abnormal returns are cumulative abnormal returns estimated using a market model for the 253 trading days ending 127 trading days prior to the earliest announcement of a takeover by the target firm, including rumor dates, which is used as day 0. The market index is the CRSP value-weighted index. *PE Single* is a dummy variable equal to one when the winning bidder is a single private equity firm. *Consortium* is a dummy variable equal to one when the winning bidder is two or more private equity firms. *Target Size* is the natural log of the equity value of the target 64 days prior to the initial takeover-related announcement date. *Cash* is a dummy variable equal to 1 for acquisitions in which the payment is all cash. *Early Announcement* is a dummy variable equal to one for those deals with an announcement for sale by the target, an earlier bid by a third party, a takeover rumor or other takeover activity prior to the announcement of the formal takeover offer. *Withdrawn* is a dummy variable equal to one when the takeover deal is not completed. (p-values are in parentheses.)

Variable	(-1,+1)	(-63,+126)	(-63,Completion)
Intercept	0.348 (0.000)	0.519 (0.000)	0.483 (0.000)
PE Single	-0.045 (0.009)	-0.068 (0.069)	-0.065 (0.138)
Consortium	-0.054 (0.007)	-0.045 (0.304)	-0.024 (0.651)
Target Size	-0.013 (0.000)	-0.025 (0.001)	-0.022 (0.012)
Cash	0.072 (0.000)	0.066 (0.007)	0.043 (0.132)
Early Announcement	-0.111 (0.000)	-0.011 (0.694)	-0.005 (0.889)
Withdrawn	-0.0003 (0.991)	-0.244 (0.000)	--
Adjusted R ²	0.138	0.037	0.006
Model p-value	0.000	0.000	0.068
Obs	864	864	835

Table 9. Regression Analysis for Industry Subsamples: -63,+126 Window

This table reports regression results of target returns that account for industry clustering of takeovers. The first regression contains industry dummies (not reported) for the sample of 864 firms with available data. The second regression is the subsample of 702 takeovers where an industry had at least five targets with a winning private equity bidder. The third regression is the subsample of 281 takeovers where an industry had at least 25% of the targets with a private equity firm as the winning bidder. See Table 3 for industry designations. Target returns are cumulative abnormal returns from a market model for the (-63,+126) window where day 0 is the initial takeover-related announcement date and the market index is the CRSP value-weighted index. *PE Single* is a dummy variable equal to one when the winning bidder is a single private equity firm. *Consortium* is a dummy variable equal to one when the winning bidder is two or more private equity firms. *Target Size* is the natural log of the equity value of the target 64 days prior to the initial takeover-related announcement date. *Cash* is a dummy variable equal to 1 for acquisitions in which the payment is all cash. *Early Announcement* is a dummy variable equal to one for those deals with an announcement for sale by the target, an earlier bid by a third party, a takeover rumor or other takeover activity prior to the announcement of the formal takeover offer. *Withdrawn* is a dummy variable equal to one if the takeover is not completed. (p-values are in parentheses.)

Variable	Industry Dummies	PE >= 5	PE >= 25%
Intercept	0.570 (0.072)	0.574 (0.000)	0.730 (0.000)
PE Single	-0.071 (0.156)	-0.057 (0.148)	-0.038 (0.479)
Consortium	-0.038 (0.494)	-0.066 (0.131)	-0.061 (0.325)
Target Size	-0.027 (0.006)	-0.032 (0.000)	-0.040 (0.008)
Cash	-0.013 (0.690)	0.081 (0.002)	0.051 (0.359)
Early Announcement	-0.004 (0.917)	0.045 (0.154)	-0.013 (0.786)
Withdrawn	-0.530 (0.000)	-0.288 (0.000)	-0.297 (0.024)
Adjusted R ²	0.094	0.059	0.046
Model <i>p</i> -value	0.000	0.000	0.004
Obs	864	702	281

Table 10. Regression Analysis for the Bidder Type Subsamples: -63,+126 Window

This table reports regressions of target returns for three subsamples by type of bidder. Regression 1 analyzes the 221 takeovers where a private firm is the winning bidder with available returns data. Regression 2 analyzes the 278 takeovers where a private equity firm is involved in the bidding process either as the winning bidder or as an identified other bidder. Regressions 3 and 4 analyze the 163 takeovers where a single private equity firm or a private equity consortium is the winning bidder with available returns data. Target returns are market model for the (-63,+126) window where day 0 is the initial takeover-related announcement and the market index is the CRSP value-weighted index. *PE Single* is a dummy variable equal to one when the winning bidder is a single private equity firm. *Consortium* is a dummy variable equal to one when the winning bidder is two or more private equity firms. *Target Size* is the natural log of the equity value of the target 64 days prior to the initial takeover-related announcement. *Cash* is a dummy variable equal to 1 where the payment is all cash. *Early Announcement* is a dummy variable equal to 1 for deals with a takeover rumor or other takeover activity prior to the formal merger announcement. *Withdrawn* is a dummy variable equal to 1 if the takeover is not completed. *Go Shop* is a dummy variable equal to one if the bidder allowed the target to continue to actively solicit interest from third parties after the signing of the merger deal. *Staple* is a dummy variable equal to one for deals with staple financing in which the target's investment bank offered financing to potential bidders. (p-values are in parentheses.)

Variable	(1)	(2)	(3)	(4)
Intercept	0.700 (0.001)	0.422 (0.025)	0.574 (0.033)	0.539 (0.057)
PE Single	0.014 (0.785)	-0.038 (0.406)	--	--
Consortium	0.037 (0.528)	-0.014 (0.784)	0.027 (0.559)	0.027 (0.562)
Target Size	-0.019 (0.166)	-0.016 (0.239)	-0.025 (0.095)	-0.023 (0.159)
Cash	-0.278 (0.020)	0.023 (0.717)	-0.059 (0.718)	-0.049 (0.767)
Early Announcement	-0.028 (0.523)	-0.066 (0.081)	-0.022 (0.617)	-0.024 (0.596)
Withdrawn	-0.245 (0.030)	-0.273 (0.015)	-0.268 (0.037)	-0.267 (0.039)
Go Shop	--	--	--	-0.026 (0.634)
Staple	--	--	--	-0.001 (0.991)
Adjusted R ²	0.035	0.023	0.023	0.011
Model p-value	0.035	0.054	0.127	0.270
Obs	221	278	163	163