M&A deal initiation and managerial motivation

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Abstract

On a hand-collected sample of around 1000 US publicly listed target firms, we show that target versus bidder initiated M&A deals differ in two main respects. First, target initiated deals have higher insider and executive management ownership that motivates the board and management to engage in the sale. Second, target initiated firms are more levered and seem to have higher growth options. This suggests that an important motivation behind the board's decision to initiate a sale of their firm is to preserve growth options in a situation with debt overhang. Moreover, target initiated deal firms grant their CEOs more stocks and options just before the deal announcement, which should increase the alignment of interest between the CEO and shareholders during the acquisition negotiations. A complementary analysis, comparing the group of deal firms (together target and bidder initiated firms) to other non-deal firms that remained publicly listed, shows that the differences between deal versus non-deal firms are much larger relatively to the differences within the deal firms based on deal initiation.

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1 Introduction

The main aim of this paper is to show that publicly listed firms actively seek to sell themselves as an optimal strategic decision increasing shareholder value and that managers of the selling firms are incentivized to organize the sale. The M&A literature so far implicitly or explicitly assumes that reasons for acquisitions are usually rooted outside of target firms. Indeed, the market for corporate control as suggested by Jensen and Ruback (1983) is built on a premise of management resistance to takeovers. Other reasons for mergers and acquisitions that consider some kind of synergies, like economies of scale or integration, complementarity of resources or diversification, also implicitly assume initiative on the side of the acquirer. In contrast to this assumption, a large fraction of takeovers are voluntarily imposed by target firms themselves. For example, Boone and Mulherin (2007) report that 15% of the large M&A transactions in their sample are initiated by the target company. Heitzman (2011) reports a fraction of 35%, while the fraction gets as high as 44% in our data set that covers also relatively small firms. Still, evidence concerning potential reasons for target firms initiating their own sale is so far limited in the literature.

Initiation of a takeover contest is an important corporate decision. If the board of directors decides to initiate a sale, they should do so in line with their obligation to maximize shareholder value. As organizing a company sale is complicated and expensive, alternative internal solutions that would be significantly simpler and cheaper should be considered before the company is offered for sale. Assuming that a sale is an optimal decision, the high cost of organizing it implies that deal initiation is associated with specific firm circumstances and substantial benefits for firm's shareholders.

At the same time, even though takeover offers are usually value enhancing for target shareholders, they might not be in line with the target managers' interests. As a result of a takeover, target firm CEOs may be giving up substantial expected utility from both future wages (in case they are not retained) and the lost ability to extract private benefits from the firm (Hartzell et al., 2004).[1] In line with the target CEOs' expected losses associated with

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[1] Fich et al. (2013) estimate that the average lost remuneration to CEOs due to takeovers is $96 million.

a potential takeover, previous literature shows that firms with higher managerial ownership are less likely to be acquired (Mikkelson and Partch, 1989; Hadlock et al., 1999). Given these costs, it is in target shareholders' interests that their CEOs are compensated and appropriately motivated so that they actively participate in offering their firms for sale and in enhancing the shareholder value.

A strong counterargument against our conjecture that firms initiate their own sale as an optimal corporate decision is that, ultimately, the initiation decision does not matter. It is not a first-order question. In other words, a firm ultimately gets an offer from an interested bidder without initiating its own sale. Moreover, due to management and director fiduciary duties, the board has to seriously consider every offer. Eventually, the firm is sold regardless of initiation. This 'irrelevance' conteragument, however, assumes that (i) interested bidders are able to identify potential targets that fit their requirements and create merger synergies and (ii) no value is lost while waiting for a potential bidder to become interested in buying the firm. Information asymmetry between bidders and potential target firms might make the searching process less effective and longer. In case value created in a takeover depends on exact timing of the deal and on firm attributes prone to be concealed from public scrutiny, active deal initiation might play a crucial role. Therefore, we conjecture that in a situation where insiders have strictly better information about suitability of their firm for sale and where the cost (potential loss) associated with waiting for a suitable bidder is high, deal initiation should matter because it increases shareholder value. Using private information about specific firm circumstances and appropriate timing of the deal makes a significant difference in terms of shareholder value enhancement in favor of deal initiation. Furthermore, as deal initiation becomes value enhancing, it makes sense to align shareholders' and CEO's interests and provide the CEO with incentives to initiate and organize the sale rather than to resist it.

Our empirical strategy is as follows. In order to test the conjecture that deal initiation does not matter for a firm to be sold, we compare all firms with a successful takeover offer to other comparable firms that remain publicly listed and consider all potential reasons associated with the odds of a takeover provided in the literature. The 'irrelevance' hy-

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pothesis predicts that all deal firms are different from other firms that remained publicly listed in a similar way and do not differ from each other based on who initiates the deal. A logistic regression estimating the factors associated with the odds of a takeover versus staying publicly listed would reveal the common characteristics of all deal firms together. As our main research question, however, we model the initiation decision to reveal those factors that differ between target versus bidder initiated deals. Our conjecture is that even though common factors prevail, the differing factors are still important and depend on information advantage of targets' insiders and right timing of the deal. Target initiated deal firms should also align their CEO's and shareholders' interests and incentivize their CEOs to negotiate a fair deal.

The existing literature suggests several potential candidates associated with the likelihood of a successful takeover deal. We group them into four categories. First, Jenter and Lewellen (forthcoming) suggest that CEO age and corporate governance characteristics affect the likelihood of takeovers. Related are also ownership and takeover defence characteristics suggested by Ambrose and Megginson (1992). Second, recent literature highlights the importance of industry competition and complementarity of resources (Hoberg and Phillips, 2010; Hoberg et al., 2014) that extends older evidence on importance of economic disturbances within industries (Mitchell and Mulherin, 1996). The third group focusses on target firm stock and operating performance and asset characteristics (Palepu, 1986; Ambrose and Megginson, 1992; Edmans et al., 2012; Bena and Li, 2014). Finally, the fourth group highlights financial constraints and debt overhang in deal firms as a special case (Erel et al., 2015; Khatami et al., 2014; Almeida et al., 2011a), though it could be considered within the third set of factors. We discuss debt overhang separately because it relates to our information advantage hypotheses that conjectures differences between target versus bidder initiated firms. As an additional group of factors we also consider managerial motivation to organize the sale that is related to, for example, Hartzell et al. (2004) or Fich et al. (2011).

We work with a hand collected sample of 1098 US publicly listed targets over the period from 2005 to 2011 from which 487 are target initiated and 611 are bidder initiated.

The acquiring firms are both public and private. To form a counterfactual, we match all deal firms with publicly listed firms that remained publicly listed based on industry, year and size (total assets).[2] Our results show that, in general, target and bidder initiated deal firms are quite alike. They differ in similar ways to other firms that remained publicly listed. They have CEOs that are more likely to be in the retirement age, they have large monitoring blockholders and are younger. They also have less independent and larger boards. They operate in industries with higher takeover liquidity, higher competition and are less likely to be similar to other firms in their industry. They are also more likely to acquire other firms and divest assets in the recent past. In terms of firm performance and asset structure, stock performance decreases the odds of becoming a successful takeover target while operating performance increases the odds. It seems that the takeover targets are undervalued, but still have growth options and suffer lower free cash flow.

In contrast to all these significant differences between deal firms as a group relatively to other firms that remained publicly listed, our results show that the only factors that significantly differentiate target from bidder initiated deals are associated with debt over-hang and managerial motivation for the deal. Target initiated deals suffer higher leverage and, at the same time, exhibit higher growth options. This suggests, that deal initiation is associated with debt overhang but due to preserved growth options, it is optimal for the firm to be sold as a going concern. This situation involves private information on the side of the target firm management concerning the growth options, which are not easily identi-fied by outside bidders. Exact and prompt timing is also very important as growth options might loose value over time. These results are in line with our asymmetric advantage hy-pothesis and suggest that the decision to initiate a sale improves shareholders' value and is not a second-order issue. By initiating, the board prevents potential financial distress and

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[2]We decide for matching rather than including all publicly listed firms due to our analysis relying on hand-collected data concerning CEO and corporate governance characteristics that are not available in usual electronic data sets for smaller firms. As the initiation decision concerns smaller firms, we consider as essential to hand collect the key variables and keep the smaller firms in the sample. Palepu (1986) argues that any analysis based on matched samples should result in the right relative ranking of firms in terms of their acquisition probabilities. As we are not per se interested in forecasting the odds of takeovers out of sample, our conclusions based on relative ranks of the outcomes should not lead to erroneous inferences even when based on matched counterfactuals.

associated destruction of growth options. Moreover, in line with our incentive hypothesis, target initiated deal firms exhibit higher executive ownership that is complemented by stock and option grants before and after the initiation decision.

Our analysis extends the recent empirical literature that shows that deal initiation is an important aspect of the takeover process affecting the deal premium, selling procedure and also deal success probability (Masulis and Simsir, 2013; Xie, 2010; Aktas et al., 2010; De Bodt et al., 2014; Fidrmuc et al., 2012). Masulis and Simsir (2013) show that target deal initiation is associated with lower announcement abnormal returns and link this finding to information asymmetries concerning the quality of target firms. Xie (2010) in turn argues that deal initiation reveals both selling firm bargaining power but also bidder valuations and thus buyer initiated deals result in higher premiums. Xie (2010) also shows that target initiated deals are more often organized as auctions whereas bidder initiated deals are most likely privately negotiated. Fidrmuc et al. (2012) confirm that target initiation together with high profitability is an important determinant of whether firms are sold in auctions or private negotiations. De Bodt et al. (2014) confirm that a higher willingness to sell, measured by target initiation, is associated with lower premium and at the same time also increases deal success probability.

Masulis and Simsir (2013) are the closest to our analysis. They focus on information asymmetry as the main explanation for the differences in premium between target versus bidder initiated deals. The authors argue that acquirers pay lower premium for target initiated deals to be compensated for adverse selection. Good quality target firms generally have strong incentives to avoid selling themselves for discounted prices and so acquirers infer that target firms initiating deals are more likely to be overvalued. As part of modeling the takeover premium, Masulis and Simsir (2013) treat the initiation choice as the first stage of the model and hypothesize that target firms with financial or competitive weaknesses, with financial constraints and firms in recession are more likely to initiate their sale and then receive smaller premium.

In contrast to Masulis and Simsir (2013), we are interested in the initiation decision itself in a broader sense and so we also compare both the target and bidder initiated

deal firms with other comparable firms that remained publicly listed. Comparing the deal versus non-deal firms, we are able to highlight that target versus bidder initiated deals are more alike than different. Nevertheless, deal firms that initiate their sale are different from bidder initiated deal firms in important ways: they are highly levered, maintain growth options and have high executive and overall insider ownership. Our approach to initiation highlights the information advantage on the side of target firm insiders who could enhance shareholder value by optimally timing their firm sale. Given their high share ownership, they are motivated to execute the sale.[3]

The remainder of the paper is organized as follows. Section 2 explains in more detail the factors associated with successful merger offers. Section 3 introduces the data, explains the coding process and provides basic statistics. Section 4 shows and discusses the regression results, Section 5 presents the robustness tests and Section 6 concludes.

2   Merger anticipation factors

Jenter and Lewellen (forthcoming) show that CEOs in retirement age are more willing to accept takeover offers probably because their personal costs of losing their jobs are diminished once they are in socially acceptable retirement age. Moreover, the retirement age effect is significantly weaker among better governed firms. This points towards agency conflicts between shareholders and target CEOs as the explanation for the retirement effect. In line with these hypotheses, our merger anticipation regression includes a CEO retirement age dummy and corporate governance variables, such as insider ownership, institutional ownership, board size, board independence and CEO/charman duality.

Ambrose and Megginson (1992) conjecture that the likelihood of receiving a takeover bid is inversely related to the level of insider ownership. Managers who own large equity stakes in their firms manage their firm more in line with the outside shareholders' interests relatively to non-shareholder insiders (Jensen and Meckling, 1976). This should make the firm less vulnerable to a takeover, since an acquirer would be less able to recoup his

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[3]Smaller bargaining power of firms that initiate their sale (stemming from eagerness to preserve growth options from potential financial distress) is eventually associated with smaller premium. Deals where timing is not a concern can enjoy the luxury of waiting for a better offer.

investment in the acquisition by improving target firm performance. Also, insiders with high insider ownership enjoy comfortable protection from outside bids. Therefore, the probability of a takeover bid should decrease as bidders need to offer premiums large enough to overcome insider resistance. Similarly, lower board independence, higher anti-takeover defenses and larger board size might entrench current management and so decrease the odds of takeovers. Alternatively, low board independence and a large board size might be associated with poor management and so increase the odds of takeovers as bidder payoffs from takeovers increase with target firm inefficiencies. Institutional investors might also contribute to better governance as they seem to provide effective corporate monitoring (Gillan and Starks, 2003; Chen et al., 2007). At the same time, institutional investors increase the odds of takeover bids through targeting firms with higher chances to become takeover targets but also through active promotion of takeovers in their portfolio firms (Gaspar et al., 2005; Greenwood and Schor, 2009).

Takeover activity is to a large extent industry driven and, therefore, other takeovers in the same industry are closely related to economic fundamentals in the industry and might increase the odds of future takeover activity (Mitchell and Mulherin, 1996). Higher product fluidity[4] and product competition create more unstable environment with industry peers competing fiercely in many respects (Hoberg et al., 2014). In highly competitive industries, takeovers could help to differentiate acquirers' products relatively to their competitors (Hoberg and Phillips, 2010). Therefore, we conjecture that product fluidity and industry competition increase takeover anticipation. In contrast, Cornett et al. (2011) (mainly referring to Gort (1969)) argue that industry concentration (low industry competition) might increase the odds of takeovers in the industry because takeovers represent means of survival in industries with large players or because the large players might engage in takeovers to reduce further already high competition. In addition to industry competition, similarity of products within an industry may also affect the odds of takeovers. When a firm is similar to its local rivals and so relative crowding of rivals around the firm is high,

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[4]Product fluidity measures the changes in firm's rivals' products relative to the firm's own products and so measures the firm's competitive product threats (Hoberg et al., 2014) .

potential bidders have many similar firms to choose from. Therefore, the industry product similarity should decrease the odds of takeovers for target firms (Hoberg and Phillips, 2010).

Palepu (1986) and Ambrose and Megginson (1992) are important early references in terms of target firm characteristics and firm asset structures affecting the odds of takeovers for target firms. They suggest management inefficiencies and market undervaluation as important factors affecting the odds of takeovers. Acquirers can profit from taking over firms whose market values are low relative to their peers, due to either mispricing or mismanagement, and restore it back to its potential (Edmans et al., 2012). Jensen (1986) suggests that firms with high free cash flow and no growth options have higher agency problems and exhibit mismatch between their financing resources and growth options. This increases their odds of being taken over. The LBO literature explores this hypothesis quite extensively (Lehn and Poulsen, 1989).

Synergies, asset complementarities and pursuit of technological innovations are also important drivers of M&As recognized in the more recent literature (Hoberg and Phillips, 2010; Rhodes-Kropf and Robinson, 2008; Bena and Li, 2014). Bena and Li (2014) show that small firms with high ratio of innovations, measured both through patents and R&D expenditure, are more likely to become takeover targets. In contrast, the inefficient management hypothesis suggests that firms with high growth options should have lower odds of becoming a takeover target as high growth options suggest good rather than poor managerial skills (Palepu, 1986; Ambrose and Megginson, 1992). Another argument is that growth opportunities rely heavily on the human capital of current managers and therefore firms with significant future growth opportunities are poor takeover candidates as outside bidders might not have a comparative advantage in managing the growth options. In contrast, the most optimal use of fixed assets is open to interpretation. Thus, firms with a high proportion of fixed assets represent opportunities for outside bidders to shift current asset utilization (Ambrose and Megginson, 1992).

Recent literature highlights financial constraints as an important additional reason for takeovers (Erel et al., 2015; Khatami et al., 2014). The main argument is that takeovers

could potentially mitigate financial constraints for firms that would otherwise have to forgo valuable investment opportunities. Acquirers with internally generated cash flow or ability to raise capital externally can enable their targets to undertake an increased number of positive net present value investments and create value.

Debt overhang with associated higher odds of future financial distress may be considered as a special case of financial constraints with important extra features (Almeida et al., 2011a). A target that is constrained but not distressed does not necessarily face the choice between liquidation and company sale. A financially constrained target has the option to withstand a liquidity shock by investing less than what would be optimal in the absence of the shock and wait for the access to external capital to improve. Targets with high reallocation costs due to their specific assets might prefer to withstand a liquidity shock rather than decide to sell. Also, the value of waiting for a suitable bidder with a good match for specific assets is high. In contrast, a firm with high leverage that as a result of a liquidity shock experiences increased probability of financial distress but still has growth options faces different trade-offs (Shrieves and Stevens, 1979). In this case, waiting to withstand a liquidity shock might lead to a financial distress with associated punitive costs. Once in financial distress, the firm would liquidate its distressed assets at the value that can be captured by industry outsiders (sell for scrap). A timely sale of the assets as a going concern might be more valuable, given the alternative. A suitable buyer would be able to operate the specific assets closer to their best/optimal value relatively to their scrap value and so a timely sale should preserve the firm's growth options while potential liquidation would not.[5] It might also be the case that a private equity investor would provide new fund infusion and extra monitoring and the existing management would continue running the firm and realize the value of growth options.

Each firm (its board of directors that represents the shareholders) possesses a put option – the right to sell the firm. It seems optimal to exercise the right to sell at the moment when the sale would preserve valuable growth options. Waiting for potential bidders to exercise their call options – right to buy the firm – would run the risk of falling firm value,

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[5]This is despite the fact that some value might be lost because a bidder has to be found relatively fast.

which would further decrease value of bidders' call options. For potential bidders, their call options have higher value when the target firm value is likely to increase rather than fall in the future. So, it seems that it is the target firm (its shareholders) that would gain more exercising their option in the given situation with debt overhang and growth options. The target firm is more motivated to sell than potential bidders are willing to buy. Almeida et al. (2011b) argue that when future projects are valuable and capital markets are imperfect, factors related to a firm's ability to smooth the financing of investment over time become valuable. For a firm with debt overhang and high growth options, prompt action minimizes the impact of future financial distress. Firms could initially reduce their leverage, but this would come at a cost as they can then finance smaller amount of projects.

In general, the literature suggests that, in contrast to target shareholders who profit from high takeover premia, target managers usually lose out as a result of takeovers (Hartzell et al., 2004). Hartzell et al. (2004) and Fich et al. (2011) explore the ways to motivate target managers to cooperate once the target firm is 'in play.' Our interest is deeper. We are interested in exploring whether managers' incentives to see the takeover deal through are increased already in the period before the deal is initiated, especially for target firms where the board decides to initiate the sale. We conjecture that managers of target initiated deal firms have higher ownership stake and get more stock and option grants before and during the negotiation process. Higher ownership stake aligns managers' interests with the interests of firm's shareholders. Managers still loose the value of remuneration and private benefits associated with controlling and running the target firm, but with higher share ownership they share in gains due to takeover premium and so their trade-off is more tilted towards positive values. Moreover, selling a firm with growth options before it reaches financial distress might by itself be quite valuable to the firm's managers. Gilson (1989) and Gilson and Vetsuypens (1993) show that managers of financially distressed firms that filed for bankruptcy or restructured their debt are at high risk of loosing their jobs and earn significantly less in the future. Leading a firm through a successful acquisition might be quite valuable (Harford and Schonlau, 2013).

3 Data

Our sample includes US M&A deals that were announced between January 2005 and December 2011 and are covered by the Security Database Corporation (SDC) in Thomson ONE Banker. We apply the following 3 selection criteria: (i) both the acquirers and targets are US companies; (ii) all targets are publicly listed firms before the deal while acquirers could be publicly listed or private firms; (iii) the acquirers own 100% of targets' shares after the deal. We use COMPUSTAT and CRSP to collect accounting and stock price data. Institutional ownership data come from FactSet. We hand collect and code information concerning the selling process from the 'background of the deal' section of DEFM14A, PREM14A, SC14D9, or S-4 filings, which we recover from the EGDAR filing collection provided by the SEC. We hand collect information concerning initiation, initiation date, selling mechanism, number of bidders contacted and the number of bidders signing a confidentiality agreement. Appendix A illustrates our coding system on examples of a target (between Applebees International Inc, the target, and IHOP Corp, the acquirer) and bidder initiated deal (between AirTran Holdings Inc., the target, and Southwest Airlines Co., the acquirer).

The selling process is usually initiated either by the board of the selling company deciding that they want to be sold or by a prospective bidder proposing to take over the firm. We code the initiation decision based on target's or bidders' actions as described in the SEC filings. Usually if a target firm plans to sell, the board considers various 'strategic alternatives' that include a possible sale of the company and they hire a financial advisor to evaluate these strategic alternatives. We classify a deal as target initiated if the target firm firmly decides for a sale or at least hires a financial advisor to identify and contact potential bidders. We classify a deal as bidder initiated, when a buyer approaches the target firm with a takeover proposal, the board considers the proposal and responds to the bidder. The target firm could then negotiate with the first bidder or contact other potential bidders to open wider competition. Whether the deal is initiated by the final acquirer or by another bidder, we define the deal as bidder initiated. Over the period 2005-2011, out of 2003 deals identified in SDC we are able to find SEC filings on EGDAR

for 1260 deals. For 103 deals, we are not able to classify the initiator and we are not able to get data from Compustat or CRSP for 59 targets. All together, the hand collection results in a sample of 1098 deals, from which 487 are target initiated and 611 are bidder initiated.

Table 1 shows selling process summary statistics for target versus bidder initiated deals. Variable definitions are provided in Appendix B. We test for differences in means using the *t*-test allowing for unequal variances and for differences in medians using the Mann-Whitney-Wilcoxon rank sum test. The first variable shows that target initiated deals are significantly smaller (USD1.4 billion) relatively to bidder initiated deals (USD2.2 billion). In line with the literature (Masulis and Simsir, 2013; Fidrmuc et al., 2012) we find that target initiated deals earn smaller premium (27% versus 39%). Out of all deals initiated by a potential bidder, 39% are eventually acquired by a different bidder.

- insert Table 1 about here -

Firms could be sold in full scale auctions, controlled sales or private negotiations (Boone and Mulherin, 2009). A full scale auction is a very structured process that follows multiple designed rounds and accommodates relatively large number of bidders (Hansen, 2001). Controlled sales involve competitive bidding but from a limited number of bidders. In controlled sales, target firms discretely canvass interest from a chosen number of bidders who then counter-bid each other (Boone and Mulherin, 2009). Private negotiations involve only one bidder. Target initiated deals are more frequently sold in auctions (50% versus 20%) and less often sold in private negotiations (14% versus 42%). These statistics are consistent with Xie (2010).

Initiation date is the date when a target firm starts considering a potential sale of its business (Boone and Mulherin, 2011). For target initiated deals, it is usually the date when the board of directors decides that they want to explore strategic alternatives. For bidder initiated deals, the initiation date is established by a potential buyer directly expressing interest in buying the target firm. Table 1 shows that target initiated deals take on average longer from the initiation date to completion (595 versus 441 days) even though they take fewer days between the public announcement to the completion. This is the case

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regardless of the selling mechanism.[6] It seems that companies need more time to organize the sale when they are not prompted by a potential (eager) buyer. Due to the fact that the private selling process is relatively lengthy and also due to the difference in length between target versus bidder initiated deal firms it is important to measure all firm characteristics affecting the initiation decision properly before the initiation date. Measuring the firm characteristics relatively to the announcement date might result in significant biases.[7]

We also code the number of potential bidders that a target firm contacts during the selling process and the number of bidders that a target firm signs a confidentiality agreement with. The average number of bidders contacted (30 versus 9) and signing a confidentiality agreement (11 versus 4) is significantly higher for target initiated deals. This is the case again also when we control for the selling process. 28% of target initiated and 23% of bidder initiated deals are eventually bought by a private equity buyer while 35% and 29% of target and bidder initiated deals end up with a buyer that is not a publicly listed company. The payment consideration is not different for the 2 groups of deals. We see that majority of deals (68% and 71%) is paid for in cash while only 12% and 10% by stock.

The main aim of the paper is to analyze determinants of the initiation decision. However, for comparison reasons, we are also interested in determinants of successful takeovers in general - that is, of both target and bidder initiated deals. We want to compare all the deal firms to other similar publicly listed firms that at the moment are not involved in any takeover deal and remain publicly listed. As Table 1 shows, target deal initiation is tilted towards smaller firms. In order to avoid any unnecessary biases, it is important that we keep as many small firms in the data set as possible. This, however, means that we have to hand collect data for several of the determinants for merger anticipation because CEO and corporate governance characteristics are not available in electronic data sets for smaller firms.[8] To avoid unnecessary time consuming hand-collecting of data, we decide to create our counterfactual by matching each deal firm based on target industry, year

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[6]These statistics are not reported, but are available on request.

[7]Masulis and Simsir (2013) measure their firm characteristics relatively to the SDC announcement date and so might be subject to this bias.

[8]ISS Governance Services (formerly Risk-Metrics) covers only S&P 1500 firms, which means that only around 15% of our target and matched firms would be covered.

and total assets just before the deal initiation. Size is a very important matching requirement because it strongly affects the odds of becoming a takeover target. Small firms are more likely to be taken over (Palepu, 1986; Ambrose and Megginson, 1992; Cornett et al., 2011). Both the cost of absorbing a large firm into the acquirer's business and that of a hostile takeover of a large firm are prohibitive. Moreover, size is usually correlated with other determinants, like corporate governance, insider ownership and innovation and so it is important to compare small target firms to similarly small firms that remained publicly listed.

Palepu (1986) argues that any analysis based on matched samples should result in the right relative ranking of firms in terms of their acquisition probabilities. As we are not per se interested in forecasting the odds of takeovers out of sample, our conclusions based on relative ranks of the outcomes should not lead to erroneous inferences even when based on matched counterfactuals as opposed to a random sample.

Our matching procedure is as follows. From the pool of all potential matching firms with available accounting and stock price data, we pick the firm that is in the same Fama-French 30 industry and comes the closest in terms of total assets in the same fiscal year using a +/−25% range. In case we fail to find a matching firm, we repeat the process for the corresponding Fama-French 12 industry. If we still do not have a match, we apply the 4-digit SIC code industry and then the 3-digit, 2-digit and finally 1-digit SIC code industry. We also require that the same publicly listed firm is not matched repeatedly to different target firms and that target firms that dropped out from our data set due to unavailable SEC filing data are not included as matched firms.[9]

Firm characteristics are reported in Table 2. We show means separately for matched versus deal firms (target and bidder initiated deal firms together) in columns 2 and 3, respectively. Column 4 shows the difference in means and its significance. Further, Columns 5 and 7 report the averages for target and bidder initiated deal firms, respectively, while Columns 6 and 8 show the difference in means relatively to their respective matched firms

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[9]All together, 889 target firms are matched based on FF30 industry, 162 based on FF12, 28 based on 4-digit SIC, 2 based on 3-digit SIC, 7 based on 2-digit SIC and finally 10 targets based on 1-digit SIC.

and their significance. Finally, Column 9 shows the difference in means between target versus bidder initiated deal firms. All variables are measured just before the initiation date and are winsorized at 1% and 99%, except for all dummy variables.

- insert Table 2 about here -

We see that due to our matching procedure deal versus non-deal firms do not differ in total assets or total sales. The deal firms, however seem to be less valuable – their market capitalization is significantly smaller. They are younger, but are followed by more analysts. The target and bidder initiated deal firms are similar in size to their matched non-deal firms, but target initiated deal firms are smaller relatively to bidder initiated deal firms. They are also less valuable and followed by fewer analysts.

The first set of characteristics that are conjectured to be associated with deal prediction concern ownership structure, corporate governance and CEO age. We see that deal firms have significantly higher board and institutional ownership and at the same time larger and less independent board of directors. Their CEOs are older and more likely to be in the retirement age. Table 2 suggests that the insider ownership differences are mostly due to target rather than bidder initiated deal firms having higher insider ownership. Institutional ownership is higher for both types of deal firms relatively to their matched firms, but is still significantly higher for bidder initiated deal firms. Board independence is significantly lower in target initiated deal firms.

Industry characteristics suggest large differences between deal versus non-deal firms, but virtually no differences within the group of deal firms. Deal firms operate in industries with higher product fluidity and lower industry concentration. More deals over the year before initiation (M&A liquidity) also increase the odds while industry similarity decreases the odds of being a target. Moreover, deal firms more often participate in asset sales and acquire other firms.

Asset characteristics confirm again a similar pattern: the only significant differences between target versus bidder initiated deals stem from higher R&D, and lower profitability of target initiated deals. On the other hand, the deal firms together are quite different from non-deal firms: they have poorer stock performance and lower market to book ratio,

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have lower asset tangibility and higher R&D ratio and at the same time higher EBITDA growth and smaller cash flow.

The last group of characteristics focusses on leverage and financial constraints. We see significant differences between both deal versus non-deal but also target versus bidder initiated deal firms. Target initiated deal firms are more levered with smaller interest coverage ratio. They have also significantly higher SA index, which indicates higher financial constraints. Moreover, they are also more likely to fall to the financial distress category with low Z-score. They issue more equity. The following section tests for the differences in a multinomial setting.

4   Results

Tables 3 and 4 report our results for logistic regressions determining the odds of a target firm initiating its own sale and of being successfully taken over in general, respectively. In other words, Table 3 compares target versus bidder initiated deals while Table 4 compares all our deal firms to their matched firms that remain publicly listed. In both tables, we first report results separately by the four groups of takeover determinants discussed in Section 2 and then pool all the explanatory variables together. We report Hubert/White robust standard errors in parentheses. All regressions include time and industry dummies, but we do not report them in the tables to preserve space. Browsing the 2 tables, it is apparent that only a few variables are significant in Table 3 that predicts the odds of initiation, while many more variables significantly determine the odds of becoming a takeover target in Table 4. This shows that all the deal firms are quite alike when comparing target versus bidder initiated deals, but together they differ quite significantly and in important ways from other non-acquired firms. This shows, that to some extent the irrelevance hypothesis holds.

4.1   Determinants of target initiation

Still, Table 3 shows that target versus bidder initiated firms are different in 2 important respects. First, even though these two sets of firms do not differ in terms of board size, board independence or CEO/chairman duality, their ownership structure is different.

Columns 1 and 2 show that target initiated deal firms have significantly higher insider ownership, which is mostly due to high ownership by executives. In contrast, bidder initiated deal firms tend to have higher institutional ownership (significant at the 10-percent level). Higher insider ownership is a robust predictor of the odds of target initiation, as the coefficient remains significant at the 1-percent level also when including all other explanatory variables in the last 3 columns of Table 3.

- insert Table 3 about here -

The second set of significant factors concerns leverage together with growth options. Columns 4 to 6 show that 2 of our 3 measures of growth options are significant. In particular, Column 4 includes the 3 components of the market to book decomposition due to Rhodes-Kropf et al. (2005). The first 2 components representing the short-term firm undervaluation (firm-specific error) and the long-term industry undervaluation (sector error) are not statistically significant. However, the long-run value to book component that measures the long-run growth prospects of the target firm is positive and significant at the 10-percent level. Even though asset tangibility is not significantly negative (Column 5), the R&D ratio in Column 6 is positive and significant at the 1-percent level. Column 7 further indicates that due to high negative correlation of long-run value to book with earnings, the long-run value to book coefficient becomes insignificant when we control for EBITDA. The R&D ratio remains significant even when controlling for earnings.[10]

At the same time, target initiated firms exhibit higher leverage. Columns 8 to 12 show that leverage is highly significant regardless of other control variables. Interestingly, the SA index measuring financial constraints (Hadlock and Pierce, 2010) does not diminish significance of leverage and by itself is not significant (Column 8). This suggests that it is debt overhang rather than financial constraints per se that increases the odds of target deal initiation: a firm must face increased prospects of financial distress to be motivated to organize its own sale. A financing shock that increases financial constraints but leads only to postponement of investment rather than decrease in value of growth options and

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[10]This regression is not reported.

potential financial distress does not push firms into a deal initiation.

Column 9 controls for imminent financial distress as it includes 2 dummy variables for low and high Altman's Z-score (Altman, 1968). The dummy for low Z-score is set to 1 in case the Z-score is lower than 1.81 and 0 otherwise and indicates a high immediate risk of financial distress. The dummy for high Z-score is set to 1 in case the Z-score is higher than 2.99 and 0 otherwise and, so, indicates financially healthy firms. Both of the Z-score dummies are insignificant, suggesting that the target initiated firms are neither financially distressed nor very healthy. This is quite important for our hypothesis because it shows that even though high leverage is associated with an increased possibility of financial distress but the financial distress is not yet imminent and, so, the firm's growth options still keep their value. In other words, selling for scrap is not yet an issue. Naturally, inclusion of the two Z-score dummies decreases the significance of the leverage coefficient.

Column 9 includes also dummies for debt and equity issues over the last 3 years before the deal initiation. The debt issue dummy is not significant, but the positive and significant coefficient for equity issues shows that target initiated firms do try to decrease their leverage before they organize the acquisition. Related to equity issues, we also check for alternative strategies that could help to avoid the firm sale, like asset sales or acquisitions of other firms. Column 3 with all the industry activity variables shows that neither the asset sale nor acquirer dummy variables are significant. It is perhaps important to note that both the target and bidder initiated deal firms are indeed actively participating in asset sales and/or acquisitions over the last 3 years before the initiation of the current deal (see Table 4). Still, Column 9 does not show significant differences between target versus bidder initiated deal firms.

Altogether, these results are consistent with the board of directors deciding to offer its firm for sale in a situation with high leverage but still valuable growth options. Financial distress is likely, but is not imminent yet. It seems optimal to timely start actively looking for a suitable bidder who would be able to preserve current growth options. Waiting for a bidder to come and overcome his information disadvantage on his own is inferior as, with time and closer to financial distress, growth options would drastically loose in value. In

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this situation, it is up to the board to exercise its put option (to sell) as potential bidders might not want to exercise their call options (to buy). Bargaining power of the board that initiates its sale is lower as it wants to sell, which naturally might result in lower takeover premium. Still, given the situation, the board acts optimally and maximizes its shareholders' value.

4.2 Determinants of being a target in general

Even though we are not directly interested in the determinants of merger anticipation in general, a logistic regression determining the odds of becoming an M&A target relatively to staying publicly listed is useful for our purposes because it highlights that both target and bidder initiated deals are indeed very different from other non-deal firms. This makes the initiation results with many insignificant explanatory variables in Table 3 more interesting. It contrasts the lack of significance within a group of firms against the group as a whole being very different from the rest of the population.

Results of logistic regressions determining the odds of becoming an M&A target relatively to staying publicly listed are reported in Table 4. Column 1 in Table 4 explores the effect of corporate governance and ownership characteristics on the probability of a takeover. It shows that target firms have significantly higher board and institutional ownership. The change in institutional ownership over the year just before deal initiation is not significant indicating that institutional owners do not increase their ownership during the year just before the initiation date to force through a change in control.

- insert Table 4 about here -

Board size and board independence are both significant at the 1-percent level. Both coefficients indicate that poor governance is associated with higher odds of takeovers. This is in line with the inefficient management hypothesis suggesting that poorer governance allows space for poorer management and attracts potential bidders who could improve the firm's management and so earn profit on the transaction (Palepu, 1986; Ambrose and Megginson, 1992). Nevertheless, we explore the inter-relation between board and institutional ownership on the one hand and board independence on the other hand. We find

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that less independent boards have higher board and officer ownership for target initiated deal firms and higher institutional ownership for bidder initiated deal firms. This indicates a substitution effect between ownership concentration and board independence: the deal firms might exhibit poorer governance in form of lower board independence, however, they have concentrated owners who should monitor their management and so substitute for board independence. As a result, we would have support for the entrenchment rather than inefficient management hypothesis: firms with lower ownership concentration and therefore poorer governance have lower odds of takeovers while firms with higher ownership concentration and better governance have increased chances of successfully completing an M&A deal. High ownership concentration encourages takeover offers. It is also interesting to note that the explanatory power of the model in Column 1 is unusually high.

In Column 2, we include a dummy for one person covering both positions of the CEO and the chairman of the board. It is not significant. Further, we also include a dummy for the CEO being in the retirement age. In line with Jenter and Lewellen (forthcoming), we see that CEOs in retirement age increase significantly the odds of takeovers.[11] Insider ownership becomes insignificant, but this is due to significant drop in the number of observations rather than inclusion of the 2 extra explanatory variables. The explanatory power of the model remains high.

We explore the impact of industry characteristics in Column 3. In line with our conjecture, high product market fluidity and industry competition increase the odds of takeovers. Higher rivals' change in their products, that is higher industry fluidity, and higher competition in the industry are associated with higher odds of takeovers. In contrast, industry similarity decreases the odds as more similar industry peers pose a crowding effect and mean that similar peers might be taken over instead (Hoberg and Phillips, 2010). The M&A liquidity dummy, based on Schingemann et al. (2002), measures the frequency of deals in the industry over the past year and is not significant in Column 3 because it is highly correlated with fluidity. M&A liquidity becomes significantly positive at the 1-

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[11]Note that the dummy is not significant for deal initiation in Table 3. CEOs in retirement age increase the odds of *both* target and bidder initiated deals.

percent level when included without the other industry variables. The last two variables in Column 3 measure alternative strategic options firms might explore before considering being sold. First, a firm might consider partial asset sale(s) to focus its activities and improve its financial position (Bates, 2005). Indeed, the dummy for asset sales over the last 3 years before the current deal is positive and significant at the 1-percent level. The deal firms actively sell significantly more of their assets before they are taken over relatively to comparable firms that remain publicly listed. The acquirer dummy is also positive and significant at the 1-percent level. It shows that deal firms are also more likely to get involved in takeovers of other firms relatively to non-deal firms. Industry fluidity and concentration are highly correlated with firm age and so we do not include firm age as a control variable in this column. It seems quite natural that younger firms operate in more fluid and more competitive industries.

Columns 4 to 8 explore the effect of target firm asset characteristics. In Column 4, we include the abnormal return over the last year before deal initiation and the market to book ratio. The past return is significantly negative suggesting that deal firms suffer poor stock performance. In Column 5, we replace the market to book ratio with its 3 components due to Rhodes-Kropf et al. (2005): firm-specific error, sector error and long-run market to book. We see that the market to book ratio in Column 4 is probably insignificant because 2 of its components have opposing effects that might cancel out and result in an insignificant overall effect. The 3 components in Column 5 suggest that deal firms are underpriced in the short-term relatively to their industry peers (the firm-specific error is significantly negative), but at the same time, they exhibit higher growth options (the long-run market to book is significantly positive). Past performance becomes insignificant, probably because the firm-specific error picks up the low performance effect.

Column 6 shows, in line with the positive coefficient for long-term value to book, that deal firms have less tangible assets. The R&D ratio in Column 7 is not significant. Column 8 includes the 3 market to book components together with profitability, cash flow and stock-trading liquidity. The market to book components remain significant. The negative coefficient for cash flow contradicts the free cash flow hypothesis by Jensen (1986)

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that firms with very high free cash flow are prone to agency problems and therefore should be more prone to takeovers. We see that deal firms suffer low rather than high cash flow.

Column 9 explores leverage and financial constraints as determinants of takeovers. The SA index is significant and positive suggesting that deal firms do suffer higher financial constraints confirming recent empirical evidence (Khatami et al., 2014). Leverage is not significant: when analyzed together, target and bidder initiated deal firms do not show higher leverage relative to non-deal firms; it is rather financial constraints that matter. Financial distress, again measured using the 2 Altman's Z-score dummies for low and high financial distress health, is not associated with target merger anticipation. The debt and equity issue dummies are both positive and significant at the 1-percent level: deal firms, relatively to non-deal firms, engage more in raising new financing.

The last 2 columns in Table 4 show that most of the explanatory variables remain significant also when we include them all together. Overall, the results show large differences between deal firms versus firms that remain publicly listed. Interestingly, the highest explanatory power comes from the corporate governance measures.

4.3 Motivating managers

In section 4.1, we show that higher insider and executive ownership are important determinants of the odds of firms initiating their own sale. In this section, we want to explore further whether boards of directors try to incentivize their managers for their firm sale before and during the negotiation process. This is important as previous literature shows that CEOs do get unscheduled option grants (Fich et al., 2011) and extra cash payments in the form of merger bonuses or increased golden parachutes (Hartzell et al., 2004; Heitzman, 2011; Fich et al., 2013) in the period after deal initiation. These papers show that the extra remuneration just before the deal public announcement is associated with higher probability of deal completion and that it compensates CEOs for their earnings and private benefits they loose as a result of the acquisition. Hartzell et al. (2004) show that the largest component of the overall gains obtained by CEOs as result of the change-in-control event comes from their stocks and options. CEOs enjoy large gains from stocks and options only because shareholders as a group receive a premium from the buyer and so stock and

option grants seem to align manager's and shareholders interests better together. CEOs are motivated to negotiate a higher premium. In this context, we conjecture that in case a board of directors perceives a future takeover deal more likely, it would grant its CEO extra stocks or options to align the CEO's interest with the shareholders' interests. Moreover, we expect that the board might grant its CEO more options and stocks not only after deal negotiations have commenced, but even before the deal initiation, especially for target initiated deals. If the board expects a deal likely, it might make sense to incentivize its CEO before he/she starts negotiating.

Table 5 explores this idea. Columns 1-4 report results for logistic regressions for all the deal firms with the initiation dummy as the dependent variable. In order to put the initiation results into perspective, Columns 5-8 report also results for logistic regressions that determine the odds of becoming a deal firm versus remaining publicly listed. In Column 1, together with institutional ownership (level and change), firm age, total assets and time and industry dummies we include also a dummy variable for zero insider ownership[12] and a set of variables measuring stock and option grants to the CEO relatively to all shares outstanding over 3 mutually exclusive periods: (i) over 2 years just before the initiation date, (ii) between the initiation and the public announcement dates and (iii) after the public announcement date up until completion of the deal. We see that in line with the results in Table 3, target initiated deals have higher ownership by board members and other officers: the coefficient for the zero insider ownership dummy is negative and significant at the 5-percent level. Institutional ownership is also significant with a positive sign as in Table 3. The 3 variables for CEO stock grants show that target versus bidder initiated deal firms grant their CEOs more stock in the period between the initiation and public announcement dates, that is, during the private negotiation process. The other 2 stock grant variables are negative and insignificant. The option grant variables are all positive, but insignificant. An unreported specification with stock and option grants over the whole period from 2 years before the initiation date up to the completion of the deal shows that

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[12]Note that insider ownership covers ownership by all board members plus other officers. For the whole sample, the overall insider ownerships is equal to 0 in as many as in 40% of firms and so 0 is a reasonable cut off point for low insider ownership.

both stock and option grants are significantly higher in target initiated deal firms. Both coefficients are positive and significant at the 5-percent level. Column 2 shows that the results in Column 1 hold also when controlling for corporate governance characteristics of the firms.

- insert Table 5 about here -

Columns 5 and 6 report results for the same specifications, but determining the odds of deal versus non-deal firms. This is interesting in order to put the initiation results into perspective of other listed firms. We see that the deal firms together have higher option grants already 2 years before the initiation date relatively to firms that remained publicly listed. They have also higher stock grants after the public announcement up to completion, but this positive effect is fully canceled out due to lower option grants during the same period. The results do not change when we control for corporate governance characteristics.

In Column 3, we interact our 6 stock and option grant variables with the zero insider ownership dummy. The idea is that a board of directors should motivate its CEO to participate in deal negotiations more when the board ownership is low. A higher board ownership guarantees monitoring from the board that would participate in gains from takeover premium. In case of low board ownership, extra incentives for the CEO might be essential to increase completion probability and secure a fair deal outcome for the firm shareholders. Board and CEO ownership would act as substitutes. In line with this conjecture, we see that target initiated deal firms with low insider ownership grant their CEOs more stock already in the period before the initiation date. The other interaction terms are not significant.[13] The results in Column 4 when controlling for corporate governance are even a bit stronger: the interaction term for stock grants before the initiation date is positive and significant at the 1-percent level. Moreover, we also see that target initiated deal firms grant less options during the private negotiation process. These results indicate

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[13]The coefficient for option grants after the public announcement could not be reported because target initiated deal firms do not grant any options after the public announcement and so the variable would fully determine the outcome.

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that target initiated deal firms are preparing for a potential firm sale even before they start negotiating with bidders. They increase stock grants to its CEO to mitigate his/her conflict of interests. For a CEO, a prospect of their firm's acquisition is associated with lost future earnings and private benefits. Higher ownership means that they would enjoy the benefit of higher takeover premium that would compensate them (at least partially) for the lost earnings and rents.

Comparing deal versus non-deal firms, Columns 7 and 8 show that the higher options grants of deal firms relatively to non-deal firms in Columns 5 and 6 are in larger part due to higher option grants in deal firms with low insider ownership. The coefficient for option grant before deal initiation becomes smaller, the coefficient for its interaction term with the zero insider ownership is positive, significant and large in size. Deal firms with low insider ownership grant significantly more stock options in the period before the deal initiation relatively to other firms that remain publicly listed. At the same time, the deal firms with low insider ownership grant less stock options after the deal initiation both before and after the public announcement of the deal.

All together, our results show that deal firms increase stock option grants already before they start actually negotiating with bidders. This happens for both target and bidder initiated deal firms as the difference in stock grants is not significant within the deal firms. This result is quite interesting as it suggests that also bidder initiated firms prepare for a potential deal before the actual negotiations start. When exploring differences between target versus bidder initiated deal firms, we see that target initiated deal firms grant their CEOs more stocks during the private negotiation process. Moreover, they also grant more stocks before the initiation date in firms with low overall insider ownership. We interpret this result as indicating that board and CEO ownership are substitutes and so boards with low ownership that see a potential of shareholder value maximization through a future company sale want to increase managerial ownership and so motivate their CEOs to actively participate and organize the sale.

5 Robustness checks

As a robustness check and an alternative to the 2 sets of logistic regressions, we estimate a multinomial logit regression that compares the target and bidder initiated deal firms to their matched firms in one model. Table 6 reports results for a representative specification from Tables 3 and 4. The dependent variable is a categorical variable equal to 0 for all matched firms, 1 for target initiated deal firms and 2 for bidder initiated deal firms. The matched firms are the reference category and so we report 2 sets of results: for the target and bidder initiated deal firms. The coefficients should be interpreted relatively to the reference category of matched firms. For completeness, the last column in Table 6 shows the coefficient differences between target versus bidder initiated deal firms and their significance.

- insert Table 6 about here -

Table 6 confirms all our conclusions. The last column shows that target versus bidder initiated deal firms differ significantly in insider and institutional ownership and leverage and growth options. We use R&D expenses to measure growth options and the coefficient difference between target versus bidder initiated deals is positive and significant at the 5-percent level. If we replace the R&D ratio with the set of market to book components, the effect of the long-run market to book is not significantly different for target versus bidder initiated firms. This is because the long-run market to book is correlated with leverage. In an unreported specification corresponding to Column 4 in Table 3, the coefficient for long-run market to book is positive and significant at the 10-percent level.

Many of the coefficients for target and bidder initiated deals versus the matched firms are significant and they both have the same sign. This shows that the variables affect the odds of target and bidder initiated deal firms in the same way with no significant differences between the 2 types of deal firms. This confirms the results in Table 4.

6 Conclusions

The main aim of the paper is to explore the reasons for why a board of directors might decide to sell its firm and why managers of the selling firm would actively participate in the sale process. On a hand-collected sample of 1098 US publicly listed target firms, we show that target versus bidder initiated firms differ only in 2 respects. First, target initiated firms have higher alignment between board (executive board) members and shareholders in the form of higher ownership stakes relatively to bidder initiated firms. Second, the target initiated deal firms are more levered but still seem to keep growth options. This suggests that the board of directors, motivated by higher ownership, wants to preserve firm value in a situation with debt overhang. By selling their firm as a going concern, the board would avoid possible future financial distress that would largely destroy firm value as it would destroy valuable growth options.

In a complementary analysis, we compare the group of deal firms to other firms that remain publicly listed. Even though the target versus bidder initiated deal firms differ only in the 2 important characteristics, together they are much more different relatively to non-deal firms. They have CEOs that are more likely to be in the retirement age, have large monitoring shareholders and are younger. They also have less independent and larger boards. They operate in industries with higher takeover liquidity, higher competition and fluidity and are less likely to be similar to other firms in their industry. They are also more likely to acquire other firms and divest assets in the recent past. In terms of firm performance and asset structure, stock performance decreases the odds of becoming a successful takeover target while operating performance increases the odds. It seems that the takeover targets are undervalued, but still have growth options and suffer lower free cash flow. They are more financially constrained, but not under imminent threat of financial distress. They are more likely to issue both debt and equity.

An additional deeper analysis of CEO incentives for the deal in form of stock and option grants during the period from 2 years before the initiation date up to the completion shows that both target and bidder initiated deal firms grant their CEOs more stock options already in the period before the private deal initiation starts. This effect is stronger in

deal firms with low insider ownership, which indicates a substitution effect between board and CEO motivation for the company sale. Comparing target versus bidder initiated deal firms shows that target initiated firms do grant more stocks and options when comparing the whole period from 2 years before the initiation date up to the completion of the deal. Focusing on the subperiods, target initiated deal firms grant their CEOs more stocks during the private negotiation process that ends on the public announcement of the deal. Moreover, target initiated firms with low insider ownership have also higher stock grants before the initiation date.

Overall, our analysis shows that even though target versus bidder initiated deal firms are quite alike and together much more different from non-deal firms, they still differ in two important respects. The differences suggest that the board of directors decides to sell the firm with the aim to maximize the shareholders' value.

Appendix A   Initiation coding example

This appendix illustrates our coding. We use 2 examples that correspond to a target initiated deal (between Applebees International Inc and IHOP Corp.) and a bidder initiated deal (between AirTran Holdings Inc and Southwest Airlines Co).

A.1   Applebees International: a target initiated deal

The following paragraph extracted from the SEC filing of Applebees International Inc describes the initial decision and helps us to code the deal initiator and the initiation date when the private selling process started: "*Our Board held its annual strategic retreat on August 23-25, 2006. . . . The strategic alternatives discussion focused on two potential alternatives: (1) a leveraged recapitalization involving an expanded share repurchase program that would involve increasing the total debt to EBITDA leverage ratio to approximately three times and (2) a confidential market test for a possible sale of the company.*"

The text shows that Applebees took initiative and started considering a potential sale as a way forward for the company, so we code the deal as target initiated. Applebees also retained financial advisors to solicit potential merger candidates. We code August 23, 2006 as the initiation date when the whole selling process started.

The following section of the filing indicates that the number of bidders contacted is 35 and the number of bidders with confidentiality agreements is 26. "*During the next several weeks and in accordance with the Committee's instructions, Citi and Banc of America Securities contacted 35 potential purchasers of Applebee's. . . . Twenty-six potential purchasers executed a confidentiality agreement and received an offering memorandum with non-public information during the week of March 18, 2007.*"

Applebee's was sold in an auction, as documented in the following text: "*On April 14, 2007, Citi and Banc of America Securities informed the Committee that we received four preliminary indications of interest in purchasing our company. . . . Five other potential bidders asked for additional time to submit an indication of interest . . . As is typical, these indications of interest were non-binding and contained numerous conditions, including due diligence conditions. . . . After reviewing the initial indications of interest with Citi's as-*

sistance, the Committee decided to allow these four bidders, including IHOP, to continue to the next phase of the sale process which involved more detailed due diligence, including access to a data room and participation in multi-day management presentations. ...This conclusion was driven in large part by the fact that at that point in time the contemplated deadline for final submission of bids was shortly before the date of Applebee's annual meeting ...During April and May, all four remaining potential bidders continued their due diligence activities. In addition, all four received a draft merger agreement and were asked to submit final, definitive offers, including a proposed contract, by June 11. "

A.2 AirTran Holdings: a bidder initiated deal

In this case, we code the initiation based on the following section from the SEC filing of AirTran Holdings Inc: *"On April 21, 2010, Gary Kelly, Southwest's Chairman of the Board, President and Chief Executive Officer, telephoned Robert L. Fornaro, AirTran's Chairman, President and Chief Executive Officer, and asked Mr. Fornaro if he would meet with him in person to discuss a potential business matter, without indicating the specific nature of the matter. On May 6, 2010, Mr. Kelly and Mr. Fornaro met in a suburb of Dallas, Texas, and Mr. Kelly asked Mr. Fornaro if AirTran would be open to discussions regarding an acquisition by Southwest. Mr. Fornaro replied that he believed that management of AirTran had a duty to consider any adequately priced and financed acquisition offer and should such an offer be forthcoming from Southwest, management of AirTran would so consider it."* Since it is Sothwest's Chairman to solicit potential merger candidate for the company, we define this deal as a bidder initiated deal. The initiation date is May 6, 2010.

AirTran was sold in a private negotiation, which can be implied from the following lengthy process: *"Following Southwest's and its advisors' evaluation of AirTran, Southwest determined to propose to AirTran that Southwest commence a preliminary due diligence investigation of AirTran. ...AirTran directed its counsel to establish an electronic data room for various documents to be made available to Southwest in connection with this due diligence. ...During the next three weeks, Southwest conducted its preliminary due diligence investigation of AirTran, including accessing the electronic data room that AirTran*

established. . . . On July 31, 2010, AirTran's senior management held a conference call with Morgan Stanley and Smith Gambrell to review and discuss the proposal received from Southwest and related matters. . . . On August 13, 2010, Vinson & Elkins distributed an initial draft of a merger agreement to AirTran and its representatives. . . . On August 27, 2010, Vinson & Elkins distributed a revised draft of the merger agreement to AirTran and its representatives, which draft reflected Southwest's responses to the AirTran comments received on August 21, 2010. . . . On September 4, 2010, Vinson & Elkins distributed a revised draft of the merger agreement in response to the discussions between the parties subsequent to the August 27, 2010 distribution. . . . Also on September 23, 2010, Vinson & Elkins sent a revised draft of the merger agreement to AirTran and its representatives reflecting all discussions between the parties on open items up to that date. . . . The merger agreement was executed on behalf of Southwest and AirTran shortly after conclusion of the respective September 26, 2010 meetings of the AirTran and Southwest boards of directors. The merger was publicly announced in the early morning of September 27, 2010." In a private negotiation, the number of bidders contacted and with confidentiality agreements are both 1.

Appendix B   Variable definitions

Variable	Definition	Source
Acquirer	Dummy variable equal to 1 in case the firm acquires another firm within 3 years before the initiation date.	SDC, own computations
Altman's Z-score	1.2*(working capital/total assets) + 1.4*(retained earnings/total assets) + 3.3*(EBIT/total assets) + 0.6*(market value of equity/book value of debt) + 0.999*(total sales/total assets). Based on Altman (1968).	COMPUSTAT, own computations
Analyst following	Number of analysts following the firm in December of the calendar year before the initiation date. In the analysis, we use $(1 + analyst following)$.	IBES
Asset sale	Dummy variable equal to 1 in case the firm sells a part of its assets within 3 years before the initiation date.	SDC, own computations
Asset tangibility	Net plant and property divided by total assets one fiscal year before the initiation date.	COMPUSTAT
Auction	Dummy variable equal to 1 in case the company is sold in a highly organized auction with pre-set rules and 0 otherwise. Based on Hansen (2001).	Hand collection
Bidders contacted	Total number of bidders that the target firm contracts during the selling process.	Hand collection
Bidder initiated deal	Deal for which, at the beginning of the selling process, a potential buyer approaches the target firm and proposes an M&A transaction.	Hand collection
Bidders with confid. agreement	Total number of bidders that the target firm signs confidentiality agreement with during the selling process.	Hand collection
Board independence	Total number of independent board members over the total number of board members.	Execucomp, Thomson Reuters Eikon, hand collection
Board size	Total number of board members.	Execucomp, Thomson Reuters Eikon, hand collection
Cash	Cash and marketable securities over total assets in the accounting year just before the initiation date.	COMPUSTAT
Cash flow	Cash flow over total assets. Based on Erel et al (forthcoming).	COMPUSTAT
Cash offer	Dummy variable equal to 1 in case the acquirer offers cash as the payment consideration and 0 otherwise.	SDC
CEO age	The age of CEO at the private year.	Execucomp, Thomson Reuters Eikon, hand collection
CEO/chair duality	Dummy variable equals to 1 in case CEO of a firm is also chairman of the firm.	Execucomp, Thomson Reuters Eikon, hand collection
CEO ownership	The total fraction of shares outstanding owned by the CEO just before the initiation date.	Thomson Insider Filings, own computations
CEO retirement	Dummy variable equal to 1 in case CEO's age is larger than 64 and 0 otherwise. Based on Jenter and Lewellen (forthcoming).	Execucomp, Thomson Reuters Eikon, hand collection

Variable	Definition	Source
Controlled sale	Dummy variable equal to 1 in case the target company decides to discreetly canvass a limited number of bidders that target management believes to have a serious interest in acquiring the company and 0 otherwise. Based on Boone and Mulherin (2009).	Hand collection
EBITDA	Earnings before interest, tax, depreciation and amortization over total assets in the accounting year just before the initiation date.	COMPUSTAT
EBITDA growth	3 year average change in EBITDA over total assets before the initiation date.	COMPUSTAT, own computations
Executive ownership	The total fraction of shares outstanding owned by firms' executives just before the initiation date.	Thomson Insider Filings, own computations
Firm-specific error	The first component of the decomposition by Rhodes-Kropf et al. (2005) based on Model 1 with FF12 industries; it estimates the deviation of the firm specific pricing from short-run industry pricing.	Own estimations
High Altman's Z-score	Dummy variable equal to 1 in case Altman's Z-score is larger than 2.99 and 0 otherwise. Indicator of high financial health of the firm.	COMPUSTAT, own computations
Industry concentration	Herfindahl-Hirschman index based on TNIC-3 (10-K based Network) industry. Based on Hoberg and Phillips (2014).	Hoberg-Phillips Data Library
Industry similarity	Cumulative firm-by-firm pairwise similarity score for all peers for the firm's TNIC-3 industry using the 10-K firm product words. Based on Hoberg and Phillips (2014).	Hoberg-Phillips Data Library
Insider ownership	The total fraction of shares outstanding owned by the board members and other officers (CB, CEO, CO, GC, P; AC, AF, CC, CFO, CI, CT, D, DO, EC, FC, GP, H, M, MC, MD, O, OB, OD, OP, OS, OT, OX, S, SC, TR, VC, AV, C, EVP, OE, GM, LP, SVP, T, VP, AI, BC, BT, CP, DS, F, FO, IA, R, SH, UT, VT, X) just before the initiation date.	Thomson Insider Filings, own computations
Inst. ownership	The total fraction of shares outstanding owned by institutional blockholders just before the initiation date.	Factset
Inst. ownership change	The change in institutional ownership over the year before the initiation date.	Factset
Interest coverage	EBIT over interest payment due in the accounting year just before the initiation date.	COMPUSTAT
Interest coverage growth	3 year average change in interest coverage ratio before the initiation date	COMPUSTAT, own computations
Leverage	Long term debt over total assets in the accounting year just before the initiation date.	COMPUSTAT
Leverage growth	3 year average change in long term debt over total assets before the initiation date	COMPUSTAT, own computations
Long-run value to book	The third component of the decomposition by Rhodes-Kropf et al (2005) based on Model 1 with FF12 industries; it measures the deviation of the long-run pricing of the industry from the book value of the firm and so measures the long-run growth prospects of the firm.	Own estimations
Low Altman's Z-score	Dummy variable equal to 1 in case Altman's Z-score is smaller than 1.81 and 0 otherwise. Indicator of financial distress	COMPUSTAT, own computations

Variable	Definition	Source
Low interest coverage	Dummy variable equal to 1 in case the interest coverage ratio (EBIT over yearly debt interest payment in the accounting year just before the initiation date) is smaller than 2 and 0 otherwise.	COMPUSTAT
M&A liquidity	The total number of targets in the same first three-digit SIC code as the sample firm over the year just before the initiation date expressed as a fraction of the total number of firms in the same first three-digit SIC code in COMPUSTAT. Based on Schlingemann et al. (2002).	COMPUSTAT, Thomson One Banker, own computations
Market/book ratio	Market capitalization plus the book value of debt over the total assets in the accounting year just before the initiation date.	COMPUSTAT
Market capitalization	Market capitalization (stock price times shares outstanding) on the initiation date, in the analysis used as a natural log.	CRSP
Mixed payment	Dummy variable equal to 1 in case the acquirer offers both cash and merged firm's stock as payment consideration and 0 otherwise.	SDC
Net income	Net income to total assets in the accounting year just before the initiation date.	COMPUSTAT
Net income growth	3 year average change in net income over total assets before the initiation date	COMPUSTAT, own computations
Non-ex. ownership	The total fraction of shares outstanding owned by independent directors just before the initiation date.	Thomson Insider Filings, own computations
Option grants before initiation	The total number of shares granted in options to the CEO as a fraction of ordinary shares outstanding over the period from 2 years before the initiation date to the initiation date.	Thomson Insider Filings; own computations
Option grants after initiation	The total number of shares granted in options to the CEO as a fraction of ordinary shares outstanding over the period from the initiation date to the SDC announcement date. Based on Heitzman (2011).	Thomson Insider Filings; own computations
Option grants after public	The total number of shares granted in options to the CEO as a fraction of ordinary shares outstanding over the period from the SDC announcement date to the resolution date. Based on Heitzman (2011).	Thomson Insider Filings; own computations
Past abnormal return	Raw stock return over 1 year before the initiation date adjusted by the equally weighted market return over the same period.	CRSP, own computation
Past return	Raw stock return over 1 year before the initiation date.	CRSP
Premium	The final offer price relative to the stock price 4 weeks before the SDC announcement date in percentage points.	SDC
initiation date	The date on which the target firm starts to consider a potential sale of the firm. Based on Boone and Mulherin (2011).	Hand collection
Private equity acquirer	Dummy variable equal to 1 in case the target firm is acquired by a firm that is majority owned by a private equity investor and 0 otherwise. Based on Fidrmuc et al. (2012).	SDC
Private negotiation	Dummy variable equal to 1 in case the company is sold in a privately negotiated sale and 0 otherwise. Based on Boone and Mulherin (2009).	Hand collection
Private selling process length	Length in days from the initiation date to the SDC announcement date.	Hand collection

Variable	Definition	Source
Prod. market fluidity	A measure of a firm's competitive product threats, it shows changes in rivals' products relative to the firm. Based on Hoberg et al. (2014).	Hoberg-Phillips Data Library
Public acquirer	Dummy variable equal to 1 in case the company is acquired by a public firm and 0 otherwise.	SDC
Pubic selling process length	Length in days from the SDC announcement date to the resolution date.	Hand collection
R&D ratio	Research and development expenses divided by total assets.	COMPUSTAT
SA index	-0.737*(size) + 0.043*(size^2) - 0.04*(age), where size is the natural log of inflation adjusted (to USD 2004) book value of total assets; age is the number of years the firm has been on COMPUSTAT with a non-missing stock price. We winsorize size from the top at ln4500 and age at 37. Based on Hadlock and Pierce (2010).	COMPUSTAT, own computations
Sector error	The second component of the decomposition by Rhodes-Kropf et al. (2005) based on Model 1 with FF12 industries; it estimates the deviation between the short-run versus long-run pricing of the firm's industry.	Own estimations
Selling process length	The length in days from the initiation date to the resolution date.	Hand collection
Stock grants before initiation	The total number of shares granted to the CEO as a fraction all ordinary shares outstanding over the period from 2 years before the initiation date to the initiation date.	Thomson Insider Filings; own computations
Stock grants after initiation	The total number of shares granted to the CEO as a fraction all ordinary shares outstanding over the period from the initiation date to the SDC announcement date. Based on Heitzman (2011).	Thomson Insider Filings; own computations
Stock grants after public	The total number of shares granted to the CEO as a fraction all ordinary shares outstanding over the period from the SDC announcement date to the resolution date. Based on Heitzman (2011).	Thomson Insider Filings; own computations
Stock offer	Dummy variable equal to 1 in case the acquirer offers merged firm's shares as the payment consideration and 0 otherwise.	SDC
Target initiated deal	The board of the target firm decides to sell the company and consequently contacts potential buyers.	Hand collection
Third party initiated	Bidder initiated deal that ends up with a buyer that is not the primary initiator of the deal.	Hand collection
Total assets	Book value of total assets in USD millions; in the analysis used as a natural log.	COMPUSTAT
Total sales	Total amount collected for providing goods and services in USD millions.	COMPUSTAT
Trade liquidity	Total number of shares traded in the year just before the initiation date over the total number of shares outstanding on the initiation date	COMPUSTAT
Transaction value	Total value paid by the acquirer less fees and expenses in USD millions.	SDC

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Table 1: Selling process summary statistics

This table presents summary statistics for the hand collected target (487) and bidder (611) initiated deals. All variables are defined in Appendix B. All variables are winsorized at the 1st and 99th percentiles except all dummy variables. We test for difference in means using the t-test and in medians using the Mann-Whitney-Wilcoxon rank sum test. The significance of differences in means and medians between target versus bidder initiated deals is denoted in the mean and median columns for bidder initiated deals. ^{a}, ^{b} and ^{c} indicate significance at the one-, five- and ten-percent levels.

	Target initiated deals			Bidder initiated deals		
	Mean	Median	St. dev	Mean	Median	St.dev
Transaction value(million USD)	1,409	286	3,973	$2,165^a$	509^a	4,992
Premium	26.6%	27.0%	58.2%	$39.0\%^a$	$34.0\%^a$	45.2%
Third party initiated	0	0	0	0.39	0	0.49
Auction	0.50	1	0.50	0.20^a	0^a	0.40
Controlled sale	0.36	0	0.48	0.38	0	0.49
Private negotiation	0.14	0	0.34	0.42^a	0^a	0.49
Private selling process length	478	342	409	314^a	220^a	333
Public selling process length	117	103	67	127^b	104	83
Selling process length	595	464	407	441^a	350^a	342
Bidders contacted	30	14	43	9^a	2^a	18
Bidders with confid. agreement	11	4	17	4^a	1^a	8
Private equity acquirer	0.28	0	0.45	0.23^c	0^c	0.42
Public acquirer	0.65	1	0.48	0.71^b	1^b	0.46
Cash offer	0.68	1	0.47	0.71	1	0.45
Stock offer	0.12	0	0.32	0.10	0	0.30
Mixture payment	0.21	0	0.40	0.19	0	0.39

Table 2: Summary statistics for deal (both target and bidder initiated) versus matched firms

The table shows mean values across matched publicly listed firms (column 2), deal target firms (column 3), 487 target initiated (column 5) and 611 bidder initiated deal firms (column 7). Means of all deal firms, target initiated deal firms and bidder initiated deal firms are compared to their matches in columns 4, 6 and 8, respectively. Column 9 shows the difference in means between target and bidder initiated firms. All variables are defined in Appendix B. We test for differences in means using the t-test allowing for unequal variances. All variables are winsorized at the 1st and 99th percentiles, except for all dummy variables. a, b and c indicate significance at the one-, five- and ten-percent levels.

Variable	(1) # obs	(2) Match firms	(3) Deal firms	(4) Deal vs match	(5) Target initiated	(6) Target vs match	(7) Bidder initiated	(8) Bidder vs match	(9) Target vs bidder
Total assets (USD million)	2196	1870	1763	-107	1473	-142	1995	-79	-522^c
Ln total assets	2196	5.799	5.868	0.069	5.689	0.043	6.011	0.090	-0.322^a
Total sales (USD million)	2196	1054	935	-119	715	-139	1111	-103	-396^a
Market cap (USD million)	2196	1477	1140	-337^b	921	-341^c	1315	-333	-394^b
Firm age	2190	22	17	-6^a	16	-6^a	17	-6^a	-1
Analyst following	2196	4.847	5.414	0.567^b	4.376	-0.154	6.242	1.142^a	-1.866^a
Insider ownership	2196	0.053	0.067	0.014^a	0.083	0.019^b	0.053	0.009	0.030^a
Executive ownership	2196	0.031	0.035	0.005	0.047	0.008	0.026	0.002	0.021^b
Non-executive ownership	2196	0.023	0.031	0.008^a	0.037	0.011^b	0.026	0.006	0.011^b
CEO ownership	2196	0.015	0.016	0.001	0.022	0.003	0.011	0.000	0.011^a
Inst. ownership	1999	0.413	0.521	0.108^a	0.456	0.055^b	0.572	0.150^a	-0.117^a
Inst. ownership change	1999	-0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.001
Board size	1969	6	8	2^a	8	2^a	8	2^a	0
Board independence	1969	0.546	0.258	-0.288^a	0.217	-0.314^a	0.290	-0.269^a	-0.073^a
CEO/chair duality	1795	0.412	0.417	0.005	0.413	0.010	0.420	0.000	-0.007
CEO retirement	1786	0.101	0.156	0.055^a	0.180	0.082^a	0.137	0.033	0.044^c
CEO age	1786	53	56	3^a	57	3^a	56	2^a	1^c
Stock grants before initiation (%)	2196	0.167	0.222	0.055^b	0.227	0.014	0.219	0.087^a	0.008
Stock grants after initiation (%)	2196	0.066	0.117	0.051^a	0.168	0.080^a	0.076	0.027^b	0.092^a
Stock grants after public (%)	2196	0.019	0.055	0.036^a	0.053	0.038^a	0.056	0.034^a	-0.003
Option grants before initiation (%)	2196	0.338	0.614	0.276^a	0.695	0.319^a	0.550	0.242^a	0.146^b
Option grants after initiation (%)	2196	0.152	0.216	0.064^a	0.273	0.068^c	0.171	0.061^b	0.101^a
Option grants after public (%)	2196	0.030	0.014	-0.017^a	0.012	-0.019^a	0.015	-0.014^b	-0.003
Zero insider ownership	2196	0.401	0.144	-0.257^a	0.109	-0.259^a	0.172	-0.255^a	-0.063^a

Variable	(1) # obs	(2) Match firms	(3) Deal firms	(4) Deal vs match	(5) Target initiated	(6) Target vs match	(7) Bidder initiated	(8) Bidder vs match	(9) Target vs bidder
Prod. market fluidity	1772	7.830	8.311	0.480^b	8.355	0.797^a	8.276	0.218	0.079
Industry concentration	1730	0.199	0.167	-0.032^a	0.171	-0.038^b	0.165	-0.026^c	0.006
Industry similarity	1730	1074	827	-248^a	898	-120	772	-349^a	126
M&A liquidity	2196	0.727	0.817	0.089^b	0.781	0.061	0.845	0.112^b	-0.064
Acquirer	2196	0.005	0.068	0.063^a	0.078	0.070^a	0.061	0.057^a	0.017
Asset sale	2196	0.131	0.255	0.124^a	0.255	0.150^a	0.255	0.103^a	-0.001
Past abnormal return	2088	0.024	-0.035	-0.059^b	-0.021	-0.029	-0.046	-0.083^b	0.025
Past return	2088	0.035	-0.010	-0.046^b	-0.007	-0.035	-0.013	-0.055^b	0.006
Market/book ratio	2181	3.110	2.775	-0.335^c	2.915	0.035	2.661	-0.632^b	0.254
Firm-specific error	2092	0.064	-0.027	-0.091^a	-0.036	-0.058	-0.020	-0.118^a	-0.016
Sector error	2092	0.072	0.064	-0.008	0.072	-0.006	0.058	-0.009	0.014
Long-run value/book	2092	0.661	0.681	0.020	0.689	0.022	0.675	0.018	0.014
Asset tangibility	2195	0.219	0.181	-0.038^a	0.172	-0.040^a	0.188	-0.036^b	-0.016
R&D ratio	2195	0.052	0.062	0.010^b	0.071	0.020^b	0.054	0.002	0.017^b
EBITDA	2196	0.041	0.043	0.001	0.020	-0.016	0.061	0.016	-0.041^a
EBITDA growth	2184	0.141	0.193	0.052^a	0.185	0.048^c	0.200	0.055^b	-0.016
Net income	2196	-0.035	-0.037	-0.003	-0.067	-0.027^c	-0.013	0.016	-0.054^a
Net income growth	2174	-0.116	-0.136	-0.020	-0.160	-0.057	-0.117	0.008	-0.044
Cash flow	2195	0.021	0.007	-0.014^a	0.006	-0.011	0.009	-0.016^b	-0.003
Cash	2196	0.142	0.141	-0.001	0.138	0.005	0.143	-0.006	-0.005
Trade liquidity	1849	0.007	0.007	0.001^c	0.007	0.001	0.007	0.001	0.000
Leverage	2196	0.149	0.173	0.024^a	0.188	0.040^a	0.160	0.011	0.028^b
Leverage growth	2192	0.128	0.228	0.100^a	0.214	0.087^a	0.238	0.110^a	-0.024
Low interest coverage	2196	0.274	0.330	0.056^a	0.376	0.099^a	0.293	0.021	0.083^a
Interest coverage growth	1694	0.495	0.891	0.396^a	0.939	0.518^b	0.856	0.304	0.083
SA index	2185	-3.530	-3.358	0.173^a	-3.300	0.194^a	-3.404	0.155^a	0.104^a
Altman's Z-score	2187	4.105	2.747	-1.358^a	2.051	-1.868^a	3.306	-0.946^a	-1.255^a
Low Altman's Z-score	2187	0.397	0.447	0.050^b	0.512	0.098^a	0.395	0.012	0.117^a

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Variable	(1) #obs	(2) Match firms	(3) Deal firms	(4) Deal vs match	(5) Target initiated	(6) Target vs match	(7) Bidder initiated	(8) Bidder vs match	(9) Target vs bidder
High Altman's Z-score	2187	0.450	0.379	-0.070^a	0.319	-0.126^a	0.428	-0.025	-0.109^a
Debt issue	2196	0.004	0.005	0.002	0.008	0.004	0.003	0.000	0.005
Equity issue	2196	0.142	0.422	0.280^a	0.452	0.316^a	0.398	0.250^a	0.054^c

Table 3: Analysis of factors influencing the likelihood of deal initiation: target versus bidder initiated deal firms.

This table reports estimation results for logistic models. The dependent variable is a categorical variable that equals 1 for target initiated deal firms and 0 for bidder initiated deal firms. The data covers 487 target initiated deals and 611 bidder initiated deals. We report Hubert/White robust standard errors in brackets. All variables are defined in Appendix B and are winsorized at the 1st and 99th percentiles, except for all dummy variables. Both year and industry dummies are included in the regressions but are not reported. ^{a}, ^{b} and ^{c} indicate significance at the one-, five- and ten-percent levels.

Panel A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Constant	-1.305^b	-1.247^b	-0.667	-2.729^a	-1.069^c	-1.189^b	-2.611^b	-0.883	-1.076	-2.384^c	-2.333^b	-2.523^a
	(0.604)	(0.606)	(0.588)	(0.997)	(0.553)	(0.546)	(1.100)	(0.725)	(0.751)	(1.227)	(1.013)	(0.889)
Insider ownership	1.738^a									2.172^a	2.519^a	2.384^a
	(0.640)									(0.838)	(0.757)	(0.690)
Executive ownership		3.579^a										
		(1.141)										
Non-exec. ownership		0.213										
		(1.026)										
Inst. ownership	-0.564	-0.570^c								-0.557	-0.624	-0.752^b
	(0.343)	(0.342)								(0.435)	(0.391)	(0.317)
Inst. ownership change	0.625	0.613								-0.092		
	(1.111)	(1.124)								(1.586)		
Board size	0.006	0.008								0.025	0.017	
	(0.029)	(0.029)								(0.035)	(0.033)	
Board independence	0.060	0.026								0.126	0.103	
	(0.276)	(0.277)								(0.300)	(0.287)	
CEO/chair duality	-0.120	-0.144								-0.304^c	-0.216	
	(0.159)	(0.161)								(0.182)	(0.172)	
CEO retirement	0.290	0.302								0.257	0.336	
	(0.205)	(0.203)								(0.225)	(0.215)	
Prod. market fluidity			0.024							0.013		
			(0.022)							(0.029)		
Industry concentration			0.108							0.070		
			(0.375)							(0.479)		
Industry similarity			0.024							-0.000		
			(0.063)							(0.000)		
M&A liquidity			-0.009							-0.034		
			(0.096)							(0.116)		
Acquirer			0.144							0.088	0.120	0.161
			(0.274)							(0.325)	(0.306)	(0.275)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Asset sale			0.234 (0.160)							0.054 (0.197)	0.033 (0.188)	0.085 (0.169)
Past abnormal return				-0.166 (0.147)	-0.082 (0.129)	-0.073 (0.128)	-0.178 (0.162)			-0.257 (0.172)	-0.257 (0.161)	-0.169 (0.139)
Firm-specific error				-0.035 (0.106)			-0.021 (0.117)					
Sector error				0.136 (0.801)			0.168 (0.851)					
Long-run value/book				1.719^c (0.889)			1.512 (0.993)					
Asset tangibility					0.318 (0.419)							
R&D ratio						2.009^a (0.742)				2.211^b (1.051)	2.471^a (0.897)	2.114^a (0.801)
EBITDA							-1.162^b (0.519)					
EBITDA growth							-0.086 (0.195)					
Cash flow							0.166 (0.698)					
Trade liquidity							0.270 (12.551)					
Leverage								1.034^a (0.333)	0.609^c (0.364)	1.426^b (0.554)	1.424^a (0.471)	1.612^a (0.413)
SA index								-0.058 (0.318)	-0.189 (0.333)	-0.498 (0.489)	-0.262 (0.422)	-0.412 (0.382)
Low Altman's Z-score									0.204 (0.199)	-0.146 (0.280)		
High Altman's Z-score									-0.282 (0.198)	-0.169 (0.256)		
Debt issue									-0.035 (0.171)	-0.005 (0.232)	-0.008 (0.219)	-0.103 (0.193)
Equity issue									0.316^b (0.138)	0.269 (0.184)	0.331^c (0.174)	0.291^c (0.155)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Firm age	0.008	0.007		0.003	0.003	0.004	0.006	0.002	0.001	-0.007	-0.001	-0.007
	(0.007)	(0.007)		(0.006)	(0.006)	(0.006)	(0.007)	(0.011)	(0.011)	(0.017)	(0.014)	(0.013)
Total assets	-0.113^c	-0.108	-0.183^a	-0.026	-0.146^a	-0.116^a	-0.028	-0.199^b	-0.228^a	-0.232^c	-0.157	-0.165^c
	(0.068)	(0.068)	(0.050)	(0.076)	(0.044)	(0.045)	(0.084)	(0.084)	(0.087)	(0.132)	(0.115)	(0.098)
# observations	821	821	959	981	1,031	1,031	928	1091	1090	720	784	952
Pseudo R^2	7.50%	8.00%	5.59%	5.84%^{a}	5.44%^{a}	5.91%^{a}	6.58%^{a}	5.62%	6.52%	10.4%	11.0%	10.1%
χ^2	78.19^a	77.81^a	68.57^a	74.50	71.54	77.51	78.81	78.92^a	87.68^a	89.22^a	99.39^a	113.7^a

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Table 4: Analysis of factors influencing the likelihood of a successful takeover: deal versus non-deal firms.

This table reports estimation results for logistic models. The dependent variable is a categorical variable that equals 1 for all deal/target firms and 0 for all matched firms. The data covers 487 target initiated deals, 611 bidder initiated deals and 1098 matching firms. We report Hubert/White robust standard errors in brackets. All variables are defined in Appendix B and are winsorized at the 1st and 99th percentiles, except for all dummy variables. Both year and industry dummies are included in the regressions but are not reported. ^{a}, ^{b} and ^{c} indicate significance at the one-, five- and ten-percent levels.

Panel A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Constant	0.225	0.178	-0.243	-0.200	-1.866^a	0.067	-0.233	-1.602^b	1.743^a	0.480	1.611
	(0.455)	(0.465)	(0.424)	(0.342)	(0.682)	(0.329)	(0.331)	(0.774)	(0.533)	(1.543)	(1.035)
Insider ownership	1.097^b	0.435								-0.614	-1.164
	(0.554)	(0.594)								(0.787)	(0.729)
Inst. ownership	3.272^a	2.718^a								2.298^a	1.860^a
	(0.294)	(0.326)								(0.447)	(0.414)
Inst. ownership change	-0.495	0.008								1.416	1.059
	(0.846)	(0.985)								(1.488)	(1.446)
Board size	0.383^a	0.393^a								0.409^a	0.406^a
	(0.029)	(0.032)								(0.041)	(0.039)
Board independence	-4.052^a	-3.835^a								-3.572^a	-3.697^a
	(0.247)	(0.265)								(0.296)	(0.295)
CEO/chair duality		0.076								-0.187	-0.192
		(0.142)								(0.173)	(0.168)
CEO retirement		0.883^a								0.811^a	0.850^a
		(0.222)								(0.255)	(0.245)
Prod. market fluidity			0.055^a							0.022	0.019
			(0.017)							(0.032)	(0.030)
Industry concentration			-0.868^a							-1.209^a	-1.046^a
			(0.272)							(0.418)	(0.405)
Industry similarity			-0.186^a							-0.000	-0.000^c
			(0.045)							(0.000)	(0.000)
M&A liquidity			0.106							0.082	0.074
			(0.071)							(0.103)	(0.100)
Acquirer			2.158^a							1.409^a	1.491^a
			(0.439)							(0.527)	(0.544)
Asset sale			0.699^a							1.047^a	0.990^a
			(0.131)							(0.229)	(0.218)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Past abnormal return				-0.215^b	-0.137			0.007		0.033	-0.109
				(0.089)	(0.098)			(0.118)		(0.181)	(0.170)
Market/book ratio				-0.017							
				(0.012)							
Firm-specific error					-0.237^a			-0.378^a		-0.641^a	
					(0.072)			(0.084)		(0.143)	
Sector error					0.171			0.184		-0.352	
					(0.558)			(0.625)		(1.014)	
Long-run value/book					1.402^b			1.437^b		1.070	
					(0.606)			(0.728)		(1.256)	
Asset tangibility						-0.954^a					
						(0.257)					
R&D ratio							0.418				
							(0.482)				
EBITDA								0.531		2.657^a	2.598^a
								(0.337)		(0.612)	(0.721)
EBITDA growth								0.190		-0.140	-0.152
								(0.147)		(0.221)	(0.215)
Cash flow								-1.720^a		-1.699^b	-1.591^b
								(0.504)		(0.798)	(0.784)
Trade liquidity								9.355			
								(9.920)			
Leverage									-0.214	-0.426	-0.235
									(0.283)	(0.709)	(0.539)
SA index									1.031^a	0.427	0.236
									(0.239)	(0.450)	(0.422)
Low Altman's Z-score									-0.000	-0.288	-0.223
									(0.156)	(0.306)	(0.295)
High Altman's Z-score									-0.133	-0.332	-0.467^c
									(0.149)	(0.263)	(0.250)
Debt issue									1.255^a	0.486^b	0.421^c
									(0.145)	(0.238)	(0.226)
Equity issue									1.289^a	1.135^a	1.092^a
									(0.116)	(0.202)	(0.196)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Firm age	-0.044^a	-0.051^a		-0.051^a	-0.052^a	-0.051^a	-0.051^a	-0.057^a	-0.028^a	-0.050^a	-0.050^a
	(0.006)	(0.006)		(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.008)	(0.014)	(0.013)
Total assets	-0.313^a	-0.279^a	-0.038	0.126^a	0.251^a	0.133^a	0.129^a	0.236^a	0.251^a	-0.267^c	-0.378^a
	(0.053)	(0.058)	(0.034)	(0.030)	(0.054)	(0.029)	(0.030)	(0.061)	(0.064)	(0.157)	(0.120)
# observations	1812	1488	1721	2079	2009	2190	2190	1707	2182	1,227	1,264
Pseudo R^2	35.35%	33.95%	5.68%	5.76%	6.42%	6.08%	5.65%	8.46%	15.07%	40.7%	39.2%
χ^2	451.90^a	383.30^a	108.3^a	121.14^a	126.78^a	131.25^a	122.19^a	148.10^a	282.68^a	382.6^a	373.6^a

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Table 5: Analysis of managerial incentives for a sale.

This table reports estimation results for logistic models. The dependent variable is a categorical variable that equals 1 for all target initiated deals (deal/target firms) in Columns 1-4 (Columns 5-8) and 0 otherwise. The data covers only the deal firms (487 target initiated deals, 611 bidder initiated deals) in Columns 1-4, but includes also 1098 matching firms in Columns 5-8. We report Hubert/White robust standard errors in brackets. All variables are defined in Appendix B and are winsorized at the 1st and 99th percentiles, except for all dummy variables. Both year and industry dummies are included in the regressions but are not reported. ^{a}, ^{b} and ^{c} indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	target initiation				deal initiation			
Constant	-1.112^b	-1.131^c	-1.117^b	-1.094^c	0.533	0.564	0.481	0.514
	(0.551)	(0.620)	(0.563)	(0.635)	(0.399)	(0.507)	(0.399)	(0.515)
Zero Insider ownership	-0.578^b	-0.660^b	-0.540^b	-0.727^b	-1.385^a	-1.250^a	-1.566^a	-1.348^a
	(0.229)	(0.264)	(0.266)	(0.317)	(0.130)	(0.191)	(0.150)	(0.221)
Inst. ownership	-0.841^a	-0.833^b	-0.861^a	-0.825^b	1.304^a	2.484^a	1.255^a	2.501^a
	(0.285)	(0.347)	(0.282)	(0.342)	(0.220)	(0.336)	(0.224)	(0.338)
Inst. ownership change	0.564	0.316	0.657	0.277	-0.693	-0.148	-0.549	-0.071
	(0.976)	(1.147)	(0.981)	(1.139)	(0.700)	(0.916)	(0.719)	(0.944)
Stock grants before initiation	-5.188	-1.708	-9.788	-8.914	0.188	1.741	-0.404	2.905
	(10.731)	(12.161)	(11.628)	(13.668)	(8.884)	(11.720)	(9.135)	(12.093)
Stock grants after initiation	73.116^a	93.144^a	70.836^a	99.696^a	24.323	67.255^b	16.003	65.059^c
	(22.724)	(22.890)	(24.414)	(24.806)	(16.982)	(30.042)	(17.449)	(33.241)
Stock grants after public	-4.418	-1.025	-10.286	-8.168	122.511^a	156.107^a	102.318^a	106.527^b
	(28.310)	(29.551)	(29.675)	(30.937)	(34.476)	(53.716)	(36.978)	(49.916)
Option grants before initiation	6.774	8.083	9.112	9.103	25.233^a	21.336^b	13.210^b	15.303^c
	(6.173)	(6.875)	(7.049)	(7.988)	(6.113)	(6.770)	(6.045)	(7.926)
Option grants after initiation	21.754	22.105	22.100	22.412	-8.131	-17.990	-1.350	-11.426
	(13.857)	(16.300)	(14.058)	(16.597)	(9.367)	(13.274)	(9.685)	(14.054)
Option grants after public	20.715	79.955	21.051	85.011	-265.79^a	-240.38^a	-229.55^a	-202.67^a
	(79.872)	(97.069)	(80.316)	(97.147)	(63.049)	(70.370)	(63.209)	(71.208)
SG before init. * zero IO			152.531^b	308.699^a			-3.728	-1.755
			(76.473)	(99.774)			(40.477)	(40.665)
SG after init. * zero IO			4.683	-36.872			112.371	9.455
			(72.621)	(56.933)			(89.704)	(68.678)
SG after public * zero IO			26.950	19.881			108.537	203.588^b
			(83.601)	(88.984)			(71.332)	(86.354)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	target initiation				deal initiation			
OG before init. * zero IO			-17.065	-4.454			82.722^a	51.398^c
			(19.898)	(18.028)			(27.710)	(27.832)
OG after init. * zero IO			-121.203	-366.639^b			-197.064^c	-162.257
			(135.726)	(151.835)			(110.326)	(120.062)
OG after public * zero IO			n.a.	n.a.			$-2{,}488.7^b$	$-2{,}222.0^b$
							(1,066.0)	(1,091.7)
Board size		0.002				0.382^a		0.380^a
		(0.029)				(0.033)		(0.033)
Board independence		-0.034		-0.031		-4.035^a		-4.068^a
		(0.284)		(0.284)		(0.274)		(0.277)
CEO/chair duality		-0.126		-0.127		0.056		0.019
		(0.162)		(0.164)		(0.145)		(0.147)
CEO retirement		0.380		0.344		0.494		0.535^c
		(0.248)		(0.250)		(0.312)		(0.311)
Firm age	0.007	0.013^c	0.007	0.012^c	-0.053^a	-0.047^a	-0.054^a	-0.047^a
	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Total assets	-0.083	-0.097	-0.086	-0.105	-0.058	-0.266^a	-0.044	-0.256^a
	(0.060)	(0.071)	(0.059)	(0.070)	(0.043)	(0.062)	(0.044)	(0.063)
# observations	1,004	821	1,003	820	1,994	1,488	1,994	1,488
Pseudo R^2	0.0802	0.0949	0.0844	0.104	0.161	0.374	0.173	0.380
χ^2	93.03^a	95.71^a	97.57^a	102.4^a	305.0^a	398.1^a	315.8^a	401.5^a

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Table 6: Analysis of factors influencing the likelihood of a successful takeover: multinomial logistic regressions.

This table reports estimation results for multinomial logistic models. The dependent variable is a categorical variable that equals 0 for all matched firms, 1 for target initiated deal firms and 2 for bidder initiated deal firms. The data covers 487 target initiated deals, 611 bidder initiated deals and 1098 matching firms. We report Hubert/White robust standard errors in brackets. All variables are defined in Appendix B and are winsorized at the 1st and 99th percentiles, except for all dummy variables. Both year and industry dummies are included in the regressions but are not reported. ^{a}, ^{b} and ^{c} indicate significance at the one-, five- and ten-percent levels.

	Target initiated		Bidder initiated		Coefficient
	coeff	s.e.	coeff	s.e.	difference
Constant	-0.974	1.336	1.611	1.086	-2.585^b
Insider ownership	-0.055	0.767	-1.755^b	0.859	1.700^b
Inst. ownership	1.599^a	0.469	2.286^a	0.442	-0.687^c
Inst. ownership change	0.927	1.574	0.772	1.534	0.155
Board size	0.409^a	0.042	0.394^a	0.042	0.014
Board independence	-3.701^a	0.352	-3.691^a	0.312	-0.010
CEO / chair duality	-0.346^c	0.201	-0.055	0.178	-0.292^c
CEO retirement	1.021^a	0.274	0.703^a	0.263	0.318
Prod. market fluidity	0.023	0.035	0.016	0.031	0.007
Industry concentration	-0.835^c	0.482	-1.073^b	0.460	0.238
Industry similarity	0.000	0.000	0.000	0.000	0.000
M&A liquidity	0.099	0.120	0.087	0.107	0.013
Acquirer	1.593^a	0.538	1.491^a	0.526	0.102
Asset sale	1.001^a	0.248	0.921^a	0.225	0.079
Past abnormal return	-0.181	0.188	0.010	0.174	-0.191
R&D ratio	-2.030^c	1.101	-4.253^a	1.042	2.224^b
Leverage	0.533	0.625	-0.788	0.643	1.321^b
SA index	-0.287	0.513	0.289	0.451	-0.576
Low Altman's Z-score	-0.532	0.337	-0.336	0.311	-0.196
High Altman's Z-score	-0.559^c	0.293	-0.379	0.267	-0.180
Debt issue	0.359	0.262	0.448^c	0.237	-0.089
Equity issue	1.096^a	0.215	0.879^a	0.198	0.217
Firm age	-0.060^a	0.016	-0.050^a	0.014	-0.010
Total assets	-0.498^a	0.146	-0.316^b	0.124	-0.182
# observations	1269				
Pseudo R^2	28.2%				
χ^2	972.71^a				