Thèse délivrée par

L'Université de Lille

N° attribué par la bibliothèque

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THÈSE

Pour obtenir le grade de Docteur en Management

Présentée et soutenue publiquement par

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Le 3 mai 2022

Strategic and Financial Competition in Corporate Mergers and Acquisitions

JURY

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DECLARATIONS

I declare that all the material contained in this thesis has not been submitted for a degree to any other university. The university does not intend to approve or disapprove of the opinion expressed in this thesis. Those opinions should be considered as specific to their authors.

ACKNOWLEDGEMENT

Finishing the thesis is always a thrilling moment for a Ph.D. student. When I started my Ph.D., I was keen to complete my doctorate degree in the soonest time. However, I have enjoyed this progress so much that I regret writing the last pages. This four-year journey is one of the most beautiful periods of my life because this gives me the chance to win over myself, surpass my limitation, and meet great people who enrich my life.

First and foremost, the person that I owe a great debt of gratitude to is Professor Sébastien Dereeper, who has inspired my interest in research work, encouraged me in many difficult times, and guided me to be an independent researcher. Although we have to work online most of the time because of the pandemic, he has always been available to give me helpful advices and instructions. Without his constant support, I never have ever could finish this thesis.

Also, I always bear in mind the great help from Professor Kim Joongi, Professor Serge Dauchy, Professor Frederic Lobez, Professor Tran Thi Tuan Anh, Professor Bui Thi Lan Huong, and Professor Joceline Donze during the starting time of my Ph.D. at the University of Lille and the Centre Franco-Vietnamien de formation à la Gestion.

To Professor Wouter De Maeseneire and Professor Mathieu Luypaert, it is an honor and a privilege that I have the opportunity to work with them. Throughout the project, they have always given me great advice and kind cooperation.

I would like to express my gratitude to Professor Jean-Gabriel Cousin and Professor Helene Bollaert who spent their precious time for giving helpful suggestions and comments on my papers. My thesis is also benefit from several comments from all participants at the LUMEN seminars, the 37th International Conference of the French Finance Association, and the 10th International Conference of the Financial Engineering and Banking Society.

A huge thank-you to Mrs. Sophie Ranchy and Mrs. Francoise Vanhulle for their enthusiasm when providing me the tremendous assistance in all administration issues. I believe that their kindness shall never be faded from the memory of me and all Ph.D. students in Lille Doctoral School.

Especially, I would like to express my gratefulness for my family. Thank you, my parent, for their endless love and for the strength they gave me to start my Ph.D. Thank you my better haft – Chung Tran, as he has been beside me as my best friend and has always been ready for all discussions on my research. And thank you, my kids, as they give me unconditional love despite of my busy schedule during my study.

Finally, I would like to send my thankfulness to my friends, Nguyen Thi Hong Nhung, Nguyen Thi Tuyet Nhung, Vu Thi Le Giang, Vo Thi Cam Ly, Dang Hong Tram, Luong Duy Quang, Trinh Quoc Dat, Sipei Zhang, Germain Durr, Amal Hsissou as the friendship with them are all beautiful flowers along the road of my Ph.D. study.

SUMMARY OF THE THESIS

RÉSUMÉ

Depuis le début du vingtième siècle, nous observons un accroissement de la participation des fonds de capital-investissement sur le marché des fusions-acquisitions. Ces entreprises financières sont devenues de plus en plus développées dans leurs structures organisationnelles et leurs activités, contribuant ainsi à l'accroissement et à l'efficacité du marché de la reprise d'entreprise. En réalisant plus de vingt-cinq pour cent du capital total transféré lors des acquisitions d'entreprises, les sociétés de capital-investissement ont remis en question le rôle prépondérant des acheteurs stratégiques dans le marché du contrôle des entreprises. A ce titre, la distinction entre acheteur stratégique et acheteur financier retient de plus en plus l'attention des chercheurs en Finance.

Nous assistons à un renforcement de la littérature existante sur l'influence des différents types d'enchérisseurs lors des fusions et acquisitions d'entreprises. Cette thèse propose trois études empiriques portant sur la concurrence entre les enchérisseurs stratégiques et financiers. Sur la base d'un ensemble unique de données collectées à la main qui comprend 1031 transactions conclues entre 2005 et 2016 sur le marché américain, cette thèse utilise une source d'informations abondante provenant du processus d'appel d'offres privé pour répondre à plusieurs questions inexplorées. Notre premier article démontre la présence d'une segmentation du marché des fusions-acquisitions selon différents groupes d'entreprises dont les caractéristiques attirent différemment les enchérisseurs stratégiques et financiers. Les firmes stratégiques préfèrent les cibles avec une forte possibilité de gain de synergie. En revanche, les acheteurs financiers sont intéressés par des cibles avec un fort potentiel d'amélioration de la valeur autonome et des opportunités plus élevées de rachat par endettement. La deuxième étude

vise à expliquer le résultat controversé de la littérature existante sur la relation entre la concurrence et l'avantage du vendeur. Nous apportons une nouvelle mesure du niveau de concurrence en combinant le nombre d'enchérisseurs qui participent à l'offre et le nombre d'offres effectuées par chaque enchérisseur. Nos résultats montrent que la concurrence profite aux revenus du vendeur et que cette relation positive est renforcée par la participation d'enchérisseurs financiers. Dans le dernier article, nous étudions comment les stratégies d'enchères peuvent influencer le choix de la procédure de vente par les entreprises cibles. Notre résultat indique que la révision du prix d'offre est associée à la possibilité pour un enchérisseur initial de conclure la transaction par la voie plus directe de la négociation. En plus, la vitesse de révision du prix d'offre améliore cette relation. Nous montrons que les enchérisseurs stratégiques surpassent les enchérisseurs financiers pour conclure l'opération par une négociation, car ils révisent généralement leurs prix offerts à un rythme plus élevé et dans un délai plus court.

ABSTRACT

The beginning of the twenty-century witnessed a new wave of private equities back into the takeover market. Advanced from the original business, financial payers have become more sophisticated in their organizational structures and activities, contributing to the corporate takeover market's development and efficiency. Accomplished for more than twenty-five percent of total capital transferred through the acquisition channel, the private equity buyer has significantly challenged the dominating role of the strategic buyer in this playground. On that account, the distinction between strategic and financial bidders has received considerable attention from academic in finance.

Supported by a growing body of research on the influence of different bidder types on several aspects of corporate mergers and acquisitions, this thesis provides three empirical studies focusing on the competition between strategic and financial bidders. Using a unique hand-collected data set including 1,031 completed deals spread out between 2005 and 2016 in the U.S takeover market, this thesis uncovered an abundant resource of information from the private bidding process to answer several questions that remained unexplored by the existing literature. Our first paper provides progressive evidence to confirm the presence of market segmentation targeting different group of firms by strategic and financial bidders. Strategic bidders prefer targets with high possibility of synergy gain. In contrast, financial bidders are interested in targets with more prevailed stand-alone value improving potential and higher opportunities to explore leveraged buyouts. The second study aims to explain the controversial result reported by existing literature about the relationship between competition and seller's benefit. We provide a new measurement for competition level by combining both the number of bidders participating and the number of bids made by each bidder. Our results prove that

competition benefits the seller's revenue, and this positive relationship is further escalated with the participation of financial bidders. In the last article, we investigate how bidding strategies can influence sellers' selection of the sale-procedure. Our result indicates that the bid revision is associated with the possibility of the initiating bidder to complete a deal by negotiation. Besides, the revision speed is found to enhance this relationship. We also evidence that the strategic bidders surpass financial bidders in completing the deal by negotiation because they typically revise their bids at a higher rate and a shorter time.

GENERAL INTRODUCTION

*"...There was a hushed silence as the Priest shouted, "should anyone have an objection to the marriage of ThinkGeek and Hot Topic**,** speak now or forever hold their peace." Suddenly, a side-door slammed open as GameStop rushed in, demanding that the ceremony stopped, because it alone was ThinkGeek's one true love. Hot Topic blanched as ThinkGeek struggled to make eye contact before nodding in agreement, apologizing, and bolting from the altar. As ThinkGeek and GameStop ran down the aisle, arm in arm, the online retailer knew that it had done the right thing because, after all, GameStop had loaded more money…".* (Daniel Whooper, 2015)

On the morning of May 26th, 2015, the merger agreement between Hot Topic and ThinkGeek was public just to be canceled a week later by a higher offer from GameStop, a global multichannel retailer focusing on video games and consumer electronics. The final deal value committed by GameStop is $140 million. This amount is $18 million higher than what was offered by Hot Topic, whose parent is Sycamore[1], a private equity firm. To be compensated for the termination of the merger, Hot Topic receives a fee of around $3.7 million.

The fight between GameStop and Hot Topic is an exciting example about the competition between strategic and financial buyers in the U.S. corporate takeover market. As they are very different in the management structures and motivations, the distinction in their interest and bidding strategies are worth our concerns for two reasons: First, the U.S. corporate takeover market is one of the largest financial markets with over a trillion dollars in annual volume over the past two decades. Traditionally, the strategic buyer is the dominant player. However, since

[1] In 2013, Sycamore Partners acquired 100% shares of Hot Topic.

2005, financial buyers' activities have become much more significant. On average, the deals completed by financial buyers account for around 25% of total deal volume in the U.S. takeover market (Figure 1). Therefore, a comparison between financial and strategic bidders gives the market participants a clearer view of their business opportunities. Second, policymakers should pay attention to the type of the ultimate buyer because being acquired by strategic or financial buyers shall totally reform the target's ownership structure and consequently alter its corporate governance; thus, affecting the core productivity of our economy.

Despite a large body of literature on M&A, we recognize that the empirical evidence for the competition among bidders, especially between strategic and financial bidders, is primarily based on public information, which is just "the tip of the iceberg" (Boone and Mulherin, 2007). The background sections[2] from the U.S Securities and Exchange Commission filings named DEFM14C, PREM14A, SC-14D-9, S4, and SC-TO-T disclosed that the bidding process typically happened long before the public announcement within a "private stage." Naturally, in the above example, GameStop was the bidder initiating the negotiation with ThinkGeek on November 24^{th,} 2014, six months before the publication. After getting an indication of interest from GameStop, ThinkGeek solicited a private auction. The managements signed confidentiality contracts with six strategic and financial buyers, including GameStop and Hot Topic. Later, three remainders offered bids in which a strategic bidder submitted one proposal, Hot Topic offered three bids, and Game Stop offered four bids. This bidding information that

[2] The sections named as "Background of the Mergers", "Background of the Transactions" or "Background of the Offers".

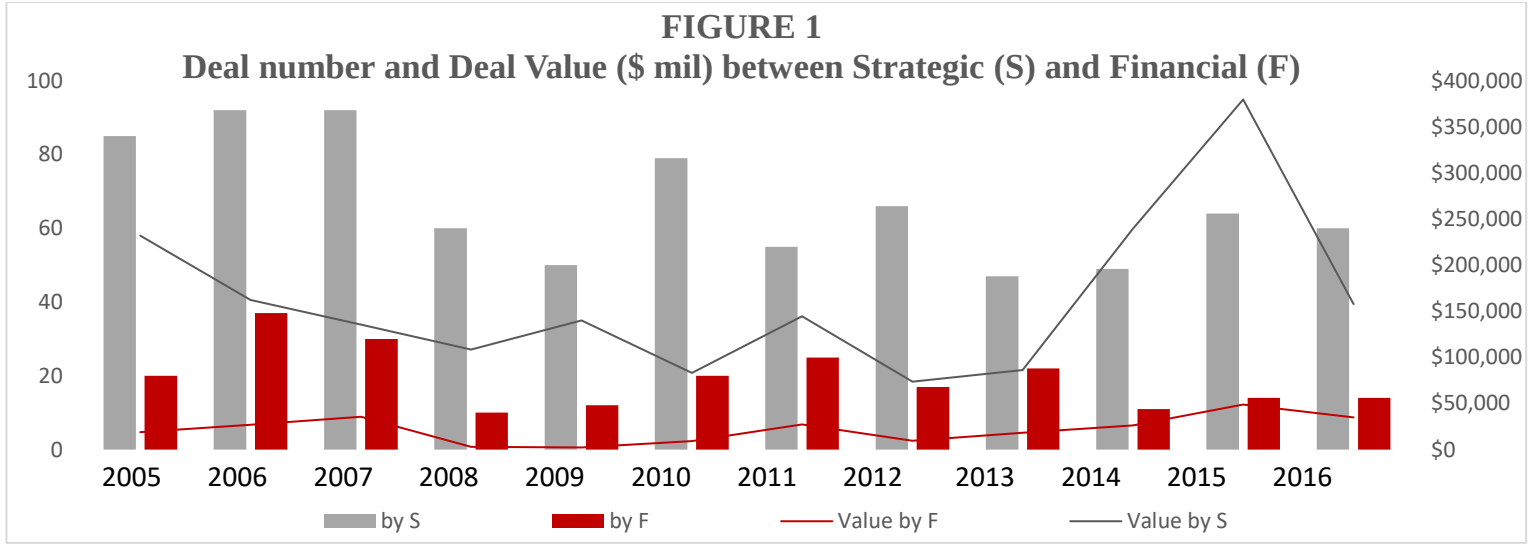
does not come into the public's eyes provides substantial materials for us to investigate the character of specific bidder types and the competition behaviors in the negotiation process.

This thesis presents three empirical studies: In the first essay, we examine the target antecedents that attract strategic and financial bidders throughout the bidding process, from initiation to signing confidentiality contracts and offering bids. Our result confirms that financial and strategic bidders are appealed to by different targets so that the competition depends on target characters. Our second essay focuses on how the competition impacts the seller revenue. This article also examines the role of the financial bidder in stimulating the relationship between competition and premium. The last paper analyzes how the bidding strategy can influence the selling mechanism. We also learn that the two types of bidders apply different techniques. Strategic bidders usually are more aggressive with higher bidding revision and quicklier in completing the deal.

Our works contribute to the current literature on mergers and acquisitions. First, our unique hand-collected data with 1031 cases of completed deals fills the voice of empirical evidence for the takeover bidding process in the private stage, such as the identity of initiation party and bidders, number of bids by each bidder, the value of the bids, and the time when each type of bidder offers their proposals. Second, our results further expand the understanding of the financial and strategic bidders, mainly focusing on their interests and bidding behaviors. Third, we suggest a new measurement of competition in which we add the factor of valuation by the number of bids observed during the bidding process. Finally, we prove that bidding strategies can impact the sale mechanism.

I propose two sections combining stylized facts and theoretical background in this introduction. At first, I demonstrate an overall picture of the mergers and acquisitions market and the growth of financial buyers as a new player in the takeover market. I extend from this part a summary of the operation and structure of financial buyers to equip an understanding of their behaviors. Then I provide detailed information of private and public bidding processes to introduce the playground and possible situations that both buyers and sellers may face when making decisions with constraints of regulations. Second, I review several theories which are the backbone of the whole thesis. Starting from the bidder angle, I summary takeover motives and possible bidding strategies they may apply. Afterward, I turn to the seller's viewpoint and review the theoretical papers on selling mechanisms.

FIGURE 1
Deal number and Deal Value ($ mil) between Strategic (S) and Financial (F)



Source: SDC Platinum

I. STYLIZE FACTS

1. The U.S. Mergers and Acquisitions Market

The year 2017 witnesses the U.S. M&A market growth back in the saddle. With $1.2 trillion of total deal values, this market almost fully recovered from the financial crisis and took the position of the largest M&A market again worldwide.

The M&A market is important because of its volume and influence. Several studies prove that mergers and acquisitions are an efficient channel for relocated assets within the economy, helping the industry restructure and grow (Song and Walkling 2000; Maksimovic and Phillips 2001; Andrade and Stafford 2004). Under rational management's decisions, merges can create value for firms by generating synergy from tax savings, market powers, or efficiency improvements. Bradley, Desai, and Kim (1988) confirm that the gain of synergy is on average 7.4% over a sample of completed tender offers between 1963 and 1984. Later, using a selection of 264 large mergers during 1980-2004, Devos et al. (2009) continue to support the available synergy gain. This paper estimates that the growth is 10.03% of the firms' post-mergers values, almost contributed by the improving resource allocation.

With the growth of the takeover market, private equity buyers specializing in leveraged buyouts have transformed themselves from alternatives to leading players in the M&A industry. Private equity firms also account for 25% of M&A volume since 2007 and are still improving, especially for mega deals. In general, the importance of annual investment by buyout funds increases gradually except for the financial crisis, up to more than $110 billion in 2019 (Mauboussin and Callahan 2020). The size of each buyout acquisition is also expanded, reaching $2.4 billion on average in 2019. As a result, the total assets managed by buyout funds increased dramatically from less than $100 billion in 1990 to more than $1,400 billion in 2019 (Mauboussin and Callahan 2020).

This trend rings a bell for asset managers, investors, and policymakers. Several studies have addressed the role of leverage buyout in our economy. Some studies have proved private equity structure's advances over that of the traditional corporation in dealing with agency conflict and the restructure of underperforming firms, contributing to wealth creation (Jensen, 1986; Masulis and Thomas, 2009; Stringham and Vogel, 2018). Other studies, however, caution that private equity firms are taking the opportunity of market mispricing (Axelson et al., 2013; Martos-Vila, Rhodes-Kropf, and Harford, 2019). While these controversial issues have not been settled, private equity firms have rapidly changed their structures and behaviors. Their activities have become more sophisticated due to growth in institutional investors, financial innovation, and sharply lower technology costs. They get better commitment from an institutional investor with a longer duration since they are considered necessary for diversifying investment portfolios against the exposure to global growth risk. They also try to apply technology to exploit the most value of the acquiring firm. According to a report of Morgan Stanley, in 2018, 25 most prominent private equity firms in the U.S. have expanded their functional teams by hiring more industry experts, trying to seize greater efficiencies from the operations of their targets.

Thus, the comparison between strategic and financial buyers has become more popular in the literature around the 2000s. Researchers firstly notice the premium paid by strategic and financial bidders and conclude that strategic buyers, on average, pay a higher premium than financial buyers (Bargeron et al., 2008; Fidrmuc, 2013). Another study confirms that the selling mechanisms are affected by the bias of targets toward the bidder type they prefer, so "one size does not fit all" (Fidrmuc et al., 2012). The strategy of financial and strategic bidders is also analyzed in the paper of Dittmar, Li, and Nain (2012), which confirms that financial bidders are more sophisticated in choosing targets, so strategic bidders are competing against financial bidders gain more than competing among their types. More recent results reevaluate

the competitive ability of financial bidders versus strategic bidders by looking at their valuation. Difference from the previous conclusion about premium, new results show that financial and strategic bidders value targets differently depending on their characteristics. Thus financial bidders still can pay higher for the targets they see fit (Gorbenko, Alexander S. 2014). The current result also confirms that the participation of different bidder types influent to the valuation of bidders (Gorbenko 2019).

2. Financial buyers

While venture capital and private equity firms are technically similar, in this thesis, financial buyers stand for private equity firms because we focus on mergers and acquisitions of control for public corporates with a minimum investment of $50 million per deal[3]. To start our analysis on the difference between financial and strategic buyers, we need to introduce financial buyer's structures and operations.

2.1 Organization structures of private equity firms

The activities of private equity firms materialized firstly with the leveraged buyout activities in the early 1980s. Although witnessing a hard time in the 1980s, the private equity industry has grown remarkably since the middle 1990s.

In terms of organization structure, private equity firms can be established in partnerships or limited liability companies. The capital for their investment activities is raised through private equity funds comprised of general partners (G.P.s) and limited partners (L.P.s). Traditionally, not everyone can be a limited partner of the private equity fund. The minimum amount of investment in a private equity fund in the U.S is around $250,000. So, limited

[3] See Wright and Robbie (1998) who distinguish private equity fund and venture capital fund. They define venture capital as investment fund focusing on non-public young firms.

partners are mainly institutional investors who are cash-rich such as pension funds, hedge funds, insurance companies, university endowments, or high-net-work individuals. Currently, some private equity funds have started to allow a much lower minimum investment of around $10,000, but this is still not popular in this market. In general, limited partners contribute more than 95% capital of the fund. On the other sides, general partners consist of skillful and knowledgeable people in financial fields. They serve as the private equity firm, and each firm can manage several private equity funds. General partners still invest their money in the fund, but only at around 1% to 5%.

When the fund is established, general partners' primary roles are searching for opportunities and managing the investments afterward. During the operational process, general partners must ensure covenant agreements initially set up among fund partners are followed, such as the type of securities the fund can invest in, the restricted amount of each investment in a portfolio, or the ratio of debt at the fund level. The general partners receive a proportion of the funds as managing fees, and a balance of investment earnings called "carried interest" or "carry." While the managing fee applied to operate the private equity firms is around 1% to 2% annually of the capital committed, the "carry" distributed to general partners could be up to 20% of the fund earnings (Metrick and Yasuda, 2007).

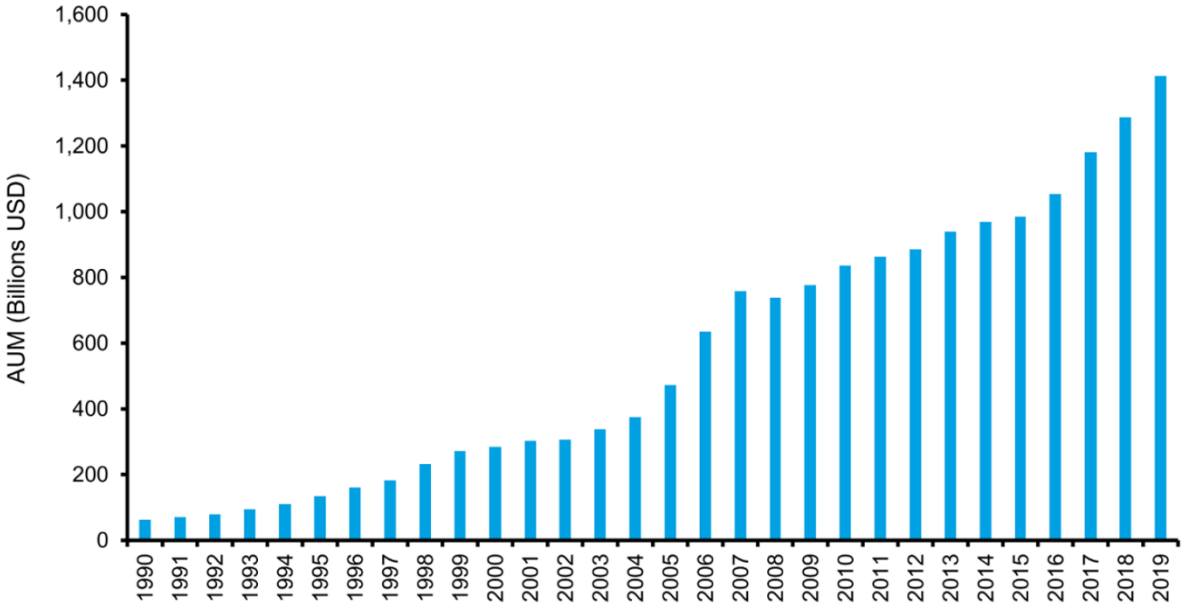
2.2 Operating activities of private equity firms

In recent decades, institutional investors have moved away from a classical mix of stocks and bonds toward a greater weight of private equity funds to search for higher returns. For example, Yale University's endowment portfolio, the most successful endowment among universities in the U.S. with a total value of $30.3 billion as of June 2019, had increased its investment in private equity funds from zero percent in 1985 to 37% in 2020. Yale's endowment has achieved 13.7% returns annually, thanks to the investment strategy to private

equity funds (Mauboussin and Callahan, 2020). Figure 2 shows the total assets managed by leveraged buyout fund increase from 1990 to 2019.

Each fundraised is performed from seven to ten years in terms of operating activities. Typically, the life circle of a private equity fund can be split into three periods, including the fundraising stage, the investment stage, and the harvest stage. The first phase takes around two years for the fund manager to call on capital from limited partners. After investors commit investment during the fundraising phase, general partners simultaneously deploy capital into investment and manage it during the second phase for about five years. One of the most typical types of investment is acquiring control through leveraged buyouts (Kaplan and Stro, 2008). The goal is to boost the target's operating efficiency so that private equity firms can improve the firm's value on markets. The private equity firms borrow a significant portion of debt from LBO sponsors to finance the acquisition, generally from 60% to 90% of the total investment. The loan backed up with the target's assets is proportionally provided by commercial or investment banks, and more recently, by institutional investors. The subordinate high yield bonds are also used to borrow money for this investment (Demiroglu and James, 2007). Finally, private equity capital invested in the deal is just less than 40% of the total deal value. During the holding period of around five years, private equity firms use the cash-generating from the target to service debts and take all access return. The third is the exiting phase, when the private equity firm divests its investment to profit. Standard exiting options of private equity firms are selling their investments to non-financial buyers, leveraged secondary buyouts, or through initial public offerings.

FIGURE 2: Assets under management for U.S. buyout industry, 1990-2019



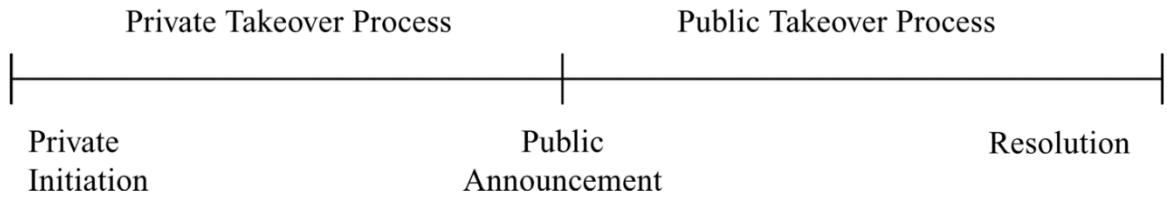
Source: PitchBook; NVCA; Counterpoint Global Estimates; and Mauboussin and Callahan (2020)

3. Takeover contest

Knowing the organization and operation of financial bidders, we now focus on the takeover process to see how the competition between strategic and financial bidders can happen. The bidding process typically starts with two phases: private and public.

While the public auction process is quite popular, the private process has not been fully explored until Boone and Mulherin (2007). The regulation requirement for this process is demonstrated firstly by Our study following the classification of Boone and Mulherin (2007) in defining the public and private processes. Their works are based on a sample including 400 deals in which 202 deals are classified as auctions. The existing Edgar files provide information associated with the competition among bidders.

Figure 3: Timeline of the takeover process



Source: "How are firms sold?" Boone and Mulherin, 2007. The Journal of Finance, Volume LXII, Issue 2, Pages 847-875.

The takeover process can be happened through auctions with many bidders or with only one bidder. In that case, the process is classified as negotiation exclusively by Audra L. Boone (2007). However, according to Eckbo (2008), the bidding process always happens in auctions because the target can cancel the negotiation and create auctions. Bidders are always under the pressure of possible competitors. This argument is supported by the contestable theory of Baumol (1982) and conforms to the 1986 William Act, which demands seller's managers to follow fiduciary duty. Thus, although there is an exclusive negotiation between buyer and sellers, we understand that the sellers are under the potential competition burden (Aktas et al., 2010). **Figure 4** demonstrates the process of a takeover by Boone and Mulherin (2009).

Figure 4: The Private and Public Takeover Process

Step	Description
A. Private Takeover Process	
1. Deal Initiation	Target board considers alternatives or Target CEO and bidder CEO meet or Unsolicited bidder makes inquiries
2. Select Advisors	Target engages investment bank and legal counsel
3. Contact bidders	Target chooses number of potential bidders to contact Potential bidders also retain financial and legal advisors
4. Confidentiality/ Standstill	Bidders sign agreements to receive non-public information Also sign standstill agreement not to make unsolicited offer Initial due diligence
5. Indications of Interest	Subset of potential bidders make non-binding price offers Further due diligence; data rooms; on-site
6. Formal Private Bids	Subset of potential bidders make binding offers Request for best and final offers
7. Takeover Agreement	High bidder signs takeover agreement Includes payment method and deal protection clauses
B. Public Takeover Process	
8. Takeover Announcement	Agreement with high bidder announced
9. Public Bidding	Possible offers from other bidders
10. Approval of Deal	Regulatory and shareholder approval
11. Deal Completion	Acquisition is completed

Source: "Is There One Best Way To Sell A Company? Auctions Versus Negotiations and Controlled Sales". Boone and Mulherin, 2009. Journal of Applied Corporate Finance. Volume 21, issue 3, pages 28-37.

3.1 Private process

The private bidding process can be started by bidders or by targets. The initiation action is a necessary behavior examined in several studies. The most current study related to initiation party is from Masulis and Simsir (2018), who carefully classified the difference between target

and bidder initiated deals. They report 35.4% deals initiated by target among 1,268 deals completed between 1997 and 2012.

Targets initiated deal starts from the board of directors' approval about soliciting the firms. Then target's management will work with their investment banks or financial advisors to contact potential bidders. The deal is initiated by bidders when the bidder CEO or management member officially gets the target and expresses their interest in acquiring 100% of target shares or a potential business combination transaction. The solicitation is sometimes public to access as many bidders as possible. However, most of the time, the investment bank will suggest a list of bidders to be contacted. In some rare cases, the target reaches only one bidder to discuss the sales, and the process is considered negotiations in the sense of Boone and Mulherin (2007).

Bidder initiated deals start with a target who does not plan to sell its firm. The bidder comes to contact its prey with a "strategic combination." If the target agrees to enter the sales of strategic control, it can continue the discussion, generally with a "counter-offer" requesting higher prices. The targets can start the auction process by contacting other bidders if they are more confident that their values can be increased with more competition (Eric De Bodt, Cousin, and Demidova, 2011). Literature sometimes mentions the new inviting bidders as "White Knights" friendly competitors (Jensen and Ruback 1983). The sellers also can choose to say no. However, if the bidder is aggressive, he can make a tender offer to the public, and the process then transfers to the public phase.

As per Eckbo (2008), the initial bid serves as the starting point of the competition process, whether the bidding process happens with only one bidder or more than one bidder. To this end, the first bid attracts potential bidders or provokes a "counter-offer" requesting for revised proposal by obligatory target managers. Besides, if a friendly negotiation happens

between the seller and only one bidder, the seller obligates to a fiduciary duty to consider the higher offer from other bidders. This duty requires the target board to evaluate competing bids until target shareholders have voted to accept the agreement (the fiduciary out). Moreover, even the bidder can obtain an "exclusivity agreement" with the target. The target also needs to require the bidder to agree to a "go-shop" condition so that the target's manager can be in line with their duty (Gorbenko and Malenko 2018). Thus, an initiated bidder is always under the pressure of potential competition (Jeremy Bulow and Paul Klemperer 1996; Aktas et al. 2010). To reduce the risk, a "pre-empty" bid can be a possible strategy for the initiated bidder to deter potential competitors.

After the contacting stage, the seller and the bidder will sign a "confidentiality contract." At some point around this phase, a staged board can be established so that the decision related to bidder selection can be more independent from the benefit of any incumbent managers (Jensen, 1988). The confidentiality contract is an agreement that allows a bidder to access the private information of sellers through the "due diligence" process. It also requests that neither party disclose any other party's confidential information provided to it under the mutual non-disclosure agreement. At the same time, the contract typically includes the condition of a "stand-still agreement." This requires each party not to hire any employee of the other party or not to purchase a specific amount of common stocks of other parties for a period (usually one year) after the end of any discussion. Some bidders do not agree with this condition, so the target does not sign the contract. Afterward, bidders will provide their informal bids along with the due diligence process as they learn more about the value of the target. When the cycle ends, the seller and bidders will discuss the "merger agreement" with conditions on payment terms, termination fees, and the time allowed for the deal to be completed. The offer price provided in the merger agreement is the value close to the final price, and sometimes it is the official offers by the bidders.

Until the seller's financial advisors confirm in writing that, as of such date, the consideration proposed to be paid to the seller's shareholders is fair from the financial point of view, the board of directors can approve the final merger agreement and recommend other shareholders to vote for the merger. The publication can happen one day after the board of directors' approval.

However, we need to notice that the bidder can make public a tender offer without the merger agreement or negotiation with the target's managers. Then, the takeover is considered "hostile" (Morck and Shleifer, 1989).

3.2 Public process

For a friendly takeover, the first public offer is usually a definitive merger agreement executed by both parties (Eckbo, 2008). After the first offer, other bidders will be alerted about the takeover to challenge the first bidder with a higher bid. As noted above, target shareholders have to evaluate and accept any better offers for shareholders' wealth, considering all conditions related to the offers (payment method, termination fee, and completion time)[4]. However, the public process also requires limited time for bidders to announce their bids. It creates some disadvantages for the new bidders if they have not attended the due diligence process during the private bidding phase. The new bidders do not have sufficient times to investigate the value of targets as much as the first bidders, and thus it is riskier for them to offer higher prices (Gentry and Stroup 2019). If the merger agreement contains a "go-shop" condition, sellers have more time, generally from 30 to 90 days, to seek better offers (Wang, 2017).

[4] In some case, although the new bidder gives higher offer but the target's managers still reject because the payment methods and other conditions are not as preferable as the first offer.

After the board has approved the final offer of directors, the buyer and the seller can choose to follow the tender offer process or merger process (Offenberg and Pirinsky 2015). With the tender offer process, the bidders seek to achieve significant ownership by sending "Offer of Purchase" (or "Schedule TO") to each shareholder. Target will reply by giving its recommendation to shareholders through "Schedule 14D-9" within ten days after the "Schedule TO." Since this is not a hostile takeover, the seller's advice shall go for the acquisition. The board then approves the tender offer, and the purchase is completed. In this way, the investment does not need to wait for shareholder votes to complete. Both parties can also follow the merger process, which takes longer. This process usually takes six months after the final offer price is publicly announced. The two parties prepare the mergers prospectus and wait for the shareholders to approve to finish the takeover.

A hostile takeover can happen if the sellers do not want to sell, and the buyer can acquire the target's shares through a tender offer. To react against this imposition, sellers can publicly recommend their shareholders not to tender their shares. Sellers also can prepare a takeover impediment such as a "poison pill" to say no to unwanted bidders (Liu and Mulherin, 2018).

II. THEORETICAL BACKGROUND

1. Motivation for merger and acquisitions

It is also necessary to look back to the theoretical works on mergers motivations to understand the different behaviors between strategic and financial bidders. The cause of mergers and acquisitions for an ordinary corporation can be classified into two categories: synergetic theory (neoclassic theory) and non-synergetic theory (Mulherin and Boone 2000).

1.1 The synergetic theories

The synergetic or neoclassic theory explains the merger motivation by synergistic reasons. Assuming that the market is inefficient and the acquirers are rational, the synergy gains mean the value of the combining entity is higher than their separate value before the mergers. Thus, that is the primary source of motivation for a takeover to happen. This theory emerges from Coarse (1937), who posits that the firm size determinants balance the cost of using the price mechanism and organizing another firm. Firms expand when there is no efficient transaction because the cost is higher than the benefit. In the appendix, Coase proposes an argument that the acquisition can be rooted in improving the firm's technology, which increases the efficiency of the firm's size. Subsequently, another theory suggests that vertical integration represents a reaction to changes in the assets to a more sophisticated level and internal development costs become more expensive (Klein and Robert, 1978). More specifically, Bradley and Kim (1988) theorize that mergers are motivated by the opportunity of manipulating for profit under market condition changes. According to neoclassic theory, the merger should happen if the combining can create value through financial or operating synergy, evidenced by lower capital costs, risk-reducing, and economics of scales, knowledge transferring, and utilizing the capacity of fixed assets.

Another more recent trend of neoclassic theory tends to explain merger motives by Q-Theory of Mergers (Jovanovic and Rousseau 2002) and view of growth (Levine 2017). Q-Theory suggests that high-Q firms buy low-Q firms to allow capital to move to a better project or investment. While Q-Theory suggests the merger is encouraged by moving the tangible assets from the low productivity to the more efficient firms, growth theory poses that the takeovers are inspired by allowing the flow of intangible assets such as growth opportunity to the firms exploits this potential. A company may seek expansion within the industry not to

forgive an opportunity in a short time window. Assuming that the chance requests a more extensive resource of productivity that internal operation cannot satisfy, then acquisition can quickly adapt to the market requirement. Another reason for the purchase is to maintain growth in a slow-growth industry. Managers are usually under pressure to perform successful growth. However, the business circle of a mature company does not allow him to keep up with the pace he obtained previous stage (Gauhan, 2002).

1.2 Non-synergetic theories

In contrast to neoclassic theory, the non-synergetic approach does not support those mergers create value. Instead, this category of views stresses agency conflict, empire-building, and managerial hubris. These theories assume that the market is efficient, but the managers are irrational.

Corporate managers are under many pressures to perform their roles in the interest of shareholders. However, these discipline forces are not always followed. Jensen and Meckling (1976) explain that agency conflict always exists under the current corporate governance. Managers will choose a set of inefficient decisions that create less value to the firms they manage because their choices are for others rather than their own money. Following this assumption, Jensen (1986) suggests that agency conflict can induce mergers without the possibility of synergy. His model predicts that buyers perform exceptionally well in the post-merger period, so they have plenty of cash. Then the need to invest those free cash flows is the reason why managers acquire another firm. In an environment where the opportunity for a positive profit return project is rare, managers decide to invest in a negative profit project such as a merger without synergy rather than payout dividends. This activity goes against shareholders' benefit and reduces the value of the combining entity.

Roll (1986) builds the hubris theory that says a merger happens because acquirers made mistakes in evaluating synergy gains. The acquisition reasonably occurred in the case that acquirers were overconfident about the result of the mergers. As a result, they perform the purchase and overpay for the target's shares. The standard for his assumption is that we only observe the more optimistic valuation in the takeover market because the pessimistic one, which is lower than the target's market prices, never enters any sample since it has not happened. The author argues that as a manager does not usually have a chance to make many acquisitions during his career, he presumes that his valuation for the target is correct. The market does not reflect the whole synergy gain created from the merger. This theory, however, is neutral regarding the value creation argument. Since it causes a reduction from the acquirer value, it benefits the target's shareholders. Thus, the value of the combination can be neutralized.

Shleifer and Visny (1989) assert that mergers can result from managers' decisions to extend their power on the cost of shareholders. This theory also is mentioned by the manager entrenchment theory. By acquiring another company, managers make it more difficult for shareholders to replace him or reduce their benefits. More than that, since the firm has become prominent enough, it is more difficult to find new ones who know better about the system than current managers.

2. The optimal auction theory and its applications on corporate takeovers

Our second essay explores how competition can maximize shareholders' wealth. Generally, the sale of a company is considered an auction because the bidding contest is set up so that sellers can call for auctions at any time. This market creates a monopoly position for sellers who are assumed to have all bargaining power. However, to complete the deal,

there is a need to have both the seller's and the buyer's agreement to establish the final price. Thus, sellers need to maximize profit by an optimal selling process.

The founding paper of the field is that of Vickrey (1961), which considers seller's choices between sealed-bid first-price and sealed bid-second price auctions. Since the seller has only one object to sell and given the symmetric, risk-neutral, and independent value bidders, Vickrey (1961) confirms that both types of auctions bring similar expected revenue for sellers. Following the work streams on optimal auctions have been the significant paper of Myerson (1981). He was the first to use mechanism design to address the problem of how to maximize sellers' revenues when bidders' valuation for the object is unknown. His paper extends the work of Vickrey (1961) by reviewing all possible ways to sell the assets. Considering the complexity of the auction model due to various auction settings methods such as Dutch auction, English auction, first price sealed bid auction, second prices sealed bid auction, an all-pay auction, Myerson (1981) simplifies the solution for the optimal question by developing Revelation Principle. Two decades later, Jeremy Bulow and John Roberts (1989) further developed the theory of optimal auctions by identifying the analogy of auction theory and discriminating monopoly theory. They provide the solution for the optimal auctions by applying the logic of marginal revenue and marginal cost. As a result, they conclude that any mechanism that awards the assets to the highest marginal revenue bidders will draw the same expected returns.

2.1 The optimal selling mechanisms

Several theoretical papers have applied the mechanism of the optimal auction theory to economic activities such as the offshore oil market, timber market, and especially corporate takeovers. Bulow and Klemperer (1996) refine our understanding of the optimal auction process in a takeover contest. They advocate that the seller should open for the highest number

of bidders possible and never be clocked up with negotiations. Given any valuations from bidders, a no reserve price English auction with N+1 bidders is constantly gaining higher expected revenue than an optimal negotiation with N bidders. In support of the above study, Bulow and Klemperer (2009) suggest targets do simultaneous auctions rather than consequence auctions. They argue that although consequence auctions allow them to access higher value bidders, one-time auctions stimulate higher competition, benefiting the seller's monopoly position.

In contrast to the suggestion of Bulow and Klemperer (2009), others paper seems to support sequence auctions as an optimal selling mechanism. Dasgupta and Tsui (2003) access the problem of bidder heterogeneous in a common value setup and conclude that the target may benefit from using a ‘‘matching auction’’, a premise of the sequential auction process. Povel and Singh (2006) are concerned about the bidder asymmetric in takeovers, which mitigates the competitive effect because bidders with less information will be more worried about the winner’s curse. Their model allows both private and common values. This paper suggests a sequential procedure as an optimal auction process in which targets prioritize exclusive rights to the more informed bidders before negotiating with other less informed bidders. They ensure that sellers allow the exclusive right to the better-informed bidder rather than generate competition from all possible bidders because it will encourage that bidder to reveal his highest willingness to pay.

Empirical studies for optimal bidding processes are rare in the past. Traditionally, the empirical studies for the competition are based on public data, and researchers use the number of public bidders in takeover auctions as a measure of competition; however, several papers report that the takeover market is not very competitive (Gregor Andrade and Mark Mitchell, 2001; Schwert, 2000; Moeller, 2004). Eckbo (2009) confirms no significant relationship between the target’s final premium and the multiple bidder contests. He also affirms that tender

offer deals receive a lower premium than mergers do, while hostile offer a higher premium than friendly or neutral takeovers. To avoid the lack of competition in public data, the optimal selling process is also discussed on the edge that managers use their power to negotiate with bidders rather than call for auctions (Moeller, Schlingemann, and Stulz 2005).

Boone and Mulherin (2007) are the first to look at the private bidding process to tackle the optimal selling mechanism. They find the haft of the contest in their 400 sample cases applying auction. One-third of those auctions are formal auctions with all rules are clearly stated. Their result shows more auctions happening than what proved under public eyes. However, the empirical evidence indicates that there is still no difference in seller's revenues between negotiations and auctions. Also, Fidrmuc, Roosenboom, Paap, and Teunissen (2012) work on the selling process organized as formal auctions, controlled sales, and private negotiation with one bidder. They conclude that the selling mechanism is optimal and does not influence the expected revenues. Those results seem to be conflict against the auction theory and support a stand for the idea of information cost.

2.2 The theory of information costs

While auction theory suggests that auctions efficiently allocate takeover assets, information cost theory explains why a limit on the number of bidders can sometimes be rational. It is well-known that both buyers and sellers have to bear information costs in a takeover process. For buyers, information costs are the prices they have to pay for acquiring information from targets, such as fee pay for financial advisors, investment banks, opportunity costs, and sometimes the entry fee (Povel and Singh, 2006). For sellers, information costs are the cost of disclosing their competitive information to non-owners (Hansen, 2001). In our paper, we use the concept of information costs in the view of sellers.

Several theories suggest that limiting information about the assets sold is not a good strategy (Akerlof, 1970; Milgrom and Roberts, 1982a). In these studies, when the seller is known to have superior information about the assets, the buyers will behave negatively. Therefore, to benefit from competition, the seller should disclose information[5]. Besides theoretical suggestions, takeover practices also force sellers to reveal confidential material through due diligence. Sellers hiding relevant data may be claimed as fraudulent activities.

However, giving out information may make the sellers vulnerable to competitors, causing costs in processing auctions. French and Mccormick (1984) firstly mention that the seller has to suffer from the cost of information leaking through the sales of their corporation. Jeremy Bulow and Paul Klemperer (1996) also say that information revealing creates a cost associated with the number of bidders participating in the auctions. Afterward, Hansen (2001) has formally structured information cost theory. The author argues that information is considered competitive, so it can cause the seller to lose its economic advantage when being disclosed to

[5]Milgrom and Robert (1982b) suggest that for a certain information, publishing policy may reduce expected value.

outsiders. For that reason, any disclosure about sellers' information during the due diligence process is evaluated as destroying its value in the eyes of all bidders at a fixed amount[6].

Therefore, having more bidders enter the auctions is negatively related to revenue because the information cost is associated with the number of bidders. Since then, the theory of information cost has been applied in several studies about the takeover process. Boone and Mulherin (2007) test the tradeoff between competition benefit and information cost and use the information cost theory to explain why the premium between negotiations and auctions are the same. Nihat Aktas, Eric de Bodt, and Richard Roll (2010) argue that information cost is one reason that creates pressure on targets and encourages them to accept negotiations rather than inviting more bidders for auctions. The theory of information costs is also employed to provide more empirical evidence for the difference of deal premium between different bidder types. Dimopoulos and Sacchetto (2014) suggest that the magnitude of the information cost effect can be tested by comparing the premium of two groups of deals. Group of sales participating by more financial bidders are considered to bear less information cost than those participating by more strategic bidders.

3. Bidding strategies

Our third essay focus on how the bidding strategies can improve the possibility of the first bidder to surpass the competition from potential bidders and target resistance. As initiating a deal is a risky business for a bidder, we expect that their bidding strategies might impact the deal outcomes.

3.1 Modeling the bidding process and bidding behaviors

[6] Because the information disclosed is assumed to contain a common value of target which all bidders can benefit the same way.

To explain the motivation of a bidder when initiating a takeover, economists assume that every takeover is a profitable opportunity. The early takeover models clarify that the source of premium from the takeovers is the possibility to improve the target company's operational efficiency (S. J. Grossman and Hart 1980). Afterward, the merger motivation is devoted to the synergy gained from combining target and acquirer resources (Bradley and Kim, 1983; Giammarino and Heinkel, 1986).

If the bidding strategies are enduring, all of the work should be started from the initiation bid of the initiating bidder. Since an initiated proposal can be in the form of a tender offer, no one can be sure that the buyer can acquire 100% target shares. So, literature separates bidding models into two most common settings: the model with the free-rider issue and the model of single seller auction (Eckbo, 2008).

It is evidenced that tender offers can create permanent value from the synergy gain if a control transfer follows the tender (Bradley et al., 1988). However, the complete acquisition may not happen as some shareholders may not tender their shares. Those shareholders gain after the tender offer because the value of the target's firm increases with synergy gain. To avoid this case, bidders should have strategies to deal with target shareholders' free-ride. Two primary strategies for bidders are toehold acquisition strategy (Shleifer and Vishny 1986) and post-merger dilution (Grossman and Hart, 1980).

In the single seller auction model, the buyers work with all shareholders or a management team with enough power to decide on negotiation, so the free-raider issue is assumed not to exist. Following the auction theory, this model assumes that the takeover happens as an open English second-price auction, bidders' valuation can be private or common, and losing bidders have no economic loss. This model also allows bidders' valuation to be classified as private and common parts. The private valuations are independent among bidders and come from the

same distribution. Besides, other bidders and sellers do not know this valuation (Krishna, 2010). In contrast, common values can be realized among all bidders and assumed to be identical. Under the common value takeover contest, bidders are all concerned about being the winner's curse since the asset valuation may be bias-high due to the auction procedure. The winner suffers from overbidding because he values the asset higher than other bidders (Cox and Isaac, 1984).

In this single seller auction model, although bidders do not have to face a free-raider problem, bidders have to face other obstacles. If a bidder initiates a takeover, his initiation alerts other bidders about a profit opportunity and provokes the reaction of target management. So, given all the cost and time the initiator has spent investigating the target, he may adjust his bid to manage the risk of losing the case to competitors. To deal with the competitors, pre-empty bid theory suggests that the first bidder should bid high initially rather than bid low and raise the bid gradually later. Besides, several studies about the target resistance issue provide bidders suggestions to overcome this challenge.

3.2 Pre-empty bid theory

The pre-empty bid theory works on a strategy of reducing the possibility of having a competition contest after the first bid because potential competitors are always present, influencing the first bidder's chance to win. Moeller (2004) has pointed out that the effect from the potential competitors can strongly impact the premiums. Bulow and Klemperer (2009) suggest potential competitors and actual competitors in takeover auctions. Aktas Nihat, Eric de Bodt, and Richard Roll (2010) confirm the importance of potential competitors in improving negotiation premiums. As a result, the first bidder should consider offering a high offer to ensure that competitors do not enter.

Fishman (1988) built the pre-empty bidding theory to model the deterring effect of the first bid. Assuming bidder asymmetry and information cost environment, the first bidder can discourage the second bidder from entering the contest. At a high enough bid from the first bidder, the second bidder's valuation over the target reduces to a level that he does not find himself having a high possibility to win the deal. Besides, the cost of information is sunk cost for the first bidder now, while it is taken into the second bidder's decision to reduce the target's value. Michael J.Fishman (1989) further posits that the higher the cost of acquiring information, the lower the intention of potential competitors to enter the contest. (Avery 1998) shows that solid bidders can use jump-bid to let weaker bidders know that entering a bidding contest may bring them a winner's curse.

Whether the pre-empty bid brings benefit for the target is examined by Hirshleifer and Png (1989). They provide evidence to confirm that target's expected prices are higher with pre-empty bid contests than with competitive bid contests. However, it is not easy to find evidence to support the existence of pre-empty bidding behaviors. It is impossible to observe the deterred bids or first bidder private value through their proposals. Thus, researchers have to use alternative proxy to indirectly measure the presence of pre-empty offers. Betton and Eckbo (2000) report a dramatic bid-jump between the initial bids to the final submission with 65% increases in premium, with 24.5% and 35.5%, respectively. They also note that the time of entering the bidding contest of the second bidder is short, which shows that the second bidder only enters when they can quickly gather information about the target or they already investigated the target previously. Hence, the cost of information searching is not too high. Finally, Betton and Eckbo (2000) find out that the rival typically has the same level of toehold as the first bidder, which means that they only enter if the benefit from toehold gives them the same competitive advantage as the first bidder. Betton, Eckbo, and Thorburn (2009) develop a two-stage bidding model that allows targets to accept or reject the first offering by bidders

and call for the auctions. This model enables the target to be more active than the previous theoretical model when reacting to the bidder's offer. Using empirical data, the authors prove that the premium of the first bid is higher in the tender offer contest than in the competition, which ends up with multiple bidders.

With the theoretical model from Betton, Eckbo, and Thorburn (2009), new evidence for the pre-empty bidding behavior can be found with data of the private bidding process. First, the private bidding process is not free of cost. Bidder has to spend time and money to investigate about target's information. They also have to exchange their information through the due diligence process if shares plan the payment. Second, although the 1986 William Act requires the target managers to perform fiduciary duty by asking them to consider any better offers, the Act does not require them to solicit their firm in an auction during the private bidding process. Thus, the hypothesis is that the initiated bidder can increase their bids during the private bidding process to overcome target resistance and convince them to sign a merger agreement. Thus, if the negotiation process is kept strictly confidential, the first bidder can prioritize time when he is the first to investigate the target value. Since the due-diligence process is a costing process, this cost becomes sunk cost for the first bidder when the merger agreement is first public. Also, a merger agreement typically goes together with a termination fee that charges the rival. Lastly, the high initial cash bid signals the high valuation of the first bidder toward the target, reducing the winning possibility of competitors and discouraging them from entering the deal.

3.3 Target resistance theory

Another obstacle that the initiated bidder has to overcome is managerial resistance. The motives and methods of managerial resistance have been extensively discussed in the early days of takeover theories (Baron, 1983; Giammarino and Heinkel, 1986; Stulz, 1988;

Berkovitch and Khanna, 1990). Overall, these studies suggest the two main reasons for management resistance: First, managers do not think that the offers reflect the actual value of their firm based on their knowledge about the firm value. Second, target managers want to keep their control over the company. Walkling and Long (2019) have provided empirical evidence for determining management resistance based on shareholders versus managerial welfare hypotheses. In a logit regression, the managerial resistance depends on premium and management welfare. The result shows that the possibility of management resistance (the action of searching for white knight, verbal opposition, and court actions) is related to management's well-fare and the portion of bidder's toehold but not related to the offer's premium. Since then, Hirshleifer and Titman (1990) and Michael J.Fishman (1989) developed a theoretical framework and empirical predictions relevant to a comprehensive study of the target resistance. Their results, however, support the argument that the target's management act for shareholders' benefit. Hirshleifer and Titman (1990) suggest that target management is less likely to reject high offers. From another perspective, Fishman (1989) predicts that cash offers receive less resistance than stock offers. Following the streams, Jennings and Mazzeor (1993) confirm that high initiated bid premium is associated with fewer competition offers. They also show empirical evidence that target resistance is significantly less likely as the bid premium increases. They also find a positive relationship between competition and resistance. In general, they support the pre-empty bidding theory by Fishman (1988) and go against Walkling et al. (2019). Dimopoulos and Sacchetto (2014) build an auction model that demonstrate a costly sequence entry auction which can explain the source of premium from pre-empty and target-resistance. Their empirical result predicts that the primary source of premium comes from target resistance. They claim that as the initiated bidders have a significant higher value for targets, they do not need to increase the premium to deter rival bidders./.

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PART I

Acquisitions by Financial versus Strategic Buyers:

Interest, Competition and Persistence during the Private Bidding Process

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Abstract

We explore how target firm attributes affect the interest of financial versus strategic bidders in the private stages of a corporate takeover process. Using a unique set of hand-collected data from 606 US public deals from 2005 to 2016, we demonstrate that targets with stand-alone value-improving potential and opportunities to exploit financial leverage benefits are more likely to attract financial buyers while targets with probable synergy gains appeal more to strategic bidders. The target firm's sales growth rate, cash flow generation, and technological innovation are found to influence financial versus strategic bidder interest from deal initiation onwards, whereas industry outperformance, market-to-book, and leverage seem to particularly affect the persistence of financial bidders throughout the deal process.

Keywords: Takeover, competition, financial buyer, strategic buyer, private bidding process.

Classification codes: G230, G340, M210, D440.

I. INTRODUCTION

Funds raised by private equity increased sharply over the past years, driving up the amounts of dry powder held by those entities to a global value of $2.9 trillion in December 2020 (Hugh MacArthur et al., 2021, p.13). The necessity to put cash to work has led to additional competition in the takeover market. However, relatively little is known about the rivalry between financial bidders (private equity, PE) and strategic buyers (corporate acquirers) in the private bidding process. Existing research on M&A typically considers financial and strategic bidders separately and often neglects a comprehensive comparison between them. The motives driving acquisitions by both types of acquirers are naturally different. While strategic buyers aim to achieve synergies, financial buyers can only gain through efficiency improvements, leverage effects or market timing (i.e., multiple arbitrage). Furthermore, the limited lifetime of private equity funds steers them towards the exit from their investments within a period of three to seven years (Kaplan and Stromberg, 2009). The few studies actually comparing financial and strategic buyers mainly focus on the observable outcomes of the public bidding process, like the ultimate target acquirer or the final takeover premium paid (Bargeron et al., 2008; Dittmar et al., 2012; Fidrmuc et al., 2012). Yet examining the type of buyer might not automatically reflect the initial interest by various types of potential acquirers in a competitive bidding process. In addition, the winning bid price in an auction does not always reflect the real value for the acquiring company (Gorbenko and Malenko, 2014; Gorbenko, 2019). Instead, presence in the early phases of the transaction process (e.g., deal initiation or purely signing a confidentiality agreement) constitutes a cleaner measure of bidder interest, not affected by price competition or deal characteristics (that may be perceived as endogenous decisions made by target management).

In this paper, we want to investigate the impact of target antecedents on the interest and persistence of financial versus strategic bidders in the private stages of the deal process, relying on "*Background of the mergers*" documents published by the U.S. Securities and Exchange Commission (SEC) in the Edgar filings. To our knowledge, we are the first to use a large set of hand-collected data about the initial contact phase as well as the subsequent stages of the private bidding process. These fine-grained and previously underexplored data enable us to come up with three proxies for bidder interest: (1) the initiating action by a bidder, (2) the number and type of bidders in each phase of the bidding process, and (3) the persistence of bidders to stay involved in the bidding from initial contact until completion. Importantly, by measuring the persistence of each type of bidder, we investigate how additional (private) information obtained during the private stages of the deal process affects the desire of bidders to continue exploring their interest in a specific target.

The acquisition of a publicly quoted target firm entails four phases in the private process, followed by the public announcement of the deal (see Figure 1). These four phases include the first contact (at the initiative of either the target or bidder), the signing of a confidentiality agreement, the informal bidding round, and the formal offer stage (Boone and Mulherin, 2007). We hand-collected the number of strategic and financial bidders in each stage of the private bidding process for a sample of 606 takeovers of US public target firms, announced between January 1st, 2005 and December 31st, 2016.

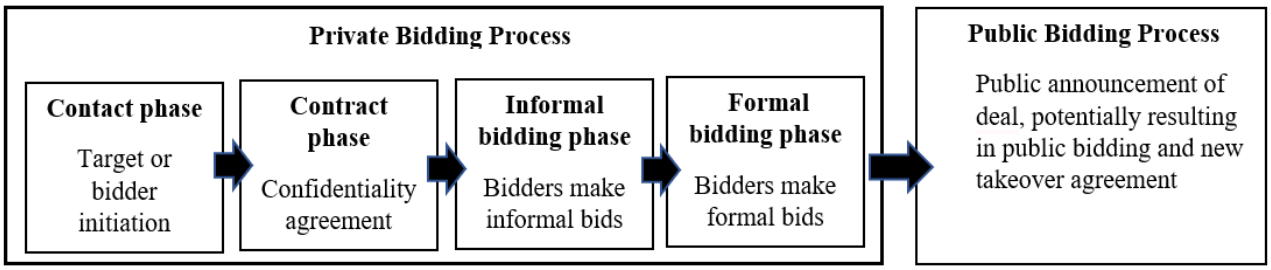

Figure 1: Takeover process from private bidding to the public bidding stage

Despite the presence of both strategic and financial parties in the early stages of the deal process in most acquisitions of public companies, our results illustrate that specific target characteristics determine the extent of initial interest from financial versus strategic bidders and their persistence during the deal process. Financial buyers exhibit greater interest in targets with stand-alone improvement potential as measured by lower market-to-book ratios and relatively higher improvement in industry-adjusted ROA over the three years before the acquisition, allowing them to develop the company strongly during the anticipated investment period. In addition, financial bidders rely on leverage benefits by opting for targets with sizable cash flows and a higher borrowing capacity. The results further support recent literature illustrating debtholder expropriation effects as a source of value in LBOs (Billett et al., 2010). We also show that financial bidders are less inclined to opt for R&D-intensive firms. Remarkably, while readily observable factors like cash flows, sales growth, and R&D expenses are established to influence the behavior of financial versus strategic buyers from the initiation, other factors like industry outperformance, market-to-book and leverage effects are primarily found to affect their involvement and persistence throughout the private stages of the deal process, especially in the sample of cash only auctions. In general, our results endorse the notion of segmentation within the takeover market whereby different targets appeal to different bidders (Gorbenko and Malenko, 2014).

Our research contributes in various respects to the literature. Most crucially, our paper is the first to investigate how target antecedents determine the interest displayed by strategic versus financial bidders in all phases of the deal process, starting from the initiation of the transaction. It is also the first to look at the difference in the number of strategic and financial bidders participating in all subsequent steps of the private bidding process (from initiation to bidding), allowing us to measure persistence across different types of bidders.

Previous studies investigating strategic versus financial bidder behavior typically only rely on data from the public stages of the bidding process. For instance, Bargeron et al. (2008) examine eventual premia paid in 1,668 US takeovers from 1980 to 2005 and reveal that public target shareholders receive a 63% higher premium when the acquirer is a public firm rather than a private equity firm. In a similar vein, Dittmar et al. (2012) research public bidding competition in a large sample of acquisitions from 1980 to 2007 and illustrate that corporate acquirers of targets that were first bid on by financial buyers outperform corporate acquirers who follow targets bid on by corporate firms. Next, Fidrmuc et al., (2012) identify a group of US listed targets (1997–2006) that were ultimately acquired by private equity firms and match it with a comparable set of acquisitions by strategic buyers. While these authors focus on the final stage of the public bidding process (by identifying the eventual acquirer), they show that target firm characteristics affect the type of buyer through the selling mechanism used in the private phase of the process (i.e., auctions versus negotiations).

Notable exceptions that do use data from the private deal process to study differences across financial and strategic buyers are Gorbenko and Malenko (2014) and Gorbenko (2019). The former analyze 349 takeover auctions between 2000 and 2008 in which the acquirer paid in cash. They indicate that dissimilar targets appeal to distinct bidder types, instead of strategic bidders always valuing targets higher because of synergies. Gorbenko (2019) explores the private bidding process for 589 auctions with winning cash-only bids from January 2000 to May 2012 and confirms that a greater spread in valuations drives the higher premiums paid by strategic acquirers due to dispersion in expected synergy gains. Our paper is different as we do not focus on the willingness to pay but rather measure the interest in the early phases of the deal process (initiation, confidentiality agreements, making a first informal and formal bid). As such, we aim to capture actual interest and persistence between different types of buyers throughout the deal process, irrespective of takeover price levels and selling mechanisms. In

addition, we analyze a more recent data set (capturing the boom in M&A and private equity activity following the subprime crisis), including transactions that are ultimately settled with stock and cover negotiated deals alongside auctions.

Finally, our paper addresses a call for further research made by various scholars. Boone and Mulherin (2007) stress the importance of further exploring the private (i.e., pre-public) takeover process as public takeover activity represents only the tip of the iceberg of actual takeover competition. Masulis and Simsir (2018) state that the crucial initial stages of the merger process where bidders and targets are matched have received relatively scant attention in the M&A literature. Finally, Gorbenko and Malenko (2014) explicitly put forward a study of variations in participation between strategic and financial bidders across several bidding stages of the acquisition process as a potential avenue for future empirical research.

The remainder of our paper is structured as follows. Section II reviews the literature and develops our hypotheses. Section III describes our data collection process and key statistics and explains our methodology to gauge bidder interest. Section IV reports the results and discusses several robustness checks. Section V concludes and provides some suggestions for further research.

II. HYPOTHESES

The M&A literature has pointed out that financial and strategic acquirers follow inherently different acquisition strategies (Dittmar et al., 2012; Martos-Vila and Rhodes-Kropf, 2019; Gorbenko and Malenko, 2014). Financial buyers typically do not integrate the target's business into their activities and do not purely pursue takeover synergies.[7] In addition, the corporate

[7] Except if synergies can be realized with other companies in their investment portfolio as part of a buy-and-build strategy.

governance structures commonly imposed by PE firms properly align managers' and shareholders' goals. Financial bidders also treat the target as a temporary asset in their portfolio and look for efficiency improvement opportunities (Kaplan and Stro, 2009). Consequently, while strategic bidders are assumed to be interested in targets with high synergetic opportunities, financial bidders, displaying a more critical and aggressive attitude, might prefer targets with clear possibilities to enhance enterprise value in the shorter term. Therefore, we build our hypotheses regarding the impact of target antecedents around the distinct motives of financial versus strategic bidders when hunting for takeovers.

2.1. Stand-alone value-improving potential

In contrast to strategic buyers, financial buyers are not keen on searching for synergy gains. Instead, they primarily concentrate on improving the stand-alone value of the target firms to achieve capital gains. The first way to enhance the target firm's value is by increasing operational performance by either focusing on efficiency or exploring growth opportunities. Financial bidders are believed to have outstanding skills in selecting targets with significant potential for cost-cutting and revenue growth (Dittmar et al., 2012). The competitive advantage of financial investors in advancing a target's performance arises from their superior governance structure (Jensen, 1986). First, these investors are found to be more directly and actively involved in target governance than a public company (Wright and Robbie, 1998). In addition, they typically aim to align managerial and shareholder interests via managerial equity ownership (Renneboog et al., 2007). When subpar performance in terms of efficiency is mainly due to incompetent incumbent managers, financial investors can act more substantially and more aggressively by replacing them. In that respect, Acharya et al. (2008) show that, after a private equity acquisition, one-third of target CEOs are replaced after 100 days and two-thirds after four years.

Traditionally, the PE literature has been fixated on efficiency improvement opportunities. The review paper by Wood and Wright (2009) highlights that buyout performance in the 1980s and 1990s was habitually obtained through strategies of cost and capital expenditure reductions and refocusing through divestment of unwanted parts (e.g., Kaplan, 1989; Lichtenberg and Siegel, 1990; Bethel and Liebeskind, 1993; Long and Ravenscraft, 1993; Seth and Easterwood, 1993; Wiersema and Liebeskind, 1995). The same, however, could apply to strategic acquisitions. The neoclassical theory suggests that M&A transactions are a means to reallocate resources from less to more efficient firms (e.g., Jovanovic and Rousseau, 2002). More recently, however, various studies have provided evidence of accelerated growth in terms of employment, sales, and capital expenditures, indicating that performance improvements after LBOs are gradually made more via revenue enhancement than cost-cutting alone (Boucly, Sraer, and Thesmar, 2011). To achieve organic growth, large private equity firms start to employ industry experts to position their investment portfolios around targeted industries (Kaplan and Stro, 2009; Stringham and Vogel, 2018). This strategic shift has been confirmed by Gompers et al. (2016), who surveyed 79 PE investors about their value-creating actions in 2011–2013. PE investors anticipate adding value to portfolio companies with a greater focus on increasing growth than on reducing expenses. The most frequently stated source of value is boosting revenue, identified by PE investors as being important in over 70% of their deals versus only 36% for cost cuts. However, the question remains whether PE companies are more likely to emphasize revenue enhancement or cost-cutting potential in their selection criteria.

The type of operational engineering envisioned by the financial buyer (i.e., efficiency or growth) will also impact the type of target they seek. If cost-cutting is the primary channel of value creation, PE investors will try to select firms with deteriorating profitability compared to their peers. Alternatively, if organic growth is the predominant value driver, they are more prone to search for targets with an upward trend of improving performance, outperforming

their peers. Especially in an anticipated buy-and-build strategy, PE players will pick out platform companies with a solid improvement in operating performance, a scalable competitive advantage, and an outstanding reputation (Hammer et al., 2017). In sum, the true impact of firm performance on the interest of financial buyers remains an empirical question. We use the three-year change in industry-adjusted ROA (EBIT/Total assets) (Masulis and Simsir, 2018) to investigate the effect of target performance on the interest of financial versus strategic bidders.

Apart from bettering operating performance, PE firms create value by timing their investments well, allowing them to invest in companies at a relatively low multiple and sell them a few years later at a higher multiple. We therefore expect financial bidders to be more apt to consider takeovers of undervalued targets, as measured by a lower market-to-book (MTB) ratio. The market-to-book ratio compares the market value of the firm's equity to its book value. As the book value can be considered a proxy for the replacement value, firms with low MTB ratios might constitute bargains (Bharath and Dittmar, 2010; Palepu, 1986). That is why we hypothesize a negative impact of a firm's MTB on the interest of financial buyers.

2.2. Exploiting leverage benefits

Next to improving the stand-alone target value through operational engineering, another practice that reflects the financial buyer's desire to create value is the optimal use of the benefits of debt financing. Acquisitions by financial buyers are frequently structured as leveraged buyouts, defined as using a large amount of debt to acquire the target (Opler and Titman, 1993). The cash flows realized by the target firm over the holding period are subsequently deployed to pay off the debt. As such, the buyer can profit from the entire upside when selling the company at the exit moment, while it only had to contribute a relatively small equity stake. Moreover, financial bidders are said to have a competitive advantage in attracting debt

financing. Their repeated interactions with financiers reduce inefficiencies from information asymmetry, resulting in better credit terms. Ivashina and Kovner (2011) explain that stronger bank relationships of private equity firms allow for higher maximum debt levels and lower credit spreads.

Besides, a leveraged buyout can create extra wealth by imposing discipline and efficiency pressures on the target's management (Jensen, 1986). It reduces the agency costs of free cash flow because managers need to use the free cash flow to pay for interest and the principal amount arising from the debt assumed for the acquisition. In addition, managers will be subject to scrutiny and monitoring of debt holders alongside shareholders (Cumming, Siegel, and Wright, 2007).

Given that leveraged buyout transactions rely on the ability of the target company to pay back debt, it is more probable that financial buyers precisely select targets with sizable cash flows (Opler and Titman, 1993). On the other hand, strategic bidders have the alternative option of offering a stock swap to finance the acquisition, making the target's ability to generate cash flow a less binding selection criterion. We therefore hypothesize that, compared to strategic buyers, financial buyers prefer targets with a superior ability to produce operating cash flows to perform leveraged buyouts. This ability is measured by its operating cash flows relative to total assets (Gorbenko and Malenko, 2014).

Opposing views exist, however, regarding the pre-LBO level of target leverage. The dominant stance in the 1980s was that lower pre-LBO leverage provides greater excess debt capacity and, hence, more immense tax shield benefits after the transaction (Kaplan, 1989). However, the relationship between the target's borrowing ability and LBO benefits has recently been proven to be weak. Axelson et al. (2013) confirm that LBO leverage has been driven by credit market conditions rather than by buyout firms optimizing leverage as a function of firm

characteristics. This result may challenge the argument that private equity favors targets with higher available debt capacity. Various other studies have suggested higher leverage ratios for LBO targets (e.g. Billett et al., 2010; Mehran and Peristiani, 2010). These scholars argue that the expropriation of wealth from debtholders could be an essential source of gains from leveraged buyouts. These advantages are more pronounced for targets characterized by higher pre-LBO leverage. The expropriation effect could also explain the negative announcement returns for bondholders around acquisition announcements (Asquith and Wizman, 1990; Warga and Welch, 1993). On the other hand, such expropriation behavior is less likely to drive strategic acquisitions. Instead, target debtholders could gain from the coinsurance effect of combining two companies with uncorrelated cash flow patterns (e.g., Billet et al., 2004; Ghosh and Jain, 2000). In that respect, Billet et al. (2004) show that target bondholders benefit when two publicly quoted companies combine. Apart from the expropriation hypothesis, it is also critical not to rule out that private equity companies may consider targets that have the potential to borrow significant amounts. Thus, compared to strategic buyers, PE companies may prefer targets that have higher debt and healthy operating cash flows. As such, firms that currently have no or very low debt will naturally not be on the radar of financial buyers, but might constitute appropriate takeover candidates for strategic buyers.

Relying on the above arguments, we expect the relationship between financial bidders' interest and the target leverage ratio to be nonlinear, pointing towards higher financial bidder interest in case of very low or very high levels. We examine such a possible concave impact by adding a variable: the power of leverage in our regression models. We follow Axelson et al. (2013), measuring leverage as the total book value of long-term debt (excluding cash and short-term investments) relative to the enterprise value (market value of equity plus book value of long-term debt minus cash and short-term investments).

2.3 Potential for synergy gains

Pursuing synergies (i.e., the ability of a corporate merger to realize superior operating and financial performance than the individual firms that are combining) is the most common rationale driving corporate takeovers (e.g., Bradley and Kim, 1983; Devos et al., 2009; Huyghebaert and Luypaert, 2010; Jovanovic and Rousseau, 2002; Trautwein, 1990). The progress in operating profitability can originate from higher revenues or decreased costs and investments following the acquisition, while the financial gains can be earned from increasing debt capacity or tax-shield benefits.

The resource-based view suggests that synergies can be created by procuring valuable assets and integrating them through acquisitions (Devos et al., 2009). Levine (2017) built a model explaining M&A transactions in which targets have excess growth opportunities but face high implementation costs, while acquirers desire growth but lack internal growth opportunities. Their empirical evidence also confirms that targets have below-average earnings growth, despite having above-average sales growth. On the other hand, acquirers lack growth opportunities but excel in cost-effectiveness, providing sizeable synergy potential. Likewise, Faria (2008) illustrates that mergers constitute a mechanism to gain access to new technology and knowledge developed by target firms. Phillips and Zhdanov (2013) argue that larger firms have disadvantages in the R&D "race", making it optimal for them to outsource R&D investments to small firms and then acquire those that successfully innovate. At the same time, the prospect of a successful exit through a strategic sale represents a vital motivation for target firms to continue spending on R&D. In contrast to strategic acquirers, financial buyers may avoid R&D-intensive targets as synergy realization might take longer (Long and Ravenscraft, 1993). Furthermore, a firm with high R&D is normally unique and has a high potential cost of

distress, thus making it difficult for the financial buyer to increase debt through an LBO (Opler and Titman, 1993).

Operating synergies can also arise from cutbacks in investments, stemming from more efficient use of capital equipment (e.g., Healy, Palepu, and Ruback, 1992; Devos et al., 2009). Merging two companies might reduce important tangible fixed assets, such as office buildings, factories, machinery, or equipment, creating divestment opportunities that will make the combined company more efficient. These gains are widely projected to be high when two firms in the same sector unite. Devos et al. (2009) estimate synergy gains for a broad sample of M&A by analyzing the present value of Value Line cash-flow forecasts and find that the bulk of the operating synergies arises from reductions in investments rather than revenue enhancement or cost decreases. Financial bidders, on the other hand, are expected to have fewer opportunities to realize capex efficiencies. Given that LBOs do not result in the combination of two firms, private equity managers are generally restricted to divesting those assets that are not core to the target firm's activities (Seth and Easterwood, 1993).

Following the arguments outlined above, we proxy for operating synergy potential by considering the target firm's sales growth, R&D expenses (relative to assets), and tangible fixed assets (Morck and Shleifer, 1987). Our hypothesis is that, compared to strategic bidders, financial bidders prefer targets with lower pre-acquisition growth rates, lower R&D intensity, and a lower level of tangible fixed assets.

Table 1 provides a detailed overview of all the definitions for the explanatory variables employed in our further analysis with the hypothesized impact.

<Insert Table 1>

III. DATA AND STATISTICS

3.1. Data collection process

Our sample comprises takeovers announced between January 2005 and December 2016, as recorded by the Securities Data Company (SDC). The following set of selection criteria are applied, in line with previous research on M&A and the private bidding process in particular (Boone and Mulherin, 2007; Gorbenko and Malenko, 2014; Masulis and Simsir, 2018):

- The bidders and targets are both US firms;
- Only publicly listed targets that are non-financial and not active in the utility industry are retained (SIC codes 6000–6999 and 4000–4999 are excluded);
- A change in control is realized where bidders held less than 50% of target shares before the transaction and ended up owning more than 50% of the shares after the transaction;
- The deal is not an undisclosed value merger, spin-off, recap, self-tender, repurchase, minority stake purchase, acquisition of remaining interest, or privatization;
- The forms of the deals are “merger” and “acquire major interests”;
- The deal status is completed;
- The deal value exceeds $50 million;

The above selection criteria produced a total of 1,278 deals from the SDC database. Given the focus of our paper on how the target’s characteristics attract different types of bidders, we only selected deals in which target accounting information was available through Compustat in the year before the acquisition announcement. Furthermore, we checked Edgar (SEC) for the following files: DEFM14A, PREM14A, SC-TO-T, and S4, to track the deals with background information available. This eventually resulted in a final sample of 606 deals,

providing full details of the losing bidder's type, identifying the initiating party, and selling mechanism.

We followed Gorbenko and Malenko (2014) in identifying the number of financial versus strategic bidders from initiation to the takeover outcome. The SEC merger background documents allowed us to hand-collect information on the type of bidder. For each deal, we were able to adequately classify financial and strategic bidders in all steps of the bid process:

- Bidder/target initiates the desire for a possible strategic combination;
- Bidders sign confidentiality contracts;
- Bidders provide non-binding bids;
- Bidders provide binding bids;
- Bidder and target jointly publicly announce a proposed merger (public bid);
- Bidders make superior (public) bids afterwards.

Regarding deal initiation, we are consistent with the approach of Masulis and Simsir (2018). The selling process can be initiated either by the selling company's board deciding that the firm is up for sale or by a prospective bidder proposing to take it over. If the board of a target firm contacts and seeks a buyer first, we define the deal as target initiated. Where a potential buyer approaches the target firm with a takeover proposal and later signs a confidentiality agreement with the target or makes an informal bid, we classify the deal as bidder-initiated. We categorize bidders into two groups, financial bidders and strategic buyers. We also keep track of whether the original initiating bidder ends up winning the bidding competition and acquires the target firm in the case of bidder-initiated deals. Next, we count all bidders signing a confidentiality agreement with the target if the background of the merger

document specifies that information. Similar to Boone and Mulherin (2007), we regard the deal as an auction process if two or more potential bidders sign confidentiality agreements, and as a negotiation when only one bidder signs one. After signing, a bidder can drop out of the deal, submit only a non-binding offer (an informal bid), or propose a binding offer in the final round of the auction (a formal bid).

3.2. Proxies for bidder interest

A bidder's interest in the target is typically observable through its behavior when approaching the target during the private bidding process. To assess bidder interest, we use three proxies: bidder initiation, bidder competition in the private bidding process, and bidder persistence throughout the entire bidding process. Our variables are based on the literature investigating multiple-bidder contests (Betton et al., 2000; Bulow and Klemperer, 2009).

3.2.1. Bidder initiation

An intuitive and straightforward proxy to measure the interest of different bidder types is to find out which type of bidder initiates the deal. The proactive initiation of a deal is considered a primary signal of special interest in the target compared to other parties. Initiation behavior is also examined as a critical variable in various other studies such as Boone and Mulherin (2007), Aktas et al. (2010), and Calcagno and Falconieri (2014). However, none of these used bidder initiation to examine the drivers of interest for different types of bidders. So far, the only empirical paper that carries out a detailed analysis of initiation on bidder interest is Masulis and Simsir (2018), who confirm that target-initiated deals receive a lower premium than bidder-initiated transactions, suggesting that initiation activity signals a higher bidder valuation. However, their study ignores any potential differences between strategic and financial bidders.

3.2.2. Bidding competition in the private bidding process

Our second proxy for bidder interest captures the participation of different types of bidders in the deal process. One may argue that the number of bidders in touch with the target could be endogenous as the target may choose it. However, auction theory in the context of M&A indicates that rational target shareholders should try to maximize the number of interested bidders. Bulow and Klemperer (1996) conclude that a higher number of bidders leads to a higher sale price for the target, thus encouraging sellers to maximize the number of bidders in a takeover. Moreover, Hansen (2001) points out "…*that there is not an unlimited number of willing bidders and that bidders who enter the process have positive expected profit*". This implies that a bidder's decision to participate in the deal signals interest in the target. The view that more bidders will increase the takeover proceeds is also reflected in the *Revlon* ruling by the Delaware Supreme Court, which held that the target board needs to act as "*auctioneers charged with getting the best price for the stockholders*." Since the corporate takeover market is found to be very competitive before the deal is public (Boone and Mulherin, 2007), some researchers have used the number of bidders in the private selling process as a measure for bidding competition. Boone and Mulherin (2011) were the first to use the number of bidders in all stages of the selling process to measure competition between deals won by private equity firms and deals won by a consortium. More recently, Gorbenko (2019) also concluded that the number of financial and strategic bidders taking part in a takeover process substantially influences the bidder's target valuation. Given these contributions, we proxy bidder interest by the level of competition through the number of each type of bidder involved in every stage of the private bidding process, resulting in three dependent variables:

- the total number of financial bidders contacted divided by the total number of all bidders contacted;

- the total number of financial bidders signing a confidentiality contract divided by the total number of all bidders signing confidentiality contracts;
- the total number of financial bidders submitting non-binding bids divided by the total number of all bidders submitting non-binding bids.

3.2.3. Bidder persistence

From the bidder's point of view, staying involved throughout the entire takeover is a costly process. Calcagno and Falconieri (2014) point out that the cost to the bidder of making a non-binding bid reflects a substantial opportunity cost. It entails using internal resources that are hence not available to evaluate alternative projects. In addition, banks or financial advisors must be hired, and an expensive due diligence process needs to be undertaken. The longer the bidder stays engaged in a deal, the higher the cost required to spend on the takeover. Gentry and Stroup (2019) find that the entry cost is about one percent of the deal value. Hence, costly participation causes potential bidders who are not interested in the target to decline participation. The interest of bidders can be derived from their decision to stay onboard throughout this process, compared to those that only displayed initial interest. Hence, the longer a financial (strategic) bidder remains, from the first contact to signing a confidentiality agreement and on to submitting informal bids, the higher the presumed interest of financial (strategic) bidders. We therefore treat persistence as an ordinal variable with the following ordered categories:

Category 1: Deals with financial bidder(s) entering the contact phase and then dropping out;

Category 2: Deals with financial bidder(s) signing a confidentiality contract and then dropping out;

Category 3: Deals with financial bidder(s) eventually making an informal offer.

3.3 Summary statistics

Table 2 (A and B) presents the breakdown of the sample according to the selling mechanism and the initiating party. It establishes that 273 out of the 606 transactions in the sample are categorized negotiations, while 333 are found to be completed through an auction process. The majority of deals are found to be bidder-initiated (462 transactions), of which 384 by strategic bidders.

<Insert Table 2>

Table 3 exhibits a summary of our data and key statistics for all explanatory variables. We observe that targets of auctions are smaller than targets of negotiated deals. Panel B illustrates that target of bidder-initiated transactions exhibit lower leverage while having a larger size and higher R&D expenses. Panel C of **Table 3** contains target characteristics in a subsample including only bidder-initiated deals, classified by strategic and financial bidders. The univariate results confirm our hypotheses. Targets of deals initiated by financial bidders have lower market-to-book ratios, R&D expenses, and sales growth while displaying higher operating cash flow generation before the transaction.

<Insert Table 3>

Table 4 (A, B, and C) shows descriptive statistics related to the involvement of bidders from initiation to completion, based on the type of bidder. Panel A illustrates that financial bidders are more prevalent in the deal process when initiated by a financial bidder or by the target company; unsurprisingly, a larger number of both strategic and financial buyers enter the contact phase for target-initiated deals. Panel B compares participation across auctions and negotiated transactions. We notice that the number of bidders in the initial contact phase in negotiated cases is not always equal to one because there could be an initial contact with more

than one bidder. However, only one bidder decides to sign a confidentiality contract. In seven cases of our data set, the number of parties making a bid is higher than the number of bidders who sign a confidentiality contract because potential acquirers provide unsolicited proposals rejected by targets, as reported in Boone and Mulherin (2007). Besides, in some negotiated deals, the number of informal bids could also be slightly higher than one. Some bidders make an informal proposal but do not sign a confidentiality agreement with the target. One of the reasons is that those bidders do not agree on some conditions of the confidentiality agreement. Panel C of **Table 4** compares deals won by strategic versus financial bidders for the whole sample. The number of bidders in all phases of deals won by financial bidders is significantly higher than those won by strategic bidders. Deals won by strategic (financial) bidders have on average 8.18 (22.60) bidders in the contact phase, 3.78 (11.39) bidders signing confidentiality contracts, and only 1.81 (4.06) bidders making informal bids.

<Insert Table 4>

Finally, the variables presented in **Table 5** measure participation in the bidding process and the persistence of different types of bidders. For negotiated deals, the number of bidders signing a confidentiality agreement equals one by construction. In general, the participation rate of financial bidders is found to be lower than that of strategic bidders. The fraction of financial bidders out of all bidders is slightly higher than one out of five in the three investigated phases. Intriguingly, the percentage of financial bidders dropping out after the contact phase of auctions (10.27%) is lower than that of financial bidders withdrawing after signing a confidentiality contract (16.76%).

IV. RESULTS

4.1. Bidder initiation

Table 6 presents the results of a logit regression whereby the dependent variable equals one if a financial bidder initiates the transaction and zero otherwise. It is estimated for the subsample of deals initiated by bidders. The main explanatory variables are target antecedents collected one year before the public announcement of the deal (see **Table 1**). The correlations among explanation variables are presented in Apendix A. We further control for target size since it strongly influences the possibility of bidders approaching the target. All target variables are winsorized at a 5% level. Finally, we control for industry-fixed effects and economic conditions. Industries are classified following the Fama & French 12 industries.[8] We control for market conditions by including the credit spread based upon the yield on Moody's Baa-rated bonds (versus 10-year treasury bonds) and the one-year market return on the S&P500 index for 12 months preceding the acquisition announcement. Axelson et al. (2013) demonstrate that buyout leverage levels (measured at the financial reporting date) are higher when debt markets are strong. Alternatively, elevated stock prices could make it easier for strategic acquirers to finance acquisitions through stock swaps (Shleifer and Vishny, 2003).

<Insert Table 6>

The regression results indicate that deals initiated by financial bidders tend to involve targets with lower sales growth, smaller R&D expenses, and higher levels of operating cash flows. This confirms our prediction that financial buyers are more likely to proactively approach targets with clear opportunities to exploit LBO benefits and especially initiate the acquisition of targets with a superior ability to generate operating cash flows. Next, our proxies

[8] We drop firms with SIC codes 6000–6999 and 4000–4999. For persistence measurements, we use FF5 because FF12 causes collinearity issues for some industries.

for synergy potential influence the probability of financial bidders initiating the deal (relative to strategic bidders). Following our expectations, R&D-intensive targets are less attractive to financial bidders as it is challenging to quickly convert R&D efforts into market value as well as complicating debt financing. This is in line with Opler and Titman (1993), who confirm that firms with high R&D expenses are less probable LBO targets, and Long and Ravenscraft (1993), who show that LBOs are uncommon in R&D-intensive industries. The marginal effect shows that cash flows have a more important impact on the initiation activity of financial bidders. Changes in industry-adjusted performance and market-to-book ratio, however, are not found to affect the initiation behavior of financial versus strategic acquirers.

Regarding our control variables, the credit spread and stock market return before the acquisition have a positive impact on the likelihood of financial bidder deal initiation. Although the credit spread has a significantly positive impact only in Column (3), it carries a positive sign in other regressions. While the literature confirms that financial bidders utilize higher leverage levels and pay more in buoyant credit markets (Martos-Vila and Rhodes-Kropf, 2019; Axelson et al., 2013), modest evidence is available about the effect of credit market conditions on financial versus strategic bidders during the private bidding process. We shed light on this aspect as our results are not based on the final takeover outcome. The results in **Table 6** suggest that financial bidder initiation is positively related to credit spread. This result may originate from stronger banking relationships (Ivashina and Kovner, 2011), offering a considerable competitive advantage, especially in more challenging credit markets. As assumed by Martos-Vila and Rhodes-Kropf (2019), both types of bidders can swiftly access debt at a low cost when market conditions are favorable. However, in tougher times, financial bidders may alter deal structures rather than reduce activity levels given their comparative advantage over strategic buyers. The literature acknowledges that LBOs' capital structure and interest coverage ratio in the later merger waves are safer than in the 1980s. Investments in private equity remaining

robust even when interest rates increase could even compel private equity managers to seek new deals rather than slowing down (Kaplan and Stro, 2009). Unlike financial bidders, when credit markets tighten, strategic bidders face reduced earnings and higher liabilities from their ongoing projects (Martos-Vila and Rhodes-Kropf, 2019), making them less willing to initiate acquisition discussions. These results imply that a rising interest rate may diminish the possibility of completing a deal for financial bidders but positively affect their initiation activities, relative to strategic buyers. The results in **Table 8** further confirm our finding on credit spreads in **Table 6** as it shows reduced persistence among strategic bidders with a higher credit spread.

A better stock market sentiment is also associated with high financial bidder deal initiation activities. This result can be explained as an optimistic view of PE firms toward market euphoria. In contrast to strategic bidders, financial acquirers can obtain more lucrative opportunities in a buoyant stock market via IPOs and by selling at a high valuation to strategic buyers or other PE funds (Hege, Lovo, Slovin, and Sushka, 2012; Masulis et al., 2009). Furthermore, "…private equity activity is subject to boom-and-bust cycles…", as suggested by Kaplan and Stro (2009). The handsome returns during a booming market may also encourage debt holders and institutional investors to pour more money into PE funds, thus putting further pressure on them to initiate deals.

Importantly, our results provide novel insights for which other studies focusing on the ultimate type of buyer cannot test. For example, Fidrmuc et al., (2012) state that *"firm characteristics affect the choice of buyer type only indirectly through the selling mechanism."* Since we measure the interest of different types of buyers at the deal initiation stage, we can verify that some target antecedents (e.g., operating cash flow generation, sales growth and R&D expenses) matter in different ways to different types of bidders, irrespective of the selling mechanism effect.

4.2. Bidder competition

We run three OLS regressions to estimate bidders' interest at three phases of the private selling process (contact, confidentiality agreement, and informal bidding phase) and one logit regression to evaluate the prospect of a financial bidder ultimately acquiring the target. The explanatory variables are the same as in the bidder initiation regressions. In addition, we control for deals initiated by the target company since these deals are shown to have a higher number of bidders in the contact phase (Masulis and Simsir, 2018; Gorbenko and Malenko, 2014). We also control for the selling mechanism (i.e., auction versus negotiation) in analyzing bidder competition (e.g., Boone and Mulherin, 2007; Aktas et al., 2010).

<Insert Table 7>

In line with the conclusions regarding the likelihood of financial bidder initiation, the results in **Table 7** provide evidence of more financial bidder interest in all phases of the deal process for targets with high operating cash flow, low sales growth rate, and low R&D expenditure. The result about R&D is consistent with our findings in **Table 6**.

While the change in industry-adjusted operational performance does not affect financial bidder deal initiation, we find that it positively influences financial bidder (relative to strategic bidder) interest in all phases of the private deal process. This supports the view that financial bidders typically search for targets with an improvement in profitability, providing them with a solid platform to increase the firm's value after the acquisition. Lower market-to-book ratios also significantly increase the involvement of financial bidders. This confirms our prediction that they are well-positioned to pick undervalued targets, allowing them to aim for multiple arbitrage (i.e., buying at low and selling at high multiples). Only the value of PPE relative to total assets does not have a significant impact. Interestingly, we find a U-shaped relationship between financial bidders' participation and leverage (which means the relationship between

strategic bidders' participation and leverage is an inverted U-shape). The trade-off between increased tax shields and expropriation benefits may help interpret this result. Financial bidders might appreciate very low levels of target debt with the aim of exploiting a tax-shield by increasing the leverage ratio following the transaction. In addition, targets with very high debt could attract financial bidder interest as it creates sizeable potential expropriation benefits from existing debtholders. For strategic bidders, our finding supports Gorbenko and Malenko (2014) to confirm the inverted U-shaped relationship between leverage and strategic bidder interest. Corporate bidders prefer targets with reasonable leverage but default risk that is not too high because the target's distress risk is transferred directly to the strategic buyer (Bruyland and De Maeseneire, 2016).

Next, the control variables show increased financial bidder interest for smaller targets that initiate an auction process. At the same time, we do not find that credit spreads and market returns have a significant impact during the bidding process. This result indicates that market conditions only have a positive impact on financial bidders at the initiation stage.

Finally, despite not being the primary purpose of our paper, we observe that the initiating party influences the participation of financial and strategic bidders differently. Financial bidders are more inclined to contact the target in target-initiated deals. However, their involvement in later phases seems to be less determined by the initiating party. The coefficient of the initiation variable reduces in significance when it comes to signing a confidentiality contract and loses significance in the bidding phase (**Table 7**, columns (1), (2), and (3)).

4.3. Persistence

As discussed in Section 3, we assess financial/strategic bidder persistence throughout the private stages of the deal process. We estimate an ordered logit model of the probability that a financial bidder will fall into one of the three categories. We code persistence as one when

financial/strategic bidder(s) only attend the contact phase and then drop out of the process. It is coded as two when financial/strategic bidder(s) sign a confidentiality contract after the contact phase but do not submit any bid. Finally, we code it as three when financial/strategic bidder(s) make an offer after signing a confidentiality contract. **Table 8** demonstrates how target characteristics affect the decision of financial/strategic bidders to stay engaged during the various private stages of the deal process, regardless of competition.

<Insert Table 8>

The regression results indicate that financial bidders' decision to sign a confidentiality contract largely depends on the change in industry-adjusted ROA, the market-to-book ratio, and cash flow levels, hence favoring targets that offer chances to advance the stand-alone value and solid cash flow generation. The highest coefficient is observed for the cash flow variable, suggesting that the log-odds of having a financial bidder staying up to a higher category is increased by 5.792 if the cash flow variable increases by one unit. **Table 8** equally contains persistence measures for strategic bidders, showing that targets with high market-to-book and low cash flow are preferred. As these are representative proxies for a favorable investment opportunity, it is apparent that strategic bidders seeking synergies are drawn to such targets. This is consistent with Levine (2017), who suggests that mergers for synergy motives should combine a cost-effective acquirer and a less efficient target with solid growth prospects. The coefficient of the cash flow variable is also highest among explanation variables for the regression related to the persistence of strategic bidders. The log-odds of having a strategic bidder staying longer is decreased by 7.967 if the cash flow variable increases by one unit. Hence, when other variables in the model are held constant, cash flow levels play a critical role in the decision of both strategic and financial bidders. In addition to the cash flow, the MTB variable has a more balanced influence on the persistence of strategic and financial bidders.

The coefficients for MTB variables in Column (1) and Column (2) are 0.229 and 0.259, respectively.

Furthermore, **Table 8** shows that the initiating party does not affect financial bidders' decision to stay, yet it does influence the decision made by strategic bidders. The specific valuation of targets explains this finding in relation to strategic bidders. When a strategic buyer opts to initiate a deal, it tends to be more persistent in hunting for the desired target.

4.4. Robustness checks

Our findings remain robust when replicating the analysis with other measurements for target performance and various sub-samples: auction deals with cash payment, cash-only payment deals, and deals without toehold. We also provide ordered logit tests to verify the results obtained by measuring competition via ordered category variables.

First, checking the results for the sample of auctions is imperative as there is a crucial difference in the number of bidders in negotiated deals versus auction procedures. The number of bidders in the negotiation sample is by definition 1 for the confidentiality contract and bidding phases. The ratio at this phase will remain at 1 (in case a financial bidder participates) or 0 (in case a strategic bidder participates). Thus, zooming in on the auction sample allows us to investigate whether our results are possibly driven by this more extreme effect observed in negotiated deals. Furthermore, we need to address possible concerns for biased results due to the impact of the selling mechanism and method of payment. So we select only auction deals that were settled 100% in cash for this sample. We confirm the role of change in industry-adjusted ROA, cash flow, leverage, and R&D expenses on financial bidder interest. Particularly in **Table 9, Column (5)** provides evidence to confirm our first and second hypotheses regarding the persistence of financial bidders. Unlike the full sample, the persistence of

financial bidders in the auction sample is highly impacted by the target's ability to explore the benefits of a leveraged buyout.

<Insert Table 9>

It is also important to consider a vital difference in the payment method, as financial bidders cannot compete with strategic bidders if the target prefers stocks or a combination of stocks and cash. To replicate a level playing field, in **Table 10** we test our findings for a subsample where all final payments are made entirely in cash. Again, the results obtained are consistent with those from the main sample. In this test, the persistence estimation regression shows a significantly negative effect for tangible assets for the first time. Thus, more tangible assets reduce the chances of a financial bidder deciding to remain involved in the deal, from the contact phase to bidding. This seems consistent with the common observation of divesting unrelated assets in LBO deals.

<Insert Table 10>

Next, it could also be relevant to look at the sample in which winners have no toehold. The pre-acquisition ownership may be a source of the agency problem, thus biasing the acquirer's interest towards the target it already partly owns. The results in **Table 11** generally confirm our conclusions.

<Insert Table 11>

Finally, we replace the measurement of target performance by industry-adjusted ROA. At the same time, we also classify industries following the Fama & French 5 industries. The results confirm the robustness of our estimates. The variable industry-adjusted ROA is positively related to financial bidder interest in all regressions analyzing the competition and persistence. This robustness test is presented in **Table 12.**

<Insert Table 12>

4.5. Ordinal variables

The higher numbers of financial (strategic) bidders participating in each phase provide evidence for larger levels of financial (strategic) bidder interest. However, when we measure the interest by the ratio of financial (strategic) bidders relative to the total number of bidders participating in each phase, we can obtain the same ratio. For example, Deal A has four participating bidders in which there are two financial bidders and two strategic bidders. Deal B has ten participating bidders in which there are five financial bidders and five strategic bidders. The (absolute) level of financial bidder interest in deal B is higher than in deal A, but we obtain the same ratio of 0.5 for both deals if we look at proportional interest. Thus, our measurement of interest – the fraction of financial bidders participating in each phase relative to the total number of bidders in each phase – may produce technical problems. We therefore perform an additional test by reorganizing our dependent variables as ordinal category variables with three-level and four-level outcomes respectively. The definition of each variable is provided in Table 13.

<Insert Table 13>

Tables 14 and 15 show our robustness test using ordered logit regressions for the ordinal variables in the whole sample, the sub-sample with cash-only payment, the auction with cash-only payment sub-sample, and the sample without toeholds. All results corroborate our main tests and hypotheses.

<Insert Table 14 and 15>

V. CONCLUSION

Using three different proxies to calculate bidder interest, our results support the notion of segmentation in the corporate takeover market, where financial and strategic bidders eye different types of targets. We conclude that firms displaying potential stand-alone value improvement at the initiation stage of the bidding process or having a financial position suitable for exploring leverage benefits are more attractive to financial bidders. Primarily, our results support the belief that financial bidders focus on enhancing target value through a "buy-and-build" strategy rather than cutting costs. After initiation, financial bidders show more interest in targets with performance improvement, allowing them to pursue a value-creating strategy through revenue growth, while strategic bidders instead compete in deals with higher opportunities to realize synergy gains. We also confirm that both tax-shield benefits and bondholder expropriation gains have an impact on financial buyer interest. The U-shaped relationship between leverage and financial bidder interest shows that while lower leverage can attract financial bidders thanks to potential tax-shields, higher leverage can provide gains from bondholder expropriation.

Our findings may be a valuable source of reference for any target company's board to make critical decisions when engaging in a bidding process. As the literature informs us that inviting an additional bidder creates a cost of information leaking (Hansen, 2001), our results enable targets to approach more suitable bidder types, thus reducing the cost whilst increasing the probability of receiving more offers. The information about initiation is equally helpful when it comes to deciding to wait for a bidder or initiate the takeover process.

However, this study is limited to target antecedents while other issues pertaining to financial and strategic bidder behaviors and deal characteristics remain unexplored. For instance, how does competition between strategic and financial bidders impact the outcome of the takeover, including deal premium and winner type? Therefore, future research might further

explore how competition can influence the takeover process outcome and provide a more comprehensive picture of the role played by target antecedents, bidder characteristics, and deal features, to predict the ultimate buyer type of a typical target and, hence, optimize a target's ability to secure the most suitable acquirer.

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Table 1: Explanatory variables and hypothesized impact

This table presents the definition of all explanatory variables and their expected impact on financial bidder interest. All variables are measured in the year before the announcement.

Variable	Definition	Expected impact on financial bidder interest
Variables of interest		
CHANGE_IN_ROA	The absolute change in the industry adjusted ROA over the past three years. ROA is calculated by Ebit/total assets (according to 2-digit US SIC code)	+/-
IND_ADJUSTED_ROA	ROA is adjusted by industry mean. ROA is calculated by Ebit/total assets (according to 2-digit US SIC code)	+/-
MTB	Market value of equity relative to the book value of equity.	-
CASH FLOW	Operating activities Net cash flow relative to total assets	+
LEVERAGE	Total book value of long-term debt (excluding cash and short-term investments) relative to the enterprise value (market value of equity plus book value of long-term debt minus cash and short-term investments)	-/+
SALES_GROWTH	Three years changes in Sales	-
RD_EXPENSES	Research and development expenses relative to total assets	-
TANGIBLES	The net value of plant, property, and equipment (PPE) relative to total assets	-
Control variables		
SIZE	Natural logarithm of target book value.	
CREDIT SPREAD	The rate on Moody's Baa bonds minus the rate on a 10-year Treasury bond. Both are taken on the preceding day of the target's fiscal year-end date, one year before the announcement year.	
MARKET RETURN	Accumulated return on the S&P 500 index for the 12 months before the month of announcement.	

Table 2A: Number of deals by selling mechanism

This table reports the number of deals for each year from January 1st 2005 to December 31st 2016 according to the selling mechanism. Negotiation is a deal with one bidder signing a confidentiality contract. Auction is a deal with more than one bidder signing confidentiality contracts.

Year	Auction	Negotiation	Total
2005	22	26	48
2006	38	34	72
2007	33	30	63
2008	12	23	35
2009	28	17	45
2010	36	34	70
2011	29	21	50
2012	27	21	48
2013	34	13	47
2014	22	17	39
2015	24	23	47
2016	28	14	42
Total	**333**	**273**	**606**

Table 2B: Number of deals by initiation

According to the initiating party, this table reports the number of deals for each year from January 1st 2005 to December 31st, 2016.

Year	Target Initiated	Strategic Initiator	Financial Initiator	Total
2005	11	35	2	48
2006	15	49	8	72
2007	16	40	7	63
2008	10	24	1	35
2009	11	29	5	45
2010	17	39	14	70
2011	15	29	6	50
2012	11	31	6	48
2013	14	23	10	47
2014	8	27	4	39
2015	8	31	8	47
2016	8	27	7	42
Total	**144**	**384**	**78**	**606**

Table 3: Descriptive statistics for target antecedents

This table reports descriptive statistics (number of observations, mean, and standard deviation) for target antecedents. Target data is collected one year before the M&A announcement. Panel A presents statistics according to the selling mechanism. Panel B presents statistics according to initiation by bidders versus targets. Panel C presents statistics for the subsample of bidder-initiated deals. Target variables are defined in Table 1.

	CHANGE IN ROA	MTB	CASH-FLOW	LEVERAGE	SALES-GROWTH	RD EXPENSES	TANGIBLES	SIZE	CREDIT SPREAD	MARKET RETURN
PANEL A: AUCTION VS NEGOTIATION										
Auction										
N	333	333	333	333	333	333	333	333	333	333
Mean	0.174	2.791	0.070	-0.064	0.508	0.066	0.191	5.918	2.722	0.093
STD	2.030	2.151	0.108	0.422	0.811	0.087	0.196	1.280	0.961	0.144
Negotiation										
N	273	273	273	273	273	273	273	273	273	273
Mean	0.033	2.791	0.072	-0.099	0.574	0.067	0.186	6.215	2.594	0.079
STD	1.729	1.810	0.110	0.384	0.872	0.091	0.169	1.364	0.916	0.144
t-statistic-dif.	0.909	-0.000	-0.168	1.072	-0.964	-0.228	0.317	-2.761	1.678	1.196
p-value	0.363	0.999	0.866	0.283	0.335	0.819	0.750	0.006	0.094	0.232
PANEL B: BIDDER VS TARGET INITIATION										
Bidder Initiation										
N	462	462	462	462	462	462	462	462	462	462
Mean	0.098	2.844	0.067	-0.096	0.542	0.070	0.182	6.116	2.643	0.089
STD	1.890	2.010	0.111	0.391	0.827	0.091	0.183	1.356	0.923	0.145
Target Initiation										
N	144	144	144	144	144	144	144	144	144	144
Mean	0.150	2.620	0.081	-0.026	0.527	0.054	0.209	5.845	2.732	0.081
STD	1.938	1.976	0.103	0.445	0.880	0.081	0.188	1.205	1.001	0.141
t-statistic	-0.289	1.174	-1.350	-1.814	0.178	1.859	-1.490	2.153	-0.989	0.594
p-value	0.772	0.240	0.177	0.070	0.858	0.063	0.137	0.032	0.322	0.552
PANEL C: STRATEGIC VS FINANCIAL INITIATION										
Strategic initiation										
N	384	384	384	384	384	384	384	384	384	384
Mean	0.039	2.946	0.062	-0.093	0.583	0.075	0.182	6.122	0.039	2.946
STD	1.898	2.033	0.114	0.377	0.881	0.094	0.182	1.361	1.898	2.033
Financial Initiation										
N	78	78	78	78	78	78	78	78	78	78
Mean	0.386	2.342	0.092	-0.115	0.337	0.048	0.183	6.088	0.386	2.342
STD	1.834	1.822	0.086	0.457	0.42	0.067	0.186	1.335	1.834	1.822
t-statistic	-1.481	2.433	-2.184	0.452	2.412	2.408	-0.055	0.204	-1.329	-1.798
p-value	0.139	0.015	0.029	0.651	0.016	0.016	0.956	0.838	0.185	0.073

Table 4: Descriptive statistics for bidder participation in each phase

This table reports descriptive statistics (number of observations, mean and standard deviation) for the number of bidders in each phase in the private bidding process: contact phase, signing confidentiality contract phase, and non-binding bid phase. Panel A presents information by initiating parties: strategic bidder, financial bidder, or target. Panel B presents data by the selling mechanism: auction versus negotiation. Finally, Panel C presents statistics per winner type.

	PHASE 1: Contact				PHASE 2: Confidentiality agreement				PHASE 3: Informal bid			
	Strategic	**Financial**	**Unknown**	**Total**	**Strategic**	**Financial**	**Unknown**	**Total**	**Strategic**	**Financial**	**Unknown**	**Total**
PANEL A: INITIATING PARTIES												
Strategic initiator												
N	384	384	384	384	384	384	384	384	384	384	384	384
Mean	4.01	1.41	0	5.42	1.99	0.70	0	2.69	1.39	0.17	0	1.56
STD	5.96	7.92	0		1.81	3.87	0		0.72	0.77	0	
Financial initiator												
N	78	78	78	78	78	78	78	78	78	78	78	78
Mean	4.87	6.82	0	11.69	1.24	4.71	0	5.95	0.50	2.51	0	3.01
STD	9.96	11.44	0		2.38	7.86	0		0.79	2.87	0	
Target initiator												
N	144	144	144	144	144	144	144	144	144	144	144	144
Mean	10.22	14.13	0	24.35	3.99	7.19	0	11.18	1.74	1.74	0	10.22
STD	10.92	26.02	0		4.11	14.00	0		1.71	2.96	0	10.92
PANEL B: BY SELLING MECHANISM												
Auction												
N	333	333	333	333	333	333	333	333	333	333	333	333
Mean	8.71	9.12	0	17.83	3.58	4.93	0	8.51	1.73	1.44	0	3.17
STD	9.90	20.25	0		3.26	10.94	0		1.35	2.65	0	
Negotiation												
N	273	273	273	273	273	273	273	273	273	273	273	273
Mean	1.81	0.25	0	2.06	0.89	0.11	0	1.00	0.90	0.12	0	1.02
STD	3.12	0.92	0		0.31	0.31	0		0.36	0.32	0	
PANEL C: BY TYPE OF WINNER												
Strategic bidders												
N	499	499	499	499	499	499	499	499	499	499	499	499
Mean	5.44	2.75	0	8.18	2.47	1.31	0	3.78	1.53	0.27	0	1.81
STD	7.89	10.94	0		2.62	5.25	0		1.06	0.98	0	
Financial bidders												
N	107	107	107	107	107	107	107	107	107	107	107	107
Mean	6.36	16.23	0	22.60	1.88	9.51	0	11.39	0.53	3.52	0	4.06
STD	10.33	26.15	0		3.38	14.93	0		0.93	3.38	0	

Table 5: Summary statistics for the dependent variables

This table reports descriptive statistics for all dependent variables for the entire sample (Panel A) as well as the auction (Panel B) and negotiation (Panel C) subsamples.

PANEL A: FULL SAMPLE			
BIDDER INITIATION	**Freq.**	**Percent**	**Cum.**
Binary variable:			
0 = Initiated by a strategic bidder	384	83.12%	83.12%
1 = Initiated by a financial bidder	78	16.88%	100.00%
Total bidder-initiated deals	**462**	**100.00%**	

BIDDING COMPETITION	**N**	**Mean**	**St.Dev**
Fraction of financial bidders over all bidders in the contact phase	606	.219	.337
Fraction of financial bidders over all bidders in the confidentiality agreement phase	606	.229	.365
Fraction of financial bidders over all bidders in the informal bid phase	606	.212	.367

BIDDER PERSISTENCE	**Freq.**	**Percent**	**Cum.**
Ordered category variable:			
1 = Deals with financial bidder(s) attending only in the contact phase and then dropping out	28	12.50%	12.50%
2 = Deals with financial bidder(s) signing a confidentiality contract and then dropping out	31	13.84%	26.34%
3 = Deals with financial bidder(s) making an actual offer	165	73.66%	100.00%
Total deals with financial bidder participation	**224**	**100.00%**	

PANEL B: AUCTION SAMPLE			
BIDDER INITIATION	**Freq.**	**Percent**	**Cum.**
Binary variable:			
0 = Initiated by a strategic bidder	170	77.27%	77.27%
1 = Initiated by a financial bidder	50	22.73%	100%
Total bidder-initiated deals	**220**	**100.00%**	

BIDDING COMPETITION	N	Mean	St.Dev
Fraction of financial bidders over all bidders in the contact phase	333	.301	.337
Fraction of financial bidders over all bidders in the confidentiality agreement phase	333	.326	.375
Fraction of financial bidders over all bidders in the informal bid phase	333	.290	.383

BIDDER PERSISTENCE	Freq.	Percent	Cum.
Ordered category variable:			
1 = Deals with financial bidder(s) attending only in the contact phase and then dropping out	19	10.27%	10.27
2 = Deals with financial bidder(s) signing a confidentiality contract and then dropping out	31	16.76%	27.03
3 = Deals with financial bidder(s) making an actual offer	135	72.97%	100
Total deals with financial bidder participation	**185**	**100.00%**	

PANEL C: NEGOTIATION SAMPLE

BIDDER INITIATION	Freq.	Percent	Cum.
Binary variable:			
0 = Initiated by a strategic bidder	214	88.43%	88.43%
1 = Initiated by a financial bidder	28	11.57%	100.00%
Total bidder-initiated deals	**242**	**100.00%**	

BIDDING COMPETITION	N	Mean	St.Dev
Fraction of financial bidders over all bidders in the contact phase	273	.119	.310
Fraction of financial bidders over all bidders in the confidentiality agreement phase	273	.110	.313
Fraction of financial bidders over all bidders in the informal bid phase	273	.117	.322

BIDDER PERSISTENCE	Freq.	Percent	Cum.
Ordered category variable:			
1 = Deals with financial bidder(s) attending only in the contact phase and then dropping out	9	23.08%	23.08%
2 = Deals with financial bidder(s) signing a confidentiality contract and then dropping out	0	0.00%	23.08%
3 = Deals with financial bidder(s) making an actual offer	30	76.92%	100.00%
Total deals with financial bidder participation	**39**	**100.00%**	

Table 6: Financial bidder initiation

This table reports two logit regressions estimating the likelihood of a financial bidder to initiate a deal. Column (5) reports the marginal effect of the logit estimation in column (4). The dependent variable equals one if a financial bidder initiates the deal. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics are reported in parentheses.

Variables	Initiated by the financial bidder (F=1/S=0)				Marginal effect
	(1)	(2)	(3)	(4)	(5)
CHANGE_IN_ROA	0.098	0.096	0.087	0.085	0.012
	(0.064)	(0.064)	(0.064)	(0.064)	
MTB	-0.101	-0.083	-0.127	-0.114	-0.010
	(0.083)	(0.083)	(0.088)	(0.089)	
CASH_FLOW	3.148**	3.787**	3.105*	3.614**	0.463
	(1.595)	(1.624)	(1.754)	(1.780)	
LEVERAGE	-0.344	0.119	-0.367	-0.040	0.015
	(0.385)	(0.505)	(0.377)	(0.493)	
$LEVERAGE^2$		0.680		0.488	0.083
		(0.532)		(0.534)	
SALES_GROWTH	-0.413**	-0.411**	-0.395**	-0.393**	-0.050
	(0.170)	(0.169)	(0.185)	(0.184)	
RD_EXPENSES	-3.727*	-3.549*	-4.238*	-4.055*	-0.434
	(2.154)	(2.137)	(2.467)	(2.442)	
TANGIBLES	-0.753	-0.883	-0.177	-0.313	-0.108
	(0.808)	(0.813)	(0.958)	(0.964)	
SIZE	-0.115	-0.124	-0.089	-0.094	-0.015
	(0.106)	(0.108)	(0.114)	(0.115)	
CREDIT_SPREAD	0.249	0.216	0.273*	0.249	0.026
	(0.157)	(0.161)	(0.162)	(0.167)	
MARKET_RETURN	1.890**	1.833**	1.795**	1.761**	0.224
	(0.869)	(0.868)	(0.869)	(0.871)	
_cons	-1.250	-1.267	-2.329*	-2.328*	
	(0.860)	(0.858)	(1.202)	(1.206)	
INDUSTRY FE	**NO**	**NO**	**YES**	**YES**	
N	**462**	**462**	**462**	**462**	
McFadden R^2	**0.069**	**0.073**	**0.101**	**0.103**	

Table 7: Bidding competition

This table shows the results of three OLS regressions and one logit regression. The dependent variable for column (1) equals the fraction of financial bidders compared to all bidders in the contact phase. Column (2) shows the fraction of financial bidders compared to all bidders in the confidentiality contract phase. Column (3) shows the fraction of financial bidders to all bidders offering an informal bid. Column (4) shows the logit regression whereby the dependent variable equals one if a financial bidder eventually wins the bidding contest. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1) Fraction of financial bidders over all bidders in contact phase	(2) Fraction of financial bidders over all bidders in signing confidentiality agreement phases	(3) Fraction of financial bidders over all bidders in informal bid phase	(4) Winner (Financial winner =1)
CHANGE_IN_ROA	0.013*	0.018**	0.018**	0.040
	(0.007)	(0.008)	(0.008)	(0.061)
MTB	-0.016***	-0.020***	-0.023***	-0.193**
	(0.006)	(0.007)	(0.007)	(0.079)
CASH_FLOW	0.260**	0.349***	0.363***	6.572***
	(0.120)	(0.126)	(0.140)	(1.911)
LEVERAGE	0.081	0.064	0.071	0.624
	(0.057)	(0.062)	(0.064)	(0.425)
$LEVERAGE^2$	0.120**	0.113*	0.118*	1.469***
	(0.056)	(0.061)	(0.063)	(0.473)
SALES_GROWTH	-0.029**	-0.029**	-0.026**	-0.447**
	(0.012)	(0.013)	(0.013)	(0.211)
RD_EXPENSES	-0.692***	-0.669***	-0.499**	-9.145***
	(0.188)	(0.196)	(0.216)	(2.866)
TANGIBLES	0.045	-0.016	-0.091	-0.535
	(0.097)	(0.103)	(0.105)	(0.750)
SIZE	-0.034***	-0.029**	-0.018	-0.167*
	(0.011)	(0.012)	(0.012)	(0.100)
CREDIT_SPREAD	-0.004	0.005	0.015	-0.104
	(0.016)	(0.017)	(0.018)	(0.151)
MARKET_RETURN	0.036	0.071	0.084	0.469
	(0.100)	(0.108)	(0.113)	(0.867)
TARGET_INITIATION	0.073**	0.060*	0.047	0.284
	(0.032)	(0.035)	(0.036)	(0.261)
NEGOTIATION	-0.137***	-0.175***	-0.139***	-0.655**
	(0.027)	(0.029)	(0.029)	(0.257)
_cons	0.457***	0.450***	0.326***	-0.853
	(0.103)	(0.110)	(0.118)	(0.996)
INDUSTRY FE	**YES**	**YES**	**YES**	**YES**
N	**606**	**606**	**606**	**606**
R-squared	**0.229**	**0.232**	**0.174**	
McFadden R^2				**.166**

Table 8: Bidder persistence

This table shows results of two ordered logit regressions whereby the dependent variable Financial Persistence is coded as 1 for deals with financial bidders attending the contact phase and dropping out afterwards; coded as 2 for deals with financial bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with financial bidders making an informal bid; Strategic Persistence is coded as 1 for deals with strategic bidders attending the contact phase and dropping out afterwards; coded as 2 for deals with strategic bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with strategic bidders making an informal bid. Column (1) and (2) report the estimation with coefficients. The cut points labeled as /cut1 and /cut2 represent the intercepts (constants) where the variable is cut into three groups. [9] Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**
	Financial Persistence (Financial bidders drop after contact =1; Financial bidders drop after signing confidential contract=2; Financial bidders offer bid=3)	**Strategic Persistence** (Strategic bidders drop after contact =1; Strategic bidders drop after signing confidential contract=2; Strategic bidders offer bid=3)
CHANGE_IN_ROA	0.171*	0.019
	(0.088)	(0.087)
MTB	-0.229***	0.259*
	(0.081)	(0.150)
CASH_FLOW	5.792***	-7.967**
	(1.917)	(3.895)
LEVERAGE	0.681	-0.483
	(0.796)	(0.670)
$LEVERAGE^2$	0.963	-0.178
	(0.687)	(0.806)
SALES_GROWTH	-0.011	0.246
	(0.242)	(0.302)
RD_EXPENSES	-2.327	4.769
	(2.977)	(3.572)
TANGIBLES	-1.340	0.188
	(0.890)	(1.378)
SIZE	0.052	-0.029
	(0.144)	(0.168)
CREDIT_SPREAD	0.181	-0.267
	(0.193)	(0.195)
MARKET_RETURN	0.484	-2.135*
	(1.547)	(1.284)
TARGET_ INITIATION	0.230	-0.680
	(0.340)	(0.425)
/cut1	-1.541	-5.276***
	(1.138)	(1.540)
/cut2	-0.497	-4.093***
	(1.145)	(1.562)
INDUSTRY FE	**YES**	**YES**
N	**224**	**563**
McFadden R^2	**0.088**	**0.119**

[9] The intercept /cut1 and /cut2 can be converted to Greene's parameterization to calculate the points estimate and standard error (Green, W.H. 2018, Econometric Analysis, 8th ed)

Table 9: Auction with only cash payment

This table presents the robustness test for the subsample contain auction deals resulting in a cash payment. It shows the results of three OLS regressions, one logit regression, and two ordered logit regressions. The dependent variable for column (1) is the fraction of financial bidders compared to all bidders in the contact phase. Column (2) shows the fraction of financial bidders compared to all bidders signing a confidentiality contract. Column (3) shows the fraction of financial bidders offering an informal bid compared to all bidders in the informal bid phase. Column (4) shows the logit regression whereby the dependent variable equals one if a financial bidder eventually wins the bidding contest. Columns (5) and (6) show the persistence of financial /strategic bidders through all phases. Financial Persistence is coded as 1 for deals with financial bidders attending the contact phase and dropping out afterward; coded as 2 for deals with financial bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with financial bidders making an informal bid; Strategic Persistence is coded as 1 for deals with strategic bidders attending the contact phase and dropping out afterwards; coded as 2 for deals with strategic bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with strategic bidders making an informal bid. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	Fraction of financial bidders over all bidders in contact phase	Fraction of financial bidders over all bidders in signing confidentiality agreement phases	Fraction of financial bidders over all bidders in informal bid phase	Winner (Financial winner =1)	Financial Persistence	Strategic Persistence
CHANGE_IN_ROA	0.010	0.020*	0.020*	-0.041	0.185*	0.022
	(0.010)	(0.011)	(0.012)	(0.095)	(0.108)	(0.096)
MTB	-0.011	-0.011	-0.017	-0.161	-0.191*	0.210
	(0.012)	(0.014)	(0.015)	(0.105)	(0.111)	(0.181)
CASH_FLOW	0.501**	0.675***	0.885***	12.363***	6.788***	-12.432***
	(0.200)	(0.230)	(0.262)	(3.215)	(2.532)	(3.627)
LEVERAGE	0.103	0.088	0.123	1.439**	2.015**	-0.448
	(0.086)	(0.095)	(0.099)	(0.717)	(0.976)	(0.901)
$LEVERAGE^2$	0.139	0.169*	0.192*	2.071**	1.970**	-0.257
	(0.085)	(0.092)	(0.099)	(0.813)	(0.859)	(1.052)
SALES_GROWTH	-0.033	-0.042	-0.030	-0.492	-0.331	0.140
	(0.025)	(0.028)	(0.031)	(0.318)	(0.377)	(0.341)
RD_EXPENSES	-0.758**	-0.880**	-0.416	-8.024**	-2.610	3.998
	(0.326)	(0.357)	(0.418)	(3.377)	(3.938)	(3.414)
TANGIBLES	0.090	0.085	-0.019	-0.682	-1.398	0.052
	(0.160)	(0.176)	(0.188)	(1.268)	(1.154)	(1.806)
SIZE	-0.029	-0.022	-0.008	-0.056	-0.028	-0.062
	(0.019)	(0.022)	(0.022)	(0.158)	(0.201)	(0.213)
CREDIT_SPREAD	0.010	0.027	0.052	0.091	0.334	-0.332
	(0.026)	(0.029)	(0.031)	(0.202)	(0.267)	(0.245)
MARKET_RETURN	0.011	0.041	0.144	0.607	1.005	-2.146
	(0.160)	(0.186)	(0.204)	(1.333)	(2.003)	(1.748)
INITIATION	0.083*	0.083*	0.081	0.596*	0.635	-0.508
	(0.043)	(0.050)	(0.054)	(0.343)	(0.536)	(0.473)
_cons	0.289*	0.260	0.081	-2.227		
	(0.174)	(0.195)	(0.255)	(1.652)		
/cut1					-1.748	-5.741***
					(1.658)	(1.985)
/cut2					-0.268	-4.406**
					(1.644)	(1.972)
INDUSTRY FE	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
N	**240**	**240**	**240**	**240**	**151**	**225**
R-squared	**0.310**	**0.281**	**0.232**			
McFadden R^2				**.229**	**.134**	**.148**

Table 10: Cash payment sample

This table presents the robustness test for the subsample containing cash payment deals. It shows the results of three OLS regressions, one logit regression, and two ordered logit regressions. The dependent variable for column (1) is the fraction of financial bidders compared to all bidders in the contact phase. Column (2) shows the fraction of financial bidders compared to all bidders signing a confidentiality contract. Column (3) shows the fraction of financial bidders offering an informal bid compared to all bidders in the informal bid phase. Column (4) shows the logit regression whereby the dependent variable equals one if a financial bidder eventually wins the bidding contest. Columns (5) and (6) show the persistence of financial / strategic bidders through all phases. Financial Persistence is coded as 1 for deals with financial bidders attending the contact phase and dropping out afterward; coded as 2 for deals with financial bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with financial bidders making an informal bid; Strategic Persistence is coded as 1 for deals with strategic bidders attending the contact phase and dropping out afterwards; coded as 2 for deals with strategic bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with strategic bidders making an informal bid. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	Fraction of financial bidders over all bidders in contact phase	Fraction of financial bidders over all bidders in signing confidentiality agreement phases	Fraction of financial bidders over all bidders in informal bid phase	Winner (Financial winner =1)	Financial Persistence	Strategic Persistence
CHANGE_IN_ROA	0.021**	0.028***	0.027***	0.071	0.268**	0.000
	(0.009)	(0.009)	(0.010)	(0.071)	(0.112)	(0.089)
MTB	-0.012	-0.014	-0.018*	-0.149*	-0.203**	0.188
	(0.009)	(0.010)	(0.011)	(0.087)	(0.101)	(0.159)
CASH_FLOW	0.240	0.361**	0.424**	6.906***	7.243***	-8.384**
	(0.153)	(0.161)	(0.184)	(2.409)	(2.517)	(4.228)
LEVERAGE	0.074	0.077	0.119	0.937*	2.229**	-1.122
	(0.073)	(0.079)	(0.084)	(0.533)	(1.003)	(0.796)
$LEVERAGE^2$	0.158**	0.186**	0.219***	1.935***	2.232***	-0.781
	(0.073)	(0.078)	(0.083)	(0.582)	(0.860)	(0.877)
SALES_GROWTH	-0.036**	-0.040**	-0.035*	-0.559**	-0.344	0.188
	(0.016)	(0.018)	(0.019)	(0.228)	(0.334)	(0.290)
RD_EXPENSES	-0.857***	-0.860***	-0.615**	-10.299***	-2.771	4.003
	(0.241)	(0.251)	(0.287)	(3.263)	(3.605)	(3.795)
TANGIBLES	0.072	0.055	-0.073	-0.767	-1.966*	0.516
	(0.130)	(0.142)	(0.150)	(0.936)	(1.169)	(1.635)
SIZE	-0.021	-0.013	-0.002	-0.006	-0.013	-0.184
	(0.015)	(0.016)	(0.017)	(0.116)	(0.165)	(0.192)
CREDIT_SPREAD	-0.006	0.003	0.015	-0.072	0.207	-0.227
	(0.021)	(0.023)	(0.024)	(0.172)	(0.243)	(0.219)
MARKET_RETURN	0.079	0.093	0.133	0.450	0.979	-2.285
	(0.132)	(0.146)	(0.156)	(1.040)	(1.892)	(1.513)
INITIATION	0.095**	0.089**	0.081*	0.530*	0.588	-0.664
	(0.042)	(0.045)	(0.048)	(0.296)	(0.463)	(0.448)
NEGOTIATION	-0.135***	-0.185***	-0.148***	-0.809***		
	(0.037)	(0.039)	(0.041)	(0.310)		
_cons	0.432***	0.382**	0.262	-0.997		
	(0.155)	(0.164)	(0.187)	(1.179)		
/cut1					-1.770	-5.984***
					(1.448)	(1.895)
/cut2					-0.607	-4.796**
					(1.437)	(1.916)
INDUSTRY FE	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
N	**407**	**407**	**407**	**407**	**181**	**371**
R-squared	**0.255**	**0.275**	**0.206**			
McFadden R^2				**0.199**	**0.142**	**0.124**

Table 11: No Toehold

This table presents the robustness test for the subsample contain deals in which acquirers own no share from the target before acquisition. It shows the results of three OLS regressions, two logit regressions, and two ordered logit regressions. Column (1) shows the logit regression with the dependent dummy variable equals one if a financial initiated the deal. The dependent variable for column (2) is the fraction of financial bidders compared to all bidders in the contact phase. Column (3) shows the fraction of financial bidders compared to all bidders signing a confidentiality contract. Column (4) shows the fraction of financial bidders offering an informal bid compared to all bidders in the informal bid phase. Column (5) shows the logit regression whereby the dependent variable equals one if a financial bidder eventually wins the bidding contest. Columns (6) and (7) show the persistence of financial/strategic bidders through all phases. Financial Persistence is coded as 1 for deals with financial bidders attending the contact phase and dropping out afterward; coded as 2 for deals with financial bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with financial bidders making an informal bid; Strategic Persistence is coded as 1 for deals with strategic bidders attending the contact phase and dropping out afterward; coded as 2 for deals with strategic bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with strategic bidders making an informal bid. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1) Initiated by financial bidder (F=1/S=0)	(2) Fraction of financial bidders over all bidders in contact phase	(3) Fraction of financial bidders over all bidders in signing confidentiality agreement phases	(4) Fraction of financial bidders over all bidders in informal bid phase	(5) Winner (Financial winner =1)	(6) Financial Persistence	(7) Strategic Persistence
CHANGE_IN_ROA	0.065	0.013*	0.018**	0.016**	0.035	0.145*	0.007
	(0.069)	(0.007)	(0.008)	(0.008)	(0.064)	(0.087)	(0.091)
MTB	-0.103	-0.017***	-0.020***	-0.023***	-0.208**	-0.224***	0.237*
	(0.096)	(0.006)	(0.007)	(0.007)	(0.086)	(0.081)	(0.143)
CASH_FLOW	3.312*	0.224*	0.304**	0.311**	6.454***	5.339***	-7.205*
	(1.970)	(0.119)	(0.126)	(0.142)	(2.118)	(1.947)	(4.079)
LEVERAGE	0.183	0.084	0.068	0.070	0.579	0.656	-0.345
	(0.548)	(0.062)	(0.068)	(0.069)	(0.470)	(0.807)	(0.794)
$LEVERAGE^2$	0.732	0.131**	0.122*	0.124*	1.574***	0.935	-0.177
	(0.603)	(0.060)	(0.066)	(0.068)	(0.529)	(0.700)	(0.914)
SALES_GROWTH	-0.302	-0.024**	-0.024*	-0.018	-0.365*	0.063	0.123
	(0.185)	(0.012)	(0.013)	(0.013)	(0.219)	(0.243)	(0.281)
RD_EXPENSES	-5.370**	-0.750***	-0.737***	-0.567***	-10.641***	-2.815	4.823
	(2.701)	(0.187)	(0.195)	(0.218)	(3.078)	(3.002)	(3.621)
TANGIBLES	0.352	0.109	0.052	-0.033	-0.172	-0.999	0.454
	(0.989)	(0.100)	(0.107)	(0.110)	(0.783)	(0.902)	(1.599)
SIZE	-0.116	-0.034***	-0.031***	-0.019	-0.143	0.028	-0.071
	(0.117)	(0.011)	(0.012)	(0.012)	(0.107)	(0.149)	(0.170)
CREDIT_SPREAD	0.229	-0.002	0.004	0.011	-0.158	0.113	-0.242
	(0.188)	(0.017)	(0.018)	(0.019)	(0.165)	(0.203)	(0.209)
MARKET_RETURN	1.997**	0.046	0.081	0.097	0.793	1.011	-2.548*
	(0.933)	(0.103)	(0.112)	(0.117)	(0.959)	(1.529)	(1.368)
INNITIATION		0.072**	0.063*	0.046	0.280	0.274	-0.459
		(0.033)	(0.036)	(0.037)	(0.280)	(0.346)	(0.454)
NEGOTIATION		-0.138***	-0.173***	-0.134***	-0.670**		
		(0.027)	(0.029)	(0.030)	(0.280)		
_cons	-2.245*	0.441***	0.451***	0.333***	-0.920		
	(1.236)	(0.105)	(0.113)	(0.122)	(1.049)		
/cut1						-1.703	-5.190***
						(1.201)	(1.613)
/cut2						-0.640	-4.082**
						(1.208)	(1.639)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Obs.	**430**	**567**	**567**	**567**	**567**	**207**	**529**
R-squared		**0.248**	**0.246**	**0.178**			
McFadden R^2	**0.102**				**0.177**	**0.085**	**0.119**

Table 12: Robustness Test for Target Performance

This table presents the robustness test replacing IND_ADJUSTED_ROA for the variable CHANGE_IN_ROA in measurement for target performance. It shows the results of three OLS regressions, two logit regressions, and two ordered logit regressions. Column (1) shows the logit regression with the dependent dummy variable equals one if a financial initiated the deal. The dependent variable for column (2) is the fraction of financial bidders compared to all bidders in the contact phase. Column (3) shows the fraction of financial bidders compared to all bidders signing a confidentiality contract. Column (4) shows the fraction of financial bidders offering an informal bid compared to all bidders in the informal bid phase. Column (5) shows the logit regression whereby the dependent variable equals one if a financial bidder eventually wins the bidding contest. Columns (6) and (7) show the persistence of financial/strategic bidders through all phases. Financial Persistence is coded as 1 for deals with financial bidders attending the contact phase and dropping out afterward; coded as 2 for deals with financial bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with financial bidders making an informal bid; Strategic Persistence is coded as 1 for deals with strategic bidders attending the contact phase and dropping out afterward; coded as 2 for deals with strategic bidders signing a confidentiality contract not offering an informal bid; coded as 3 for deals with strategic bidders making an informal bid. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1) Initiated by financial bidder (F=1/S=0)	(2) Fraction of financial bidders over all bidders in contact phase	(3) Fraction of financial bidders over all bidders in signing confidentiality agreement phases	(4) Fraction of financial bidders over all bidders in informal bid phase	(5) Winner (Financial winner =1)	(6) Financial Persistence	(7) Strategic Persistence
IND_ADJUSTED_ROA	0.088	0.019**	0.025***	0.024**	0.058	0.176*	-0.008
	(0.081)	(0.009)	(0.010)	(0.010)	(0.077)	(0.106)	(0.108)
MTB	-0.104	-0.016**	-0.019***	-0.023***	-0.170**	-0.229***	0.260*
	(0.085)	(0.006)	(0.006)	(0.007)	(0.077)	(0.081)	(0.150)
CASH_FLOW	3.256*	0.222*	0.307**	0.336**	6.255***	5.636***	-7.917**
	(1.679)	(0.117)	(0.124)	(0.136)	(1.821)	(1.872)	(3.882)
LEVERAGE	-0.049	0.070	0.052	0.059	0.666	0.556	-0.484
	(0.512)	(0.058)	(0.063)	(0.063)	(0.440)	(0.760)	(0.664)
$LEVERAGE^2$	0.440	0.102*	0.093	0.101	1.448***	0.933	-0.181
	(0.544)	(0.058)	(0.062)	(0.063)	(0.479)	(0.671)	(0.793)
SALES_GROWTH	-0.404**	-0.031***	-0.029**	-0.026**	-0.486**	0.011	0.251
	(0.181)	(0.011)	(0.012)	(0.012)	(0.217)	(0.247)	(0.296)
RD_EXPENSES	-4.096*	-0.663***	-0.657***	-0.484**	-9.365***	-2.755	4.774
	(2.421)	(0.186)	(0.196)	(0.215)	(2.696)	(3.013)	(3.587)
TANGIBLES	-0.355	0.015	-0.008	-0.077	-0.459	-1.116	0.178
	(0.903)	(0.088)	(0.094)	(0.096)	(0.727)	(0.857)	(1.388)
SIZE	-0.099	-0.036***	-0.032***	-0.020*	-0.161	0.068	-0.027
	(0.112)	(0.011)	(0.012)	(0.012)	(0.100)	(0.143)	(0.168)
CREDIT_SPREAD	0.266	-0.004	0.006	0.016	-0.092	0.218	-0.266
	(0.163)	(0.015)	(0.016)	(0.017)	(0.146)	(0.189)	(0.196)
MARKET_RETURN	1.984**	0.039	0.072	0.089	0.713	0.529	-2.109*
	(0.864)	(0.096)	(0.105)	(0.109)	(0.829)	(1.544)	(1.267)
INNITIATION		0.086***	0.075**	0.060*	0.350	0.221	-0.671
		(0.032)	(0.034)	(0.035)	(0.253)	(0.340)	(0.421)
NEGOTIATION		-0.136***	-0.170***	-0.133***	-0.617**		
		(0.027)	(0.029)	(0.030)	(0.258)		
_cons	-1.462*	0.590***	0.577***	0.456***	0.189		
	(0.873)	(0.086)	(0.093)	(0.096)	(0.773)		
/cut1						-1.204	-5.263***
						(1.100)	(1.549)
/cut2						-0.167	-4.080***
						(1.109)	(1.573)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Obs.	**430**	**567**	**567**	**567**	**567**	**207**	**529**
R-squared		**0.209**	**0.214**	**0.166**			
McFadden R^2	**0.089**				**0.163**	**0.085**	**0.119**

Table 13: Definition of Alternative Categorized Dependent Variables

Categorized Variables	Level of outcomes
F_contact	Category 1: Deal without a financial bidder in the contact phase Category 2: Deal with the number of strategic bidders at least equal to the number of financial bidders in the contact phase Category 3: Deal with more financial than strategic bidders in the contact phase
F_contract	Category 1: Deal without a financial bidder in the confidentiality contract phase Category 2: Deal with the number of strategic bidders at least equal to the number of financial bidders in the confidentiality contract phase Category 3: Deal with more financial than strategic bidders in the confidentiality contract phase
F_bidding	Category 1: Deal without a financial bidder offering a bid Category 2: Deal with the number of strategic bidders at least equal to the number of financial bidders in the bidding phase Category 3: Deal with more financial than strategic bidders offering a bid
F_*involvement*	Category 1: all other cases Category 2: deals where financial bidders had more contact than strategic bidders in the contact phase Category 3: deals where financial bidders signed more confidentiality agreements than strategic bidders Category 4: deals where more financial bidders offered bids than strategic bidders
S_*involvement*	Category 1: all other cases Category 2: deals where strategic bidders had more contact than financial bidders in the contact phase Category 3: deals where strategic bidders signed more confidentiality agreements than financial bidders Category 4: deals where more strategic bidders offered bids than financial bidders

Table 14: Alternative specification of financial versus strategic bidder interest

This table presents a robustness test for the full sample, the subsample of auctions that are eventually settled in cash, the subsample with cash payment only, and the subsample without toehold. Three different ordered logit regressions are estimated. F_contact is coded as 1 for deals without financial bidders attending the contact phase, 2 for deals with the number of strategic bidders at least equal to the number of financial bidders in the contact phase, and 3 for deals with the number of financial bidders exceeding the number of strategic bidders in the contact phase. F_contract is coded as 1 for deals without financial bidders signing a confidentiality contract; 2 for deals with the number of strategic bidders at least equal to the number of financial bidders in the confidentiality contract phase and 3 for deals with the number of financial bidders exceeding the number of strategic bidders in the confidentiality contract phase. F_bidding is coded as 1 for deals without financial bidders attending the bidding phase, 2 for deals with the number of strategic bidders at least equal to the number of financial bidders in the bidding phase, and 3 for deals with the number of financial bidders exceeding the number of strategic bidders in the bidding phase. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	FULL SAMPLE			**AUCTION-CASH PAYMENT**			**FULL SAMPLE-CASH PAYMENT**			**FULL SAMPLE-NO TOEHOLD**		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	F_contact	F_contract	F_ bidding	F_contact	F_contract	F_ bidding	F_contact	F_contract	F_ bidding	F_contact	F_contract	F_ bidding
CHANGE_IN_ROA	0.130***	0.161***	0.134***	0.122*	0.151**	0.143*	0.167***	0.214***	0.188***	0.121**	0.156***	0.121**
	(0.050)	(0.053)	(0.052)	(0.074)	(0.072)	(0.077)	(0.062)	(0.064)	(0.061)	(0.053)	(0.057)	(0.055)
MTB	-0.126**	-0.178***	-0.224***	-0.173**	-0.179*	-0.203*	-0.112	-0.166**	-0.170**	-0.128**	-0.188***	-0.235***
	(0.056)	(0.060)	(0.071)	(0.086)	(0.092)	(0.108)	(0.072)	(0.077)	(0.084)	(0.058)	(0.063)	(0.075)
CASH_FLOW	3.755***	4.354***	5.299***	6.011***	5.364***	9.772***	3.337**	4.360***	5.983***	3.748**	4.418***	5.441***
	(1.371)	(1.339)	(1.527)	(2.039)	(1.919)	(2.473)	(1.689)	(1.670)	(1.936)	(1.476)	(1.476)	(1.703)
LEVERAGE	0.522	0.389	0.469	0.688	0.634	0.959	0.409	0.447	0.701	0.613	0.477	0.547
	(0.361)	(0.391)	(0.385)	(0.588)	(0.582)	(0.621)	(0.442)	(0.468)	(0.474)	(0.399)	(0.442)	(0.432)
$LEVERAGE^2$	1.047***	1.028**	1.004**	1.172**	1.167*	1.496**	1.109**	1.285**	1.493***	1.183***	1.174**	1.137**
	(0.386)	(0.433)	(0.422)	(0.585)	(0.630)	(0.679)	(0.446)	(0.509)	(0.503)	(0.425)	(0.491)	(0.480)
SALES_GROWTH	-0.285**	-0.228	-0.345**	-0.165	-0.205	-0.352	-0.306*	-0.305*	-0.398**	-0.252*	-0.189	-0.278
	(0.141)	(0.149)	(0.168)	(0.210)	(0.210)	(0.269)	(0.170)	(0.179)	(0.199)	(0.149)	(0.159)	(0.182)
RD_EXPENSES	-6.091***	-7.480***	-6.804***	-4.366*	-5.891**	-4.647*	-6.034***	-7.691***	-6.810***	-6.749***	-8.528***	-8.024***
	(1.933)	(1.921)	(2.137)	(2.503)	(2.415)	(2.762)	(2.180)	(2.151)	(2.406)	(2.046)	(1.991)	(2.225)
TANGIBLES	0.277	-0.052	-0.584	0.277	0.411	-0.338	0.304	0.073	-0.624	0.634	0.300	-0.223
	(0.648)	(0.630)	(0.658)	(1.044)	(0.995)	(1.023)	(0.827)	(0.811)	(0.807)	(0.684)	(0.665)	(0.697)
SIZE	-0.272***	-0.244***	-0.131	-0.211	-0.133	-0.079	-0.153	-0.099	-0.025	-0.283***	-0.257***	-0.145
	(0.080)	(0.089)	(0.089)	(0.129)	(0.141)	(0.137)	(0.099)	(0.112)	(0.108)	(0.083)	(0.093)	(0.093)
CREDIT_SPREAD	0.042	0.026	0.085	0.197	0.146	0.324*	0.068	0.015	0.099	0.010	-0.019	0.022
	(0.118)	(0.124)	(0.126)	(0.173)	(0.178)	(0.183)	(0.138)	(0.146)	(0.148)	(0.130)	(0.137)	(0.140)
MARKET_RETURN	0.565	0.414	0.396	0.566	0.212	0.744	0.794	0.427	0.644	0.550	0.487	0.592
	(0.690)	(0.725)	(0.724)	(1.032)	(1.123)	(1.119)	(0.823)	(0.918)	(0.910)	(0.721)	(0.765)	(0.774)
INITIATION	0.458**	0.432**	0.279	0.507*	0.638**	0.509*	0.555**	0.607**	0.461*	0.443**	0.429*	0.284
	(0.211)	(0.218)	(0.222)	(0.279)	(0.301)	(0.305)	(0.255)	(0.272)	(0.263)	(0.223)	(0.234)	(0.238)
NEGOTIATION	-1.810***	-1.955***	-1.466***				-1.734***	-1.917***	-1.425***	-1.824***	-1.996***	-1.465***
	(0.250)	(0.269)	(0.257)				(0.302)	(0.316)	(0.308)	(0.265)	(0.286)	(0.273)
/cut1	-1.330*	-1.086	0.232	-0.859	-0.131	1.564	-1.145	-0.575	0.619	-1.402*	-1.196	0.071
	(0.688)	(0.755)	(0.802)	(1.023)	(1.121)	(1.475)	(0.880)	(0.976)	(1.102)	(0.717)	(0.787)	(0.837)
/cut2	-0.221	-0.359	0.787	0.723	0.932	2.401	0.048	0.186	1.184	-0.305	-0.500	0.591
	(0.692)	(0.755)	(0.802)	(1.031)	(1.120)	(1.478)	(0.886)	(0.973)	(1.104)	(0.721)	(0.787)	(0.835)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
N	**606**	**606**	**606**	**240**	**240**	**240**	**407**	**407**	**407**	**567**	**567**	**567**
McFadden R^2	**0.201**	**0.216**	**0.180**	**0.169**	**0.168**	**0.171**	**0.202**	**0.230**	**0.188**	**0.211**	**0.229**	**0.188**

Table 15: Alternative specification of financial versus strategic bidder interest

This table presents a robustness test for the full sample, the subsample of auctions that are eventually settled in cash, the subsample with cash payment only, and the subsample without toehold. Four different ordered logit regressions are estimated. F_involvement is coded as 1 for deals where financial bidders had more contact than strategic bidders in the contact phase, 2 for deals where financial bidders signed more confidentiality agreements compared to strategic bidders, 3 for deals where financial bidders offered more bids than strategic bidders, and 0 for all the other cases. S_involvement is coded as 1 for deals where strategic bidders had more contact than financial bidders in the contact phase, 2 for deals where strategic bidders signed more confidentiality agreements compared to financial bidders, 3 for deals where strategic bidders offered more bids than financial bidders, and 0 for all the other cases. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	FULL SAMPLE		**AUCTION-CASH PAYMENT**		**FULL SAMPLE-CASH PAYMENT**		**FULL SAMPLE_NO TOEHOLD**	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	F_involvement	S_involvement	F_involvement	S_involvement	F_involvement	S_involvement	F_involvement	S_involvement
CHANGE_IN_ROA	0.106*	-0.126**	0.064	-0.109	0.151**	-0.163***	0.108*	-0.122**
	(0.057)	(0.054)	(0.086)	(0.073)	(0.068)	(0.061)	(0.060)	(0.056)
MTB	-0.176**	0.183***	-0.203*	0.144	-0.177*	0.138*	-0.194***	0.193***
	(0.070)	(0.071)	(0.120)	(0.107)	(0.091)	(0.081)	(0.075)	(0.075)
CASH_FLOW	6.459***	-5.860***	11.477***	-12.808***	7.134***	-7.076***	6.710***	-5.780***
	(1.593)	(1.700)	(2.473)	(2.974)	(2.012)	(2.129)	(1.743)	(1.859)
LEVERAGE	0.838**	-0.366	0.937	-1.364**	0.757	-0.780	0.927**	-0.463
	(0.371)	(0.386)	(0.610)	(0.670)	(0.478)	(0.478)	(0.398)	(0.432)
$LEVERAGE^2$	1.374***	-1.097**	1.347*	-2.095***	1.483***	-1.697***	1.524***	-1.254**
	(0.449)	(0.442)	(0.778)	(0.764)	(0.563)	(0.525)	(0.506)	(0.496)
SALES_GROWTH	-0.311**	0.250	-0.371	0.216	-0.430**	0.309	-0.291*	0.191
	(0.151)	(0.173)	(0.245)	(0.274)	(0.178)	(0.207)	(0.165)	(0.183)
RD_EXPENSES	-7.358***	8.605***	-5.527*	7.058**	-7.586***	8.808***	-8.689***	10.091***
	(2.344)	(2.463)	(2.990)	(3.068)	(2.607)	(2.685)	(2.437)	(2.647)
TANGIBLES	-0.874	0.542	-0.939	0.942	-0.987	0.813	-0.755	0.213
	(0.672)	(0.735)	(1.041)	(1.209)	(0.821)	(0.887)	(0.699)	(0.772)
SIZE	-0.160*	0.092	-0.086	-0.038	-0.031	-0.029	-0.173*	0.099
	(0.091)	(0.090)	(0.143)	(0.140)	(0.110)	(0.106)	(0.094)	(0.095)
CREDIT_SPREAD	0.006	-0.168	0.219	-0.377**	0.021	-0.130	-0.056	-0.161
	(0.135)	(0.128)	(0.190)	(0.187)	(0.159)	(0.153)	(0.151)	(0.143)
MARKET_RETURN	0.287	-0.733	-0.028	-1.117	0.262	-0.973	0.496	-0.903
	(0.776)	(0.773)	(1.179)	(1.143)	(0.960)	(0.953)	(0.833)	(0.832)
INITIATION	0.401*	-0.194	0.483	-0.399	0.436	-0.337	0.411*	-0.204
	(0.227)	(0.233)	(0.314)	(0.327)	(0.271)	(0.277)	(0.241)	(0.249)
NEGOTIATION	-1.208***	1.300***			-1.237***	1.299***	-1.273***	1.318***
	(0.255)	(0.262)			(0.303)	(0.311)	(0.273)	(0.280)
/cut1	0.333	-1.299	1.109	-3.427**	0.396	-1.745	0.081	-1.234
	(0.861)	(0.807)	(1.382)	(1.417)	(1.060)	(1.066)	(0.883)	(0.837)
/cut2	0.392	-1.121	1.155	-3.122**	0.443	-1.528	0.147	-1.079
	(0.862)	(0.803)	(1.378)	(1.407)	(1.058)	(1.063)	(0.884)	(0.835)
/cut3	0.706	-0.916	1.623	-2.828**	0.757	-1.303	0.480	-0.879
	(0.858)	(0.804)	(1.369)	(1.405)	(1.055)	(1.062)	(0.879)	(0.837)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
N	**606**	**606**	**240**	**240**	**407**	**407**	**567**	**567**
McFadden R^2	**0.169**	**0.167**	**0.165**	**0.189**	**0.174**	**0.178**	**0.169**	**0.167**

APENDIX A

Pairwise correlations among target's antecedents

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) CHANGE_IN_ROA	1.000							
(2) MTB	0.063	1.000						
(3) CASH_FLOW	0.005	-0.082	1.000					
(4) LEVERAGE	-0.018	0.024	0.205	1.000				
(5) SALES_GROWTH	0.057	0.238	-0.110	-0.054	1.000			
(6) RD_EXPENSES	0.008	0.289	-0.473	-0.429	0.236	1.000		
(7) TANGIBLES	0.007	-0.118	0.271	0.367	-0.147	-0.392	1.000	
(8) SIZE	0.059	-0.071	0.269	0.351	-0.109	-0.369	0.222	1.000

PART II

MORE BIDDERS OR RIGHT BIDDERS?

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Abstract

Generating competition has been widely considered as a perennial strategy by sellers in corporate mergers and acquisitions. However, from existing literature, the impact of competition on seller's revenue has engendered some valid concerns. Using a unique hand-collected data with 5,695 non-binding bids and 2,414 bidders in 923 completed cases between 2004 and 2016 in U.S takeover market, this article provides a new insight for the measurement of competition. We provide empirical proof to show that competition should be examined through the prime of not only the number of bidders but also the associated number of bids. Controlling for target and deal characters, our study asserts that higher level of competition brings higher premium for sellers in auctions. Furthermore, our result highlights how bidder type-specific participating in a deal can affect that relationship. On average, the competition has a more decisive influence on premium in sales with the partaking of financial bidders.

I. INTRODUCTION

The role of competition in improving seller's revenue is an interesting topic that has been widely discussed by several economic scholars. While theory papers confirm that competition is associated with higher seller expected revenue (Bulow and Klemperer, 1996; Krishna, 2009), current empirical evidence in corporate takeover shows inconsistent results.

Traditionally, observable competitions are very limited. Using data of the public bids for takeovers, Moeller et al. (2007) document that less than 4% of deals in the U.S. market are subject to more than one bidder. Also, Betton, Eckbo, and Thorburn (2009) note that 94.7% of public bids for U.S. targets between 1980 and 2005 are recorded as a single-bidding contest. However, Boone and Mulherin (2007a) commence a critical contribution when pointing out high level of takeover competition in the private bidding process. With information detailed from exploring the EDGAR 14F file for 308 cases of takeover contests in the 1990s, the authors confirm that about 50% of corporate takeovers are taken place under private auctions, which happen long before the public announcement. Proxy competition by both number of bidders and binary variables for selling mechanism, Boone and Mulherin (2007a) find no significant relationship between their competition measurements and premium, confirming that the wealth effect of competition are comparable with the wealth effect for negotiations. Among recent related studies on competition, only Schlingemann and Wu (2015) confirm that the number of bidders in the contact phase is statistically related to target returns, condition on targets' sizes. Yet, it is widely known that the number of bidders in the contact phase is far different from the number of bidders who can be considered as bona fide bidders.

Hence, the question whether competition measured by number of bidders participating in private bidding phase has any impacts on seller's revenue remains controversial. With the information disclosed in Edgar fillings, there are several business practices showing that bidders behave very different after participating in the private bidding process. In our sample of 923 deals between 2005 and 2016, we observe that attracting an additional bidder signing a confidentiality contract does not necessarily mean the seller can benefit from a higher level of competition. In reality, a surprising number of bidders withdraws after signing confidentiality contracts. Around 70% of bidders signing confidentiality contracts withdrawing and never submit any bid to the seller. In addition, many studies confirm that the number of bidders participating in the process changed significantly from one phase to another (contacts, signing confidentiality contracts, and indications of interests). Boone and Mulherin (2008) examine 145 auction deals in the 1990s and report that among 13.84 inviting bidders, there are 5.77 bidders participating, and only 1.51 bidders submit an indication of interests (bids). Gentry and Stroup (2019) indicate that, in their sample of 529 auctions, only a haft of invited bidders are participating. Schubert (2020), observing 421 auctions between 2004 and 2017, reports that only 30% of participating bidders indicate interests. Noticeably, when we analyze the private bidding process in more detail manner, we witness that the number of bids each bidder offers is also very different among each other's. Some bidders bid many times while others make only one bid and withdraw. Among bidders offering bids, the ratio of bidders pulling out of the process after offering only one bid is 33.6%.

Those common-practice behaviors advise us to consider bidder's level of competition when performing empirical studies on how bidding competition impact seller's revenue. We acknowledge that when measuring the competition by the number of bidders, missing from the

current literature is a variable that can control the difference in bidder's level of competition. Exploring bidding data in the private negotiation process, we notice that the divergence in the number of offers among bidders may potentially represent different levels of the bidder's magnitude concerning their strength in competition. Bidders with higher level of competition offer more bids to follow the deal. Thus, we proxy for the level of competition by the ratio of total number of bids to the total number of bidders. If this ratio is positively related to premium, the number of bids matters more to premium than the number of bidders. Otherwise, the number of bidders is more important for sellers to maximize their revenue. In order to stress on the "bona fine" bidders, our variable for level of competition uses the number of bidders offering bid rather than the number of bidders signing confidentiality contracts. Regarding bidder type-specific valuation, we further expand our analysis to compare the effect of competition on premium under the difference between strategic and financial bidders. Our paper provides three main results: (1) Higher number of bidders increases seller's premium when the additional bidder has higher level of competition than the existing bidders. (2) The level of competition has positive effect on seller's premium in auction while having negative effect on seller's premium in negotiation. (3) Premiums are stronger influenced by the competition in deals with the participation of financial bidders than that of strategic bidders.

Our analysis has five main contributions: (1) Our sample includes 5,695 non-binding bids and 2,414 bidders [10] in 923 completed takeovers, spreading out between 2005 and 2016. To the best of

[10] 2,414 are number of bidders who offer bids. The number of bidders who sign confidentiality contracts are 6,912 bidders.

our knowledge, the information about the number of bids providing by each bidder has not been explored by the existing literature, so our unique dataset helps filling the empirical void of lacking data in the private bidding process. (2) We contribute to the understanding of M&A practice. Our results explain the puzzle of sellers' behaviors as in one hand they seek more competition, but in the other hand, restrict the number of bidders. (3) Our empirical evidence is inclined with the auction theory which suggest competition benefits sellers. (4) Our result suggests that in negotiation deals, given the advantage of the first bidder, the stronger bidder is more likely to provide lower premiums compared to weaker bidder, so we confirm negotiation is harmful for seller's revenue. (5) our results also lend support to the understanding of the role of bidder types on premium. Financial bidders create a better competitive environment for targets; thus, their presentation in auctions brings higher value for shareholder wealth.

Our paper includes six sections. Section 2 reviews the literature about the importance of bids and bidders concerning as a measure of competition. This section also provides background to build our hypothesis. Section 3 presents our data collecting process and statistics; Section 4 reports our methodology and models; Section 5 discusses results and the robustness test; Section 6 concludes.

II. LITTERATURE AND HYPOTHESIS

Hypothesis 1: Deals with higher competition level measured by the total number of bids relatively to total number of bidders are associated with higher sellers' premiums.

From the auction theory, it is well known that higher number of bidders benefit sellers and the number of bidders is suggested to represent a measure of competition. In empirical research, several papers define number of bidders as a measure of competition. Boone and Mulherin (2011) use the number of bidders in all stages of the private bidding process to examine the effect of forming a consortium on the competition. Schlingemann and Wu, (2015)[11] use the number of bidders in the private contact phase to measure the competition effect on target stock price returns.

However, there are also some studies challenging the certainty of the number of bidders as a measure of competition. Aktas, de Bodt and Roll, (2010) claim that the number of bidders is noisy information to measure competition. Boone and Mulherin (2011), while using the number of bidders to measure competition, specify that the number of contacts contains many noises and suffers endogenous selection bias. Fidrmuc (2013) also questions the negative relationship he found between the number of bidders and premium, explaining that this relationship happens because of the negative correlation between the number of bidders and bidder's valuations.

So, how much should we trust the number of bidders as a measure of competition in takeover market? There are two main reasons to reassess this measurement. The first reason is that the private bidding nature is distinct from the public stages, so our measure may suffer bias if we treat all bidders from private processes with the same weight. Hansen (2001) notes, *"There is an aspect of this auction process that is interesting as they stand, but the process calls more strongly for*

[11] (Schlingemann and Wu, 2015) confirms the positive relationship between numbers of bidders contacted and target returns only for small size targets. Moreover, they also specified that number of bidders contacted in their research measure ex-ante competition, not the on-site competition because the number of contacts are much larger than the number of bidders who really offer bids.

explanation because it conflicts with standard results in auction theory and/or with what would appear to be rational behavior of the part of bidders." The confliction is further detailed by Gorbenko and Malenko (2014, 2019) that the private bidding process does not follow any framework of auction theory. Second, since all bidders are uninformed about the exact number of competitors or competitors' offers in an auction, the positive effect of the number of bidders on winners' valuation is insignificant (Krishna, 2009). In private bidding process, bidders get information about the other offers from the seller. The research of Aycinena and Rentschler (2018) also confirms that the relationship between number of bidders and premium disappears if bidders are uninformed about the number of competitors.

In short, while the number of bidders is still used in the literature as a measure for competition, the fact that bidders are different in their competition ability suggests giving each bidder a different level of competition.

The idea that the number of bids in private bidding processes can represent for bidder's level of competition is implied in the paper of Hansen (2001). The author claims that sellers can screen bidders through the initial round of non-binding bids to select stronger bidder. As all bidders attending the auction expected profit at the end of the deal, the best bidding strategy is honestly revealing valuation through their bids each round. If they bid too high to enter the last competition, their expected profit will be lower as the target increase the reserve price in later rounds. However, if they bid too low to force the final reserve price down, they are not different from other bidders and may lose their chances to enter the next round. Thus, the stronger the bidder is, the higher number of bids he makes.

The relation between number of bids and bidder's aggressiveness is also implied in the research of Boone and Mulherin (2009): *"In the corporate M&A setting, as in the IPO market, the sequential provision of indication of interest servers to induce information revelation by potential bidders. The incentive for bidders to reveal their reservation prices is provided by inviting more aggressive bidder to the next round of bidding and, in control sales, by limiting the number and all kinds of bidder"*.

Furthermore, the research of Gorbenko and Malenko (2014) also suggest that the number of bids is a property of the competition level. Their model assumes that bidders will not let others win at the price they are willing to bid. As we acknowledge from the due diligence process, bidders may decide to continue by offering one more bid or withdraw. If they offer a new bid to continue, it means their competition level is higher than the one who chooses to offer less bids and withdraws. In conclusion, the number of bids is associate with the strength of each bidder in term of competition level.

Bulow and Klemperer (1996) clearly states that: *"No amount of bargaining power is as valuable to the seller as attracting one extra bona fine bidder"*. The idea of a "bona fine" bidders suggest us not to consider all bidders as equal. After all, our intuition is that *N+1 bidder is better for the seller* when the additional bidders is a "bona fine" bidder, bidder with higher competition level than the existing N bidders. Otherwise, the additional bidder creates information cost for the seller which has negative impact the seller's valuation (Hansen, 2001).

Our measurement of competition level attempts to reflect more precisely the benefit of competition in takeover activities. Our research is in the same vein as Schubert, (2020) since we

aim to provide some textures about the new factor of bidder behaviors. However, we scaled the level of competition by the strength of each bidder participating in the process while Schubert, (2020) focuses on how bidder's interest changes from phase to phase. Hence, using the ratio of total number of bids to total number of bidders in each deal to measure level of competition in a deal, we expect that the higher the competition level, the higher the seller's premium.

Hypothesis 2:

The relationship between the level of competition and the seller's premium is impacted by the selling mechanisms. While this relationship remains positive significant in auctions, it suffers a moderating effect in negotiations.

We further explore the relationship between level of competition and premium under the influence of takeover mechanisms.

In our paper, we separate our sample into auctions and negotiations. However, it is essential to remember that, naturally, all takeover contests are auctions from the time of private initiation (Eckbo, 2008). Once the seller agrees to enter a sale of control, the seller's management is responsible for considering higher bids from other bidders. So, the seller remains its power to call for auction during the negotiation process. As a result, any deal completed between the seller and only one bidder is literally a sequential auction in which the first bidder wins the deal. It means, in both auctions and negotiations, bidders are in competition contest.

As we measure level of competition by the ratio of number of bids to number of bidders, in negotiations the number of bids express the competition level of the first bidder. If the first bidder

bids hardly with several jump-bids, we should expect premium increases as the number of bids increase. However, the pre-empty bid offers by the first bidder who have higher level of competition may be lower than the offers by the first bidders who have relatively lower level of competition because the weaker bidder is under more threat from auction. If the first bidder is highly competitive, it is more likely that other potential bidders are deterred away from entering the deal (Fishman, 1988). This idea is supported by Bulow and Klemperer (2009) as they comment that jump-bids even creates an over-deterrence effect because this type of behavior signals to potential competitors that the first bidder is very aggressive and willing to win at all prices. Finally, the higher the level of competition the first bidder is, the lower the premium that the seller receives because it is more difficult for the seller to have another candidate who wants to compete with the first bidder. For negotiation deal ended up with less number of bids, the first bidder may have lower competition level; thus, he accept a higher price to avoid the potential competitors to enter the deal (Aktas, de Bodt and Roll, 2010).

Hence, we hypothesis that competition level measured by the relativeness of number of bids to number of bidders is associated with the increase of premium in auctions where there are more than one bona fine bidder. However, if the deal has only one bidder, the competition level of the first bidder causes the premium to reduce.

Hypothesis 3: The relationship between competition and premium is influenced by the type of bidders participating in the deals. The connection is more robust in sales with the participation of financial bidders than deals with only strategic bidders.

Finally, we are left with whether the relationship between the competition and premiums is affected under the influence of the bidder-type. Even though extensive

research on the impact of bidder type over premium is beyond the scope of this paper, it is essential to explore this influence because empirical evidence suggests that type of bidders influence the relationship between competition and premium.

A large body of literature confirms that the motivation of strategic bidders and financial bidders is considerably different when it comes to takeover. Strategic bidders are motivated to acquire firms for synergy, while financial bidders seek targets with a high possibility of self-value-improving in the post-merger stage. Bargeron (2008) confirms that strategic bidders pay higher premiums than financial bidders, especially in dealing with the high value of synergy. Gorbenko, Alexander S. (2014) have done significant works exploring how valuation is different between two types of bidders and address the specific value and common value as what strategic and financial buyers highly value. Fidrmuc, Roosenboom, Paap, Teunissen (2012) also suggest that targets with high research and development expenses may prefer to negotiate with strategic buyers. In general, strategic bidders prefer a target with higher research and development expenses because they are searching for specific value, while financial bidders look for common value in targets such as better return compared to the industry. Overall, the literature recommends that strategic bidders are more likely to focus on specific values to earn synergy. Those values may be sensitive to information cost compared to common value. According to Hansen (2001) framework, information cost is available so targets have to balance it with the benefit of auction. Since information cost is negatively related to competition, we expect that in deal of only strategic bidders, the cost of information leaking influence target wealth and then reduce the effect of competition on premium, compared to the group with the involvement of financial bidders. Finally, we hypothesize that the relationship between competition and premiums is stronger in deal with the participation of financial bidders.

III. DATA

3.1 Data selection

The abundance of information in EDGAR files allows us to collect initiation parties, number of bids, number of bidders in contact phase, confidentiality phase, and bidding phase. Our data collection process follows the paper of Boone and Mulherin (2007a) that details the private bidding process into several steps. However, we add the significance of the number of bids offered by each bidder to that process.

Our sample is composed of takeovers announced between January 2005 and December 2016, as recorded by the Securities Data Company (SDC), and the following set of selection criteria are applied following previous research on the private bidding process (Boone and Mulherin, 2007a; Masulis and Simsir, 2018) :

- Bidders and targets are both U.S. firms;
- Only public listed targets that are nonfinancial and not in the utility industry are retained (SIC codes 6000-6999 and 4000-4999 are excluded);
- A change in control is realized where bidders held less than 50% of target shares before the transaction and ended up owning 100% of the shares after the transaction;
- The deal is not an undisclosed value merger, spin-off, recap, self-tender, repurchase, minority stake purchase, acquire of remaining interest, and privatization;
- Forms of the deals are “merger” and “acquire major interests”;

- Deal status is completed;

- Deal value exceeds 50 million U.S. dollars;

The above selection criteria produce a total of 1,278 deals from the SDC database. Because we plan to control for the target's characteristics, we only pick deals in which target's accounting information is available on Compustat database in the year before the acquisition announcement. This accounting step eliminates 182 deals from our original sample. Further, we check on EDGAR files on the SEC for the following files: DEFM14A, PREM14A, SC-TO-T, and S4 to track out the deals with background information available. We finally finished our selection process with a sample of 923 deals. We follow Boone and Mulherin, (2007a) to classify the deal as auctions or negotiations. We describe the deal as an auction if at least two bidders sign a confidentiality contract and otherwise as a negotiation. By this way of specification, within our sample of 923 cases, there are 302 negotiations and 621 auctions.

We follow Gorbenko and Malenko, (2014) to identify the number of financial versus strategic bidders from the initiation step to the outcome of a takeover. The background documents allow us to hand collect information on the type of bidder as strategic bidder or financial bidder. For each deal, we can classify the financial bidder and the strategic bidder in all steps of the following process:

- Bidder/target initiates the desire for a strategic combination.

- Potential bidders contact in solicitation phase.

- Bidders sign confidentiality contracts.

- Bidders provide bids.

- If the target management establishes a special committee

We count contacting bidders as bidders who contact or be contacted by targets. We record the number of bidders who signs confidentiality agreements with the target if the background of the merger document specifies that information. After signing a confidentiality agreement, a bidder can drop out of the deal, submit only one or several offers, or submit a binding request in the final round of the auction (formal bids). The number of bids is collected as formal and informal bids during the private bidding process. The bids can be in the form of oral or written offers, but they must be provided by financial advisors, investment banks, or management members. All bidders must sign confidentiality agreements before accessing to private information from sellers. Finally, if the information in Edgar's file discloses that the target announces termination discussion with all bidders, we do not count the number of bids or number of bidders participating in the deal before the termination. Overall, our sample contains 923 completed deals between 2005 and 2016 with 2,417 bidders and 5,698 bids.

Regarding deal initiation, we follow Masulis and Simsir, (2018). The selling process can be initiated either by the selling Company's board deciding that they want to be sold or by a prospective bidder coming and proposing to take over the firm. If the commission of a target firm contacts and seeks a buyer first, we define the deal as target-initiated deal. Suppose a potential buyer approaches the target firm with a takeover proposal and later signs a confidentiality agreement with the target or offers bids. In that case, we classify the deal as bidder-initiated deal.

The examples of the deal process are in the Appendix. The American Science case announced in 2016 is an auction where there are two bidders offering proposals, and each of them makes six

bids. The SRA case announced in 2011 is an auction where there are eight bidders submitting bids, but only two of them make more than one bid, and others make only one bid and subsequently drop out. The text we provide in the Appendix summarizes the text in SEC filings that show all details and support our argument that bidders are different in their level of competition, so we need to take the number of bids into our measurement of competition level. An essential aspect of the two cases is that both are bidders initiated and are sequential auctions. Most of the bidders in the second case withdraw from the process rather than fail off the competition.

3.2 Statistic description

Table 1 presents our data summary for the distribution of auctions and negotiations by year. The portion of auction in our sample is around 67% of total deals, which is consistent with Liu and Mulherin, (2018). The number of auctions tends to be higher in the second haft of the sample.

<Insert Table 1>

Table 2 - Panel A presents our data summary for the difference between auctions and negotiations. In the same notion with the statistic information which has been published by Gorbenko and Malenko (2014) and Boone and Mulherin (2007a), the number of bidders who take part in the participating phases is 10.6, almost three times higher than the number of bidders who offer bids. The number of bidders offering bids is 1.03 in negotiations. As explained by Boone and Mulherin, (2007a), the number of bidders in negotiations is slightly higher than one because sometimes the target does not respond to unsolicited bids. The number of bids in auction (NB) is on average 7.48 bids, nearly double the average number of bids in negotiations. In auctions, on

average, the ratio of the number of bids to the number of bidders is lower compared to that in negotiations, with 2.62 and 3.37 respectively. Consistent with the competition variable, premium in auctions is lower than in negotiations. T- test result shows that all of the variables in the two groups are significantly different at 1%.

Table 2 - Panel B presents the difference between deals with the participation of financial bidders and deal with only strategic bidders. The category with only strategic bidders has 535 observations, 145 observations higher than the category with the involvement of financial bidders. The ratio that bidders leave the contest after the confidentiality contract phase is significantly higher in the group with the participating financial bidders. In a typical deal with the participation of financial bidders, 13.31 bidders who sign confidentiality contracts but only 3.31 bidders offer bids, which means roughly 70% of bidders withdraw. In the group of only strategic bidders, 3.24 bidders sign confidentiality contracts and 1.52 bidders offer bids; the withdrawing ratio is lower, with 53%. Although the number of bids offered in the deals with financial bidders is higher than that with only strategic bidders, the competition variable (the number of bids/number of bidders) is significantly lower than in the group of the only strategic bidder, at 2.48 bid and 3.13 bid, respectively. The premium also follows the pattern of competition since premium in group financial bidders is 8% lower than that in group of only strategic bidders.

Table 2 - Panel C presents the same information as Panel B but for the auction sample. All the results from T-test show significance at 1%. In this sub-sample, the ratio of withdrawing after signing confidentiality contract is slightly higher in the group with the participating financial bidders than with only strategic bidders, at 70% and 67%, respectively. In the group with financial bidders, the competition and the premium are also lower than in group of only strategic bidders. Overall, Panel B and Panel C suggest the difference in competition level and premiums as per the type of bidders participating in the deal. This is consistent with the previous literature demonstrating that strategic pay higher premiums and value targets higher than financial bidders. bidder type-specific on competition level.

<Insert Table 2>

Table 3 - Panel A summarizes the statistic description for target characteristics in two subsamples, negotiations and auctions. The univariate results show that targets in the negotiation and auction samples are only different by the size. Typically, targets in negotiations have more prominent sizes than targets in auctions, significant at 1% level.

Table 3 - Panel B summarizes the statistic description for target characteristics in two subsamples, including the group of the only strategic bidder and the group with the participating financial bidders. T-test results show that targets in the category of only strategic bidders have higher R.D. expenses and market-to-book, while lower cash flows and operating performance than in the group with financial bidders.

<Insert Table 3>

Table 4 presents our summary of statistic description for the number of deals and the number of bids as per number of bidders.

<Insert Table 4>

IV. METHODOLOGY

In the regression models hereafter, we use premium four weeks before the announcement date from SDC as our dependent variable to measure seller's premium (Boone and Mulherin, 2007a; Betton, Eckbo, and Thorburn, 2009; Eckbo, 2008; Aktas, Bodt, and Roll, 2010). This variable is defined as the offer prices relative to the target closing stock price four weeks before the announcement date. According to Betton, Eckbo, and Thorburn, (2009), the bid premium is advanced over abnormal return since it is the direct output of the takeover process and is less being affected by rumors. We describe in Appendix 1 the definition of all variables used in our models.

The relationship between level of competition (LEVEL_OF_COMPETITION) and seller's premium is our primary concern for investigation. To construct this variable, we divide the number of bids (NB) by the number of bidders offering bids in each deal (NBD). To control outliers, the total number of bids and number of bidders are winsorized at one percent.

We use classical deal characters as control variables such as tender offers, special committee establishment, payment method, toehold, and initiation party. These variables are claimed as having influence on the takeover premium (Moeller et al., 2004; Masulis and Simsir, 2018). We also control target characters such as size, leverage ratio, R.D. expenses, cash flows, and changes in industry-adjusted ROA. These variables are also used as control variables when analyzing the premium (Masulis and Simsir, 2018; Gentry and Stroup, 2019; Gorbenko, 2019). Industry indicator is classified following Fama-French 5 industries in which we drop SIC codes 6000-6999 and 4000-4999. We use GDP growth rate as time control for our estimations.

We use OLS regression to test our first hypothesis by the following models:

$$PREMIUM_{it} = \alpha + \beta_1 LEVEL\_OF\_COMPETITION_{it} + \beta_2 DEAL\_CHARACTER_{it} + \beta_3 TARGET\_CHARACTER_{it} + \beta_4 INDUSTRY_{it} + \beta_5 GDP_t + \varepsilon \quad \textbf{(Eq.1)}$$

We further investigate whether the relationship between LEVEL_OF_COMPETITION and PREMIUM is impacted by the selling mechanism. We assume selling mechanisms are divided into auctions and negotiations as per the suggestion from Boone and Mulherin (2007a). We interact the LEVEL_OF_COMPETITION variable with the variable AUCTION which carries the value

of one for auctions and zero for negotiations. Equation 2 describes the model that we test the second hypothesis:

$$PREMIUM_{it} = \alpha + \beta_1 LEVEL\_OF\_COMPETITION_{it} + \beta_2 LEVEL\_OF\_COMPETITION_{it} x\ AUCTION_{it} + \beta_3\ AUCTION_{it} + \beta_4 DEAL\_CHARACTER_{it} + \beta_5 TARGET\_CHARACTER_{it} + \beta_6 INDUSTRY_{it} + \beta_7 GDP_t + \varepsilon \quad (\mathbf{Eq.\ 2})$$

Finally, to examine the influence of the type of bidder participating in the deal, we interact the competition variable with the dummy variable of SONLY. Equation 3 describes the model we test the third hypothesis:

$$PREMIUM_{it} = \alpha + \beta_1 EVEL\_OF\_COMPETITION_{it} + \beta_2 EVEL\_OF\_COMPETITION_{it} x\ SONLY_{it} + \beta_3\ AUCTION_{it} + \beta_4 DEAL\_CHARACTER_{it} + \beta_5 TARGET\_CHARACTER_{it} + \beta_6 INDUSTRY_{it} + \beta_7 GDP_{it} + \varepsilon \quad (\mathbf{Eq.\ 3})$$

V. RESULTS

Table 5 presents the influence of several measurements of competition on premium for the entire sample of 923 deals. Overall, the results support our first hypothesis that the level of

competition is positively associated with higher target premium. We gradually substitute the variable represented for LEVEL_OF_COMPETITION by number of bidders signing confidentiality contract (NBP), number of bidders offering bids (NBD), and number of bids (NB). In Columns (1) and (2), NBP and NBD have negative relationship with premium. This result is consistent with Fidrmuc, (2013), who claim that competition measured by the number of bidders does not fully reflect the competition unless controlling for valuation-related variables. Gentry and Stroup, (2019) also expect a negative relationship between NBP and valuation. In the paper of Gorbenko, 2019, number of bidders signing confidentiality contract is found insignificantly related to target premium while negative related to bidders' valuation. The variable number of bids in Column (3) is not significant. In Column (4), the Level_Of_Competition variable characterized by NB/NBD is positively significantly related to the premium at 10% level. This relationship further explains the results in Columns (1) and (2) where NBP and NBD carry negative signs. The contribution of a number of bids in the measurement of competition help control the valuation-related factor, as suggested by Fidrmuc, (2013). Suppose a new bidder enters the auction but his valuation is lower than the current level of competition. In that case, his participation does not contribute to the competition of the deal but even causes a negative influence on the premium because the information cost reduces the expected valuation of target. Our result is in line with Gorbenko, (2019) since this study suggests that higher NBP might reduce average valuation of the target because weak bidder enters the process.

<Insert Table 5>

5.2 Sale procedures

In **Table 6** we introduce the interaction term *Level_Of_Competition x AUCTION* to test the impact of selling mechanisms on the relationship between the Level_Of_Competition and the Premium. Column (1) show that the coefficient of the interaction term is highly significant at 1% level, indicating that the sale procedures have a strong impact on how competition level influence premium. The coefficient of the interaction term is positive 0.148 while the coefficient of Level_Of_Competition variable is negative 0.059. This indicates the Level-Of-Competition is associated with higher premium when deals arranged as auctions. This result follows the theory suggested by Bulow and Klemperer (2009) that auctions benefit sellers' revenue because it stimulates competition. In line with our second hypothesis, as strong bidder may exercise pre-empty bid, their power help them not to pay high compared with less power bidder. Thus, when deals are arranged as negotiations, the higher the first bidder's level of competition, the lower the premium.

In Conlumn (2) and (3), we present the analysis on two subsamples. The competition variables are positive significant 1% for the auction sample and slightly negative significant at 10% for the negotiation sample. This result supports our explanation for the positive effect of competition on premium in auction and negative effect on the premium in negotiations.

<Insert Table 6>

5.3 Strategic versus Financial bidders

We further expand our analysis to see how the relationship between competition and premium is influenced by the type of bidder participating in the contests. In Columns (2) and (3),

we introduce another interaction term between competition and bidder type (Level_Of_*Competition x SONLY*) in which SONLY is a binary variable carrying value of one for deals participating by only strategic bidders and zero for deals with the presence of financial bidders. The coefficients of the interaction term and the competition variable seize the different effects of competition on premium between two types of bidders. In Column (3), we find that the coefficient on the interaction term is (0.075) and significant, but the coefficient of competition variable is also 0.075 and significant at 5% level. The difference in the coefficients is signifying that for a deal involving only strategic bidders, the increasing competition does not influence the premium. In contrast, the increase of competition for deals involving financial bidders positively affects premiums. In conclusion, the result demonstrates that competition has a more substantial influence on the premium in deals with the participating financial bidders, as we have expected in our third hypothesis.

In columns (4) and (5), we present the analysis on two subsample strategic bidders only and deal with financial bidders to see the influence of intention on premium. The coefficient of the competition variable is 0.074 and significant at 5% level in the sample of financial bidders while it is insignificant in the subsample including only strategic bidders. While the univariate test presented in Table 2C shows that deals with only strategic bidders have higher competition and higher premiums, the result we found in Table 7 suggest that higher competition does not lead to higher premium for deal including only strategic bidders. Also, Table 3 indicates that targets in sales with only strategic bidders have significantly higher R.D. expenses. This result supports our finding in OLS regressions and confirms our third hypothesis. An explanation for this result might come from the information cost. High competition might cause a decrease in premium because information cost is high in deals where bidders are searching for specific value such as a gain from synergy. Overall, the result of Table 7 confirms that, although sales among strategic bidders can bring a higher level of competition and higher premium, the influence of competition on the premium is lower than in sales with the participation of financial bidders.

<Insert Table 7>

5.4 Robustness check

5.4.1 Another classification of auction

Rather than classifying a deal which has more than one bidder signing a confidentiality contract as an auction, literature sometimes considers auctions as deals having more than one bidder offering bids. This approach stresses on the idea of a "bona fine" bidder. The new classification can also be justified because while many deals are categorized as auctions using the number of bidders signing confidentiality contracts is higher than one, the number of bidders finally remains and offers bid is only one. So, classifying auctions based on confidential contracts seems to overestimate the competition level (Chira and Volkov, 2017). Using this new classification, we have 507 auctions and 416 negotiation deals. We apply the same regressions in **Table 6** to test the robustness of our conclusion. The results shown in **Table 8** are consistent with our main findings.

<Insert Table 8>

5.4.2 Sample with a high and low number of bidders

The statistics description in **Table 4** shows that as the number of bidders increases, the total number of bids increases but it may result as the level of competition decreases. So, someone may argue if the positive relationship between premium and level of competition is the result of the way how target designs the sales. In order to justify our result, we conduct a robustness test based on two samples of high and low number of bidders. We break our auction sample into two groups depending on the number of bidders who signing confidentiality contract. The low sample contains

423 takeovers having two and three bidders; the high sample includes 198 auctions having higher than three bidders. In **Table 9**, the Level_Of_Competition variable is positive significant in both low and high samples.

<Insert Table 9>

5.4.3 An alternative measure of competition

. As HHINDEX is popular as a measurement of market competition level, we use HHINDEX as an alternative to measure the competition level in each deal. Assuming a bidder participating in a deal is a firm operating in an industry. The ratio of the bids making by that bidder to total number of bids in the deal will serve as the market share of a firm. As we sum up the square of that ratio for all bidders in a deal, we get the HHINDEX for the concentration of bids on bidders. However, our HHINDEX should be interpreted differently from HHINDEX of market concentration. High HHINDEX normally reflects high market concertation and thus low competition. In our application, high HHINDEX reflects higher concentration of bids and thus higher competition level in a deal. Hence, we expect if the HHINDEX is associated with higher premium. In **Table 10**, we present results of the relationship between HHINDEX and target premium. Because the total number of bids is essential to bidders' level of competition, we control the number of bids in our regression model. Column (1) shows the result of the whole sample, Column (2) shows the results of the auction sample. We can not test on negotiations because HHINDEX in negotiation deals is always equal to one. The HHINDEX variable's coefficient is consistent with the result we obtained in the main tests.

<Insert Table 10>

VI. CONCLUSION

This article investigates the association between level of competition and target premium, taking the variety of the number of bids into account. Literature in the field leading by Boone and Mulherin (2007a), Schlingemann and Wu, (2015), and Schuber (2020) use the number of bidders to define the competition. The novelty of our work is that we look at competition not only by number of bidders but also number of bids they made. By this way of construction, we hope to further extend the understanding about competition. Our analysis is based on a unique hand-collected data of 5,698 bids and 2,417 bidders in 923 deals, including 621 auctions and 302 negotiations in the U.S. takeover market completed between 2005 and 2016.

Our findings are consistent with auction theory as we confirm level of competition increases the seller's premium. Besides, our result explains sellers' behaviors in takeover market as they try to promote competition among bidders but also limit the number of bidders. We also suggest that the level of competitiveness of bidder is an essential resource to empower higher benefits for target shareholders. Moreover, we also find out that the competition level in deals with the participation of financial bidders is more sensitive to the premium. Our results are robust when we try to apply different classifications of sale procedures. The results also remain significant when we substitute the measurement of level-of-competition by a concentration index.

We also document the negative effect of competition in the sample of negotiations. As the negotiation sample contains deals with only one bidder, we assume that the measurement of competition in this type of deals should cover the potential threat effect (Aktas, de Bodt and Roll,

2010). If the number of bids given by the only bidder in a negotiation deal is increased, it means the first bidder is strong in competition and the pressure from potential competitors for him are low. This explains why the premium obtained in the negotiation sample is lower when the number of bids increases. Our study provides ample scope for future research on bidding competition in corporate takeovers. As our empirical evidence suggests the negative relationship between the number of bids and premium in negotiations, future research might further explore this relationship by looking at the influence of management resistance in defining premium. Finally, an interesting research topic also can be a deeper analysis on the role of strategic and financial bidders in corporate takeovers.

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Table 1
AUCTIONS VS NEGOTIATIONS

This table reports the number of deals each year from January 1, 2005, to December 31, 2016, according to selling mechanism as negotiations or auctions[12]. Auctions are deals with at least two bidders signing confidentiality contracts. Other deals are classified as negotiations.

Year	Auctions	Negotiations	Total
2005	60	28	88
2006	75	37	112
2007	75	34	109
2008	39	28	67
2009	37	18	55
2010	58	35	93
2011	51	23	74
2012	49	26	75
2013	51	13	64
2014	35	18	53
2015	44	26	70
2016	47	16	63
Total	**621**	**302**	**923**

[12] These are number of auctions and negotiations in which we can identify party of initiation

Table 2
BIDDERS AND BIDS IN AUCTION AND NEGOTIATION

This table shows the statistics (mean, standard deviation, min, max, t-statistic, and p-value of the sample) of the number of bidders and the number of bids in each deal as the sample is divided into auctions and negotiations. NBP is the number of bidders participating (signing confidentiality contract); NBD is the number of bidders offering bids; NB is the number of bids in each auction. Panel A presents information on auctions versus negotiations. Panel B shows deals involving only strategic bidders versus deals with the participation of financial bidders. Panel C presents deals involving only strategic bidders versus deals with the involvement of financial bidders in the auction sample. The sample covers January 1, 2005, to December 31, 2016.

AUCTIONS VS NEGOTIATIONS

	Auctions					Negotiation						
	N	**Mean**	**St. Dev**	**p25**	**p75**	**N**	**Mean**	**St. Dev**	**p25**	**p75**	**t-statistic**	**p-value**
NBP	621	10.63	14.22	3.00	12.00	302	1.00	0.00	1.00	1.00	11.761	0.000
NBD	621	3.38	2.67	2.00	4.00	302	1.03	0.19	1.00	1.00	15.262	0.000
NB	621	7.48	4.31	4.00	10.00	302	3.42	1.39	2.00	4.00	15.989	0.000
NB/NBD	621	2.62	1.14	1.90	3.00	302	3.37	1.38	2.00	4.00	-8.702	0.000
Premium	621	0.36	0.22	0.19	0.50	302	0.41	0.21	0.25	0.53	-2.8294	0.005

PANEL B: STRATEGIC VS FINANCIAL BIDDERS IN FULL SAMPLES

	Strategic and Financial Bidders					Only Strategic Bidders						
	N	**Mean**	**St. Dev**	**p25**	**p75**	**N**	**Mean**	**St. Dev**	**p25**	**p75**	**t-statistic**	**p-value**
NBP	389	13.31	16.08	3.00	17.00	534	3.24	6.31	1.00	3.00	13,188	0.000
NBD	389	4.13	3.03	2.00	5.00	534	1.52	0.95	1.00	2.00	18.769	0.000
NB	389	8.54	4.70	5.00	11.00	534	4.41	2.40	3.00	5.00	17.475	0.000
NB/NBD	389	2.48	1.14	1.67	3.00	534	3.13	1.30	2.00	4.00	-7.883	0.000
Premium	389	0.33	0.21	0.17	0.45	534	0.41	0.22	0.25	0.54	-5.2876	0.000

PANEL C: STRATEGIC VS FINANCIAL BIDDERS IN AUCTIONS

	Strategic and Financial Bidders					Only Strategic Bidders						
	N	**Mean**	**St. Dev**	**p25**	**p75**	**N**	**Mean**	**St. Dev**	**p25**	**p75**	**t-statistic**	**p-value**
NBP	345	14.92	16.43	4.00	20.00	276	5.32	8.24	2.00	6.00	8.8817	0.000
NBD	345	4.52	3.00	2.00	6.00	276	1.98	1.13	1.00	2.00	13.4142	0.000
NB	345	9.14	4.64	6.00	12.00	276	5.43	2.71	3.00	7.00	11.8216	0.000
NB/NBD	345	2.31	0.94	1.67	2.67	276	3.01	1.25	2.00	4.00	-7.9390	0.000
Premium	345	0.33	0.21	0.17	0.45	278	0.40	0.22	0.23	0.54	-4.1377	0.000

Table 3
STATISTIC DESCRIPTION FOR TARGET CHARACTERISTICS

This table reports statistics (number, mean, standard deviation) of the target's characteristics used in our estimation as the sample is divided into auctions and negotiations. Information of each target is collected one year before the year of the merger announcement. Variables are defined in Appendix 1. Panel A describes the univariate comparison between the samples of Negotiation and Auction. Panel B represents the univariate comparison between the samples of deal with the participation of financial bidders and deals with only strategic bidders.

PANEL A: AUCTIONS VS NEGOTIATIONS

	Negotiation					Auction						
	N	**Mean**	**St. Dev**	**p25**	**p75**	**N**	**Mean**	**St. Dev**	**p25**	**p75**	**t-statistic**	**p-value**
SIZE	302	6.16	1.38	5.08	7.09	621	5.80	1.30	4.73	6.71	3.9119	0.0001
MTB	302	2.77	1.82	1.49	3.38	621	2.73	2.12	1.29	3.42	0.2449	0.8066
LEVERAGE	302	-0.10	0.37	-0.22	0.12	621	-0.11	0.43	-0.27	0.16	0.0948	0.9245
CASH FLOWS	302	0.07	0.11	0.04	0.13	621	0.06	0.12	0.02	0.13	1.5084	0.1318
RD EXPENSE	302	0.07	0.09	0.00	0.10	621	0.07	0.09	0.00	0.12	-1.0978	0.2726
CHANGE_IN_ROA	302	0.05	1.73	-0.51	0.63	621	0.17	1.98	-0.70	0.81	-0.9258	0.3548

PANEL B: STRATEGIC VS FINANCIAL BIDDERS IN FULL SAMPLES

	Strategic and Financial Bidders					Only Strategic Bidders						
	N	**Mean**	**St. Dev**	**p25**	**p75**	**N**	**Mean**	**St. Dev**	**p25**	**p75**	**t-statistic**	**p-value**
SIZE	389	5.87	1.26	4.89	6.71	534	5.96	1.39	4.76	6.92	-0.9249	0.3553
MTB	389	2.23	1.75	1.15	2.60	534	3.11	2.12	1.61	4.07	-6.7504	0.0000
LEVERAGE	389	-0.10	0.46	-0.28	0.24	534	-0.11	0.37	-0.24	0.10	0.5604	0.5753
CASH FLOWS	389	0.08	0.10	0.04	0.14	534	0.05	0.12	0.02	0.13	3.5623	0.0004
RD EXPENSE	389	0.05	0.08	0.00	0.08	534	0.08	0.10	0.00	0.14	-5.6973	0.0000
CHANGE_IN_ROA	389	0.25	1.91	-0.68	0.83	534	0.04	1.90	-0.63	0.64	1.6784	0.0936

Table 4
STATISTIC DESCRIPTION
FOR THE NUMBER OF BIDS
BY NUMBER OF BIDDERS

This table reports statistics (number, mean, standard deviation, median, max and min) of number of bids (NB) as per number of bidders (NBD). Here we also show the number of deals as per NBD.

Number of bidders	**Number of deals**	**Number of bids (N.B.)**	
		mean	SD
1	416	3.462	1.398
2	194	5.542	2.094
3	117	7.188	2.251
4	67	8.851	2.395
5	33	10.000	2.398
6	26	11.577	2.248
7	20	12.450	1.820
8	50	13.250	1.467
Total	**923**		

Table 5: LEVEL_OF_COMPETITION AND PREMIUM

This table shows the results of four OLS regressions, each using a different factor of competition. The dependent variable for all regression is Premium 4 weeks before the announcement. Column (1) shows results estimated with the natural logarithm of NBP. Column (2) shows the result with the natural logarithm of NBD. Column (3) shows results estimated with the natural logarithm of NB, Column (4) shows results estimated with the natural logarithm of Level_Of_Competition. All of the remaining variables are explained in Appendix 1. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)
Dependent variable		**Premium**		
Log (NBP)	-.034***			
	(.009)			
Log (NBD)		-.03**		
		(.013)		
Log (NB)			-.015	
			(.015)	
Level_Of_Competition				.04*
				(.021)
INITIATION	-.026	-.045**	-.056***	-.048**
	(.02)	(.02)	(.019)	(.019)
COMMITTEE	-.031*	-.034*	-.037**	-.038**
	(.018)	(.018)	(.018)	(.017)
TENDER	.059***	.058***	.057***	.058***
	(.021)	(.021)	(.021)	(.021)
TOEHOLD	-.031	-.032	-.03	-.031
	(.039)	(.039)	(.039)	(.038)
CASH PAYMENT	.016	.01	.005	.004
	(.02)	(.02)	(.02)	(.02)
SIZE	-.014*	-.01	-.01	-.01
	(.007)	(.007)	(.007)	(.007)
MTB	-.01**	-.009*	-.009*	-.008*
	(.005)	(.005)	(.005)	(.005)
LEVERAGE	.085***	.08***	.076***	.078***
	(.028)	(.028)	(.028)	(.028)
CASH FLOWS	-.352***	-.35***	-.353***	-.348***
	(.098)	(.1)	(.1)	(.1)
RD EXPENSES	.378***	.384***	.39***	.386***
	(.145)	(.147)	(.147)	(.147)
CHANGE_IN_ROA	-.004	-.005	-.005	-.005
	(.004)	(.004)	(.004)	(.004)
GDP GROWTH	-2.64***	-2.719***	-2.707***	-2.703***
	(.713)	(.718)	(.72)	(.718)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**
_cons	.582***	.544***	.55***	.489***
	(.062)	(.061)	(.065)	(.064)
Obs.	923	923	923	923
R-squared	.157	.146	.142	.145

Table 6: LEVEL OF COMPETITION IN AUCTIONS AND NEGOTIATIONS

The dependent variable for all regression is Premium four weeks before the announcement in percentage. AUCTION variable carrying value of 1 for auction deal and zero for otherwise. In Column (1), we include interaction terms (Level_Of_Competition × AUCTION). In Column (2) and (3), we estimate the effect of Level_Of_Competition for the two sub-samples negotiations and auctions. Definitions of all variables are provided in Appendix 1. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)
		Negotiation Sample	**Auction Sample**
Level_Of_Competition	-.059*	-.053*	.085***
	(.033)	(.032)	(.027)
***Level_Of_Competition* * AUCTION**	.148***		
	(.042)		
AUCTION	-.197***		
	(.049)		
INITIATION	-.032	.032	-.043**
	(.02)	(.051)	(.022)
COMMITTEE	-.032*	.054*	-.066***
	(.017)	(.031)	(.021)
TENDER	.06***	.023	.07***
	(.021)	(.04)	(.025)
TOEHOLD	-.035	-.148***	.015
	(.04)	(.053)	(.054)
CASH PAYMENT	.01	.025	.003
	(.02)	(.031)	(.027)
SIZE	-.011	-.011	-.01
	(.007)	(.011)	(.009)
MTB	-.008*	-.009	-.006
	(.005)	(.009)	(.005)
LEVERAGE	.083***	.008	.106***
	(.028)	(.052)	(.033)
CASH FLOWS	-.368***	-.481**	-.332***
	(.098)	(.19)	(.112)
RD EXPENSES	.374***	.59**	.287*
	(.144)	(.279)	(.172)
CHANGE_IN_ROA	-.004	-.006	-.004
	(.004)	(.008)	(.005)
GDP GROWTH	-2.592***	-3.949***	-2.158**
	(.71)	(1.194)	(.907)
INDUSTRY F.E.	**YES**	**YES**	**YES**
_cons	.618***	.624***	.423***
	(.072)	(.1)	(.076)
Obs.	923	302	621
R-squared	.162	.222	.164

Table 7: COMPETITION AND BIDDER TYPES

The dependent variable for all regression is Premium four weeks before the announcement in percentage. In Column (2) and Column (3), we include interaction terms (Level_Of_Competition × SONLY) to test whether the effect of competition depends on the bidder's types. Columns (4) and (5) estimate the effect of intention for the strategic bidders and financial bidders separately. Definitions of all variables are provided in Appendix 1. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)
		Full Sample		Sample with only Strategic bidder	Sample with Financial Bidder
Level_Of_Competition	.056***	.077**	.075**	0.002	.074**
	(.021)	(.031)	(.031)	(.027)	(.032)
***Level_Of_Competition* * S_ONLY**		-.079*	-.075*		
		(.041)	(.041)		
S_ONLY		.125***	.121***		
		(.043)	(.043)		
INITIATION		-.039*	-.039*	-.029	-.049*
		(.02)	(.02)	(.029)	(.026)
COMMITTEE		-.029*	-.034*	.004	-.08***
		(.017)	(.018)	(.024)	(.025)
TENDER		.062***	.056***	.039	.07**
		(.021)	(.021)	(.027)	(.033)
TOEHOLD		-.034	-.03	-.044	-.018
		(.038)	(.039)	(.055)	(.052)
CASH PAYMENT		.019	.016	.026	.002
		(.021)	(.021)	(.026)	(.038)
SIZE		-.012	-.011	-.001	-.024**
		(.007)	(.007)	(.009)	(.011)
MTB		-.009*	-.01**	-.01*	-.007
		(.005)	(.005)	(.006)	(.007)
LEVERAGE		.082***	.079***	.051	.109***
		(.027)	(.028)	(.044)	(.036)
CASH FLOWS		-.374***	-.346***	-.358***	-.364**
		(.098)	(.099)	(.132)	(.158)
RD EXPENSES		.406***	.366**	.398**	.342
		(.133)	(.146)	(.179)	(.254)
CHANGE_IN_ROA		-.005	-.005	-.002	-.008
		(.004)	(.004)	(.006)	(.006)
GDP GROWTH		-2.727***	-2.678***	-3.536***	-1.02
		(.71)	(.714)	(.931)	(1.133)
INDUSTRY F.E.	**NO**	**NO**	**YES**	**YES**	**YES**
_cons	.341***	.443***	.432***	.525***	.493***
	(.022)	(.066)	(.068)	(.079)	(.101)
Obs.	923	923	923	534	389
R-squared	.008	.147	.155	.142	.162

Table 8: ANOTHER CLASSIFICATION OF AUCTIONS

The dependent variable for all regression is Premium four weeks before the announcement in percentage. This table contains the results from tests of whether the competition has differential effects on negotiation vs. auction. However, the auction is defined as deals having more than one bidder offering bids. AUCTION2 variable carrying value of 1 for auction deal and zero for otherwise. In Column (1), we include interaction terms (Competition × AUCTION2) to test whether the effect of Level_Of_Competition depends on the selling mechanism with the new classification. In Columns (2) and (3), we estimate the effect of Level_Of_Competition on subsamples Negotiations and Auction by the new classification. Definitions of all variables are provided in Appendix 1. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)
		Negotiations	**Auctions**
Level_Of_Competition	-.030	-.029	.104***
	(.028)	(.028)	(.035)
Level_Of_Competition* **AUCTION2**	.137***		
	(.044)		
AUCTION2	-.155***		
	(.047)		
INITIATION	-.039**	.005	-.063**
	(.02)	(.033)	(.025)
COMMITTEE	-.036**	.048*	-.085***
	(.018)	(.025)	(.024)
TENDER	.06***	.059**	.056**
	(.021)	(.03)	(.028)
TOEHOLD	-.035	-.129***	.024
	(.038)	(.046)	(.059)
CASH PAYMENT	.006	.015	.008
	(.02)	(.026)	(.029)
SIZE	-.011	.007	-.018*
	(.007)	(.009)	(.01)
MTB	-.008*	-.009	-.005
	(.005)	(.006)	(.006)
LEVERAGE	.08***	-.006	.124***
	(.028)	(.043)	(.035)
CASH FLOWS	-.337***	-.492***	-.200
	(.1)	(.141)	(.136)
RD EXPENSES	.381***	.563***	.325
	(.146)	(.207)	(.204)
CHANGE_IN_ROA	-.005	.001	-.008
	(.004)	(.006)	(.006)
GDP GROWTH	-2.716***	-3.052***	-2.397**
	(.712)	(.99)	(.997)
INDUSTRY F.E.	**YES**	**YES**	**YES**
_cons	.576***	.456***	.47***
	(.069)	(.083)	(.09)
Obs.	923	416	507
R-squared	.156	.202	.176

Table 9: HIGH AND LOW NUMBER OF BIDDERS

This table shows the results of two OLS regressions, each measuring the effect of competition on premium in the low and high samples of the auctions sample, based on the number of bidders. The dependent variable for all regression is Premium 4 weeks before the announcement. Column (1) shows results estimated in the low sample. Columns (2) show results estimated in the high sample. All of the remaining variables are explained in Appendix 1. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1

	BOTTOM QUANTILE	**TOP QUANTILE**
Variable	**(1)**	**(2)**
Level_Of_Competition	.071**	.127**
	(.034)	(.057)
INITIATION	-.068**	-.054
	(.026)	(.039)
COMMITTEE	-.043	-.075**
	(.027)	(.038)
TENDER	.078**	.031
	(.031)	(.047)
TOEHOLD	.066	-.146***
	(.066)	(.055)
CASH PAYMENT	.014	-.049
	(.032)	(.055)
SIZE	.003	-.042**
	(.011)	(.017)
MTB	-.004	-.013
	(.007)	(.009)
LEVERAGE	.058	.191***
	(.042)	(.051)
CASH FLOWS	-.316**	-.418**
	(.133)	(.209)
RD EXPENSES	.155	.592*
	(.202)	(.339)
CHANGE_IN_ROA	-.002	-.008
	(.006)	(.007)
GDP GROWTH	-2.201**	-1.579
	(1.015)	(1.753)
INDUSTRY F.E.	**YES**	**YES**
_cons	.358***	.67***
	(.084)	(.16)
Obs.	423	198
R-squared	.150	.270

Table 10: HHINDEX AS AN ALTERNATIVE MEASURE OF COMPETITION

This table shows the results of two OLS regressions, each measuring the effect of HHINDEX on premium. The dependent variable for all regression is Premium 4 weeks before the announcement. Columns (1) show results estimated in the entire sample. Columns (2) show results estimated in the sample of auctions. All of the remaining variables are explained in Appendix 1. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)
	FULL SAMPLE	**AUCTION SAMPLE**
HHINDEX	.046**	.081***
	(.023)	(.028)
NB	.017	.085***
	(.022)	(.030)
INITIATION	-.036**	-.068***
	(.018)	(.021)
COMMITTEE	-.045**	-.048**
	(.02)	(.022)
TENDER	.058***	.070***
	(.021)	(.025)
TOEHOLD	-.031	.016
	(.039)	(.055)
CASH PAYMENT	.007	.002
	(.020)	(.027)
SIZE	-.011	-.010
	(.007)	(.009)
MTB	-.009*	-.005
	(.005)	(.005)
LEVERAGE	.079***	.108***
	(.028)	(.033)
CASH FLOWS	-.349***	-.344***
	(.100)	(.113)
RD EXPENSES	.384***	.291*
	(.146)	(.171)
CHANGE_IN_ROA	-.005	-.004
	(.004)	(.005)
GDP GROWTH	-2.711***	-2.036**
	(.717)	(.909)
INDUSTRY F.E.	**YES**	**YES**
_cons	.097	-.342
	(.234)	(.283)
Obs.	**923**	**621**
R-squared	.146	.162

Appendix 1: Definition of explanatory variables

	Definition	Formulary in database
Bidders and bids		
NBP	Number of bidders sign a confidentiality contract	Hand collected
NBD	Number of bidders offering bids	Hand collected
NB	Number of bids	Hand collected
Level_Of_Competition	NB/NBD	Hand collected
Deal characteristics		
TOEHOLD	Acquirer with toehold=1; without toehold=0	SDC
CASH PAYMENT	Binary variable carrying value of one if payment by cash, zero for otherwise	Hand collected
COMMITTEE	Binary variable carrying value of one of the target firms establishes a specific committee to justify the deal, zero for otherwise	Hand collected
INITIATION	Binary variable carrying value of one of the deals is initiated by target, zero for otherwise	Hand collected
TENDER OFFER	Binary variable carrying value of one of the deals is tendered, zero for otherwise	SDC
AUCTION	Binary variable carrying value of one if the number of bidder signs confidentiality contract is higher than one; zero for otherwise	Hand collected
AUCTION 2	Binary variable carrying value of one if the number of bidders offers bids is higher than one; zero for otherwise	Hand collected
S_ONLY	Binary variable carrying value of one if deals have only strategic bidders offering bids; zero if deals have financial bidders providing proposals.	Hand collected

Target characteristics		
SIZE	The logarithm of target total assets	Compustat
MARKET-TO-BOOK	Market value of equity relative to the book value of equity.	Compustat
RD EXPENSE	Research and development expenses relative to total assets	Compustat
LEVERAGE	Total book value of long-term debt (excluding cash and short-term investments) relative to the enterprise value (market value of equity plus book value of long-term debt minus cash and short-term investments)	Compustat
CASH FLOWS	Operating activities Net cash flow relative to total assets	Compustat
CHANGE_IN_ROA	The absolute change in the industry adjusted ROA over the past three years. ROA is calculated by Ebit/total assets (according to 2-digit US SIC code)	Compustat
Industry control		
FF5	Industry indicator is classified following Fama-French 5 industries in which we drop SIC codes 6000-6999 and 4000-4999	
Time control		
GDP GROWTH	GDP growth rate	World Bank

Appendix 2: Examples for bidding contests

(The background sections from the U.S Securities and Exchange Commission filings named DEFM14C and PREM14A)

A. Case American Science _ 2016

"On February 9, 2016, Deepak Chopra, the President and Chief Executive Officer of Buyer, telephoned John Sanders, a member of the Company's board of directors, indicating an interest in making an acquisition proposal for the Company…. On February 10, 2016, Mr. Chopra telephoned Mr. Dougherty and indicated an interest in acquiring the Company, and noted that Buyer would be sending a written proposal subject to completion of a diligence investigation…In a letter dated February 17, 2016 from Mr. Chopra to Messrs. Dougherty and Helmer, Buyer proposed an all-cash acquisition of the Company for a price between $32.00 and $37.00 per share of Company common stock ….

... It was the consensus of the directors that the proposed price range in the February 17, 2016 letter was not sufficient to commence negotiations and that the Company should inform Buyer it was still considering the proposal. The board of directors concluded that a focused solicitation should be pursued to minimize risks of disclosure and that Evercore should reach out to the four other potential strategic bidders in the detection equipment industry previously discussed at the meeting on February 4, 2016 as most likely to be interested in and best able to realize synergies in a transaction…

On February 23, 2016, Mr. Dougherty telephoned Mr. Chopra to indicate that, while the Company was still considering the proposal, the current valuation range was not sufficient to engage in diligence… Mr. Chopra verbally indicated that Buyer would be willing to increase the

proposed purchase price range to between $37.00 and $42.00 per share of Company common stock...

On February 24 and 25, 2016, representatives of Evercore contacted four other companies in the detection equipment industry, whom we refer to as Company A, Company B, Company C and Company D, to inquire about interest in a potential transaction involving the Company.

Representatives of Evercore reported on the initial reactions from the four other companies in the detection equipment industry that Evercore had contacted, noting that Company A and Company B had requested meetings to discuss a potential transaction and had received drafts of a confidentiality agreement, Company C had expressed interest in a potential transaction and had received a draft confidentiality agreement and Company D had not yet responded to the initial outreach. ... Following the meeting of the board of directors on February 29, 2016, Buyer was provided with the same form of confidentiality agreement previously provided to three of the other companies in the detection equipment industry, Company A, Company B and Company C. The Company's management and representatives of Wilmer Hale negotiated the terms of such confidentiality agreements with each of Buyer, Company A and Company B. The Company entered into confidentiality agreements with Buyer on March 3, 2016, with Company an on March 7, 2016, and with Company B on March 8, 2016. …

… Representatives of Evercore reported that Buyer had executed a confidentiality agreement with the Company and due diligence meetings were scheduled for March 9, 2016, and that confidentiality agreements were almost finalized with Company A and Company B. They also noted that Company C was still evaluating a potential transaction, and that Company D had expressed no interest in pursuing a transaction with the Company at that time.

… They also reported that Buyer, Company A and Company B had each been asked to submit a written indication of interest by March 24, 2016, based upon the diligence information provided to date…

On March 23, 2016, Buyer delivered a letter proposing an all-cash acquisition of the Company at a price of $35.00 to $38.00 ... On March 24, 2016, Mr. Chopra called Mr. Dougherty to outline the rationale for the latest proposal and indicated a likely price point of $37.00 per share....

On March 24, 2016, Company A delivered a letter proposing an all-cash acquisition at a range of $140 million to $150 million in enterprise value, which implied a price of $31.29 to $32.65 per share of Company common stock...

The board of directors met telephonically on March 28, 2016, they also reported that Company B did not submit a written proposal, but had indicated in a telephone call that any bid would be in the range of $30.00 per share of Company common stock, ... The board of directors determined that negotiations with Buyer and Company A should continue with emphasis on quantifying synergies that would … and the Company and Company E executed a confidentiality agreement on March 31, 2016, …

On April 22, 2016, Buyer delivered a letter proposing an all-cash acquisition of the Company at a price of $35.50 per share of Company common stock...

On April 25, 2016, Company A delivered a letter proposing an all-cash acquisition at an enterprise value of $160 million that implied a price of $34.11 per share of Company common stock...

On June 1, 2016, Buyer delivered a letter proposing an all-cash acquisition of the Company at a price of $35.50 per share of Company common stock,

On June 2, 2016, Company A delivered a letter proposing an all-cash acquisition of the Company at an enterprise value of $175 million that implied a price of $35.50 per share of Company common stock. …

On June 5, 2016, Mr. Chopra telephoned Mr. Dougherty and informed him that Buyer would be submitting a revised bid the following day to acquire the Company at a price of $37.00 per share of Company common stock, and that this represented the highest price Buyer was prepared to pay.

On June 6, 2016, Buyer delivered a letter proposing an all-cash acquisition of the Company at a price of $37.00 per share …

On June 7, 2016, Company A delivered a letter proposing an all-cash acquisition of the Company at a price of $35.75 per share …

On June 8, 2016, Buyer delivered a revised draft of a merger agreement and on June 9, 2016, Buyer delivered a letter proposing an all-cash acquisition of the Company at a price of $37.00 per share …. On June 9, 2016, Company A confirmed telephonically to representatives of Evercore that its June 7, 2016 proposal represented its best and final proposal. Company A also delivered a revised draft of a merger agreement…

The Company and Buyer each issued a press release announcing the execution of the merger agreement before the U.S. stock markets opened on the morning of June 21, 2016."

B. Case SRA_2011

On February 16, 2010, Dr. Volgenau met with a senior executive of a strategic competitor, which we refer to as Strategic Bidder B, who expressed interest in exploring a potential strategic transaction involving the Company.

On March 2, 2010, representatives of Providence contacted Dr. Volgenau to introduce themselves and their firm to Dr. Volgenau. During April 2010, Dr. Volgenau and Providence had two additional discussions to explore potential interest in beginning a dialogue regarding a potential sale of the Company.

On May 6, 2010, Dr. Volgenau met with a senior executive of a strategic competitor, which we refer to as Strategic Bidder A, who expressed interest in exploring a potential strategic transaction involving the Company.

On May 12, 2010 and May 18, 2010, Dr. Volgenau had preliminary conversations with representatives of Providence regarding a potential strategic transaction between the Company and Providence. On May 18, 2010, the Company and Providence entered into a confidentiality agreement...

Also on October 27, 2010…At the invitation of the board, representatives of Providence met with the board to discuss possible terms of a potential acquisition proposal, including a preliminary indication of a potential purchase price of up to $28 per share, subject to the completion of due diligence. …

On December 1, 2010, the board of directors received an unsolicited confidentiality written non-binding proposal from Strategic Bidder A to acquire the Company at an indicative purchase price range of $29 to $31 per share. …

On December 29, 2010, a representative of Providence contacted the chairman of the special committee and communicated an indication of interest to acquire the Company at a purchase price of $27.25 per share...

Beginning on January 10, 2011, in accordance with the special committee's directives, Houlihan Lokey initiated contact with additional financial sponsors and, beginning on January 11, 2011, a form of confidentiality agreement was distributed to such financial sponsors.

On or about January 11, 2011, Dr. Volgenau was contacted by a senior executive of Strategic Bidder B, who again expressed interest in exploring a potential strategic transaction with the Company. …

On January 14, 2011, senior executives of a strategic competitor to the Company, which we refer to as Strategic Bidder C, separately contacted each of Dr. Sloane and a representative of Houlihan Lokey to express interest in discussing a potential strategic transaction with the Company…

Between January 17, 2011 and February 9, 2011, the Company entered into confidentiality agreements and had management due diligence meetings with each of Strategic Bidder A and five financial sponsors, which we refer to as Financial Bidder A, Financial Bidder B, Financial Bidder C, Financial Bidder D and Financial Bidder E.

On January 18, 2011, a senior executive of Strategic Bidder C contacted a representative of Houlihan Lokey to again express interest in discussing a potential strategic transaction with the Company.

On January 20 and 21, 2011, representatives from two of the financial sponsors that had been contacted on behalf of the special committee indicated to Houlihan Lokey that such financial

sponsors were not interested in exploring a potential transaction with the Company, citing valuation as the reason…

On January 23, 2011, the board of directors received a letter from Strategic Bidder A indicating that Strategic Bidder A was formally withdrawing its previously submitted non-binding written proposal…

On January 26, 2011, a representative of a strategic competitor to the Company, which we refer to as Strategic Bidder D, contacted Houlihan Lokey to express interest in discussing a potential strategic transaction with the Company…

On or about February 3, 2011, after discussion of these issues by the chairman of the special committee with Dr. Volgenau, Dr. Volgenau agreed that the special committee should contact potential strategic buyers that previously had indicated interest in exploring a potential transaction with the Company. The next day, the chairman of the special committee, in a conference call with representatives of Kirkland and Ellis and Houlihan Lokey, authorized Houlihan Lokey to contact Strategic Bidders B, C and D. Following such call, Houlihan Lokey contacted each of Strategic Bidders B, C and D, and each was provided with a form of confidentiality agreement.

…Strategic Bidder D subsequently indicated that it would no longer pursue a potential transaction with the Company…

Between February 8, 2011 and February 14, 2011, the Company entered into confidentiality agreements with each of Strategic Bidder B and Strategic Bidder C and provided them with an executive summary regarding the Company….

On February 14, 2011, non-binding written indications of interest were received from Financial Bidder A with an indicative purchase price of $32 per share, which proposal also included a request for exclusivity, and from Financial Bidder B with an indicative purchase price

range of $29 to $30 per share. In addition, on that same day, non-binding oral indications of interest were received from Financial Bidder D with an indicative purchase price range of $29 to $30 per share, and from Financial Bidder C with an indicative purchase price of $24 per share. Neither Financial Bidder C nor Financial Bidder D submitted a written indication of interest and both subsequently communicated that they were withdrawing from the process. Also on February 14, 2011 … Financial Bidder E was withdrawing from the process due to its perceived inability to be competitive on price…

On February 14, 2011, Houlihan Lokey contacted a representative of Strategic Bidder A to explore whether Strategic Bidder A would consider rejoining the process, but the representative indicated that Strategic Bidder A was not prepared to do so at that time. …

On February 18, 2011, non-binding written indications of interest were received from Strategic Bidder B with an indicative purchase price of $33 per share, which proposal also included a request for exclusivity, and from Strategic Bidder C with an indicative purchase price range of $30 to $31 per share. In addition, on that same day, Providence submitted a non-binding written indication of interest with an indicative purchase price of $30 per share that, by its terms, would expire on February 23, 2011 unless Providence was granted exclusivity by such date…

On February 21, 2011 … the special committee discussed the material terms of the five non-binding written indications of interest submitted by bidders, as well as information regarding each of the bidders. The special committee determined that, in light of the multiple bids and narrow range of indicative purchase prices submitted by bidders, granting exclusivity to Providence or any other bidder was inappropriate at such time…

Also on February 22, 2011, a representative of a strategic buyer, which we refer to as Strategic Bidder E, contacted Houlihan Lokey to express interest in a potential strategic transaction with the Company…

On February 23, 2011, a representative of Providence informed a representative of Houlihan Lokey that Providence was withdrawing from the process given the special committee's decision not to grant exclusivity to Providence…

On February 24, 2011, Dr. Volgenau discussed a potential transaction with Financial Bidder A…

On February 25, 2011, a bid instruction letter, including a draft merger agreement, was sent to each of the five bidders (including Providence), which letter required final bids and a complete markup of the merger agreement to be submitted by March 18, 2011…

On March 1, 2011, Strategic Bidder E and the Company entered into a confidentiality agreement and Strategic Bidder E was provided with due diligence materials regarding the Company. Thereafter … Strategic Bidder E informed Houlihan Lokey that it would not be continuing in the process…

On March 7, 2011, Dr. Volgenau was informed by a representative of Strategic Bidder B that it was no longer pursuing a potential strategic transaction with the Company…

On March 14, 2011, a representative of Strategic Bidder C notified a representative of Houlihan Lokey that it would no longer pursue a potential strategic transaction with the Company…

On March 17, 2011, a representative of Financial Bidder B notified a representative of Houlihan Lokey that it would no longer pursue a potential strategic transaction with the Company…

On March 18, 2011, a written proposal was received from Providence to acquire 100% of the outstanding common stock of the Company at a purchase price of $30 per share.

Also on March 18, 2011, Financial Bidder A indicated that it would be withdrawing from the process. In order to keep Financial Bidder A in the process, the special committee granted Financial Bidder A an extension of the bid submission deadline until March 20, 2011. On March 20, 2011, a written proposal was received from Financial Bidder A to acquire 100% of the outstanding common stock of the Company at a purchase price of $30 per share…

Between approximately 2:30 p.m. on March 30, 2011 and the beginning of the special committee meeting that evening, the chairman of the special committee, together with representatives of Houlihan Lokey, engaged in negotiations with Providence regarding its proposed purchase price. Providence indicated that it would increase its proposed purchase price to $30.50 per share….

… Following such discussion, representatives of Houlihan Lokey rejoined the board meeting and relayed to the board that Financial Bidder A indicated that its previously communicated $31.25 per share proposal was contingent on having exclusivity through the close of market trading on the following day. ... The special committee then directed its advisors to communicate to Financial Bidder A that it would agree to negotiate exclusively with Financial Bidder A until 3:00 p.m. the next day.

At approximately 3:40 p.m. on March 31, 2011, a representative of Providence informed the chairman of the special committee that it was increasing its purchase price to $31.25 per share. … Subsequently, Financial Bidder A indicated that it was withdrawing its proposal and would no longer participate in the process. Providence did not increase its offer from the previously communicated $31.25 per share.

On the morning of April 1, 2011, the Company and Providence issued a joint press release announcing the execution of the merger agreement.

PART III

CAN PROACTIVE BIDDERS AVOID AN AUCTION PROCESS THROUGH THEIR BIDDING STRATEGY IN ACQUISITIONS?

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ABSTRACT

Given the competitive nature of the takeover business, bidders have many reasons to prefer negotiations to auctions. In light of this, our paper explores the strategies that initiating bidders embrace to complete a deal by one-to-one discussion. Using a hand-collected sample consisting of 496 private cash bids in 329 takeovers initiated by bidders in the U.S market between 2004 and 2016, our results confirm that the premium revision in the private bidding process is associated with a higher possibility for an initial bidder to enter a merger agreement by negotiation. Moreover, the revision speed empowers this relationship, improving the opportunity for the first bidder to complete the deal. Finally, we assert that the decision on negotiation relative to auction is not attributed to the type of initiated bidders. Instead, different bidder types process different strategies that in turn impact their success to avoid competitors.

I. INTRODUCTION

In the corporate takeover market, it is believed that buyers strongly prefer privately negotiated transactions over auctions to avoid bidding competition. On the other hand, sellers are assumed to succeed in elevating offer prices by organizing a competitive auction process (J. Bulow and Klemperer, 2009). The vendor's decision on the type of sale process can be explained by information cost theory, suggesting that target management makes a rational trade-off between the cost of leaking sensitive information and the benefit of bidding competition in an auction (Hansen, 2001; Boone and Mulherin, 2007). In addition, it has been argued that bidders that initiate an acquisition attempt by proactively approaching a target company can influence this trade-off, and hence, the likelihood of facing competitors through their pricing decisions early in the private phase of the deal process. (Giammarino and Heinkel, 1986; Fishman, 1989; Daniel and Hirshleifer, 2018; Eckbo, 2008),

The existing empirical evidence supporting for the second view, however, focuses primarily on the public deal process and thus neglects the critical role of the preceding private bidding phase. For instant, Robert and Mazzeor (1993) analyze a sample of 647 public offers to confirm that higher bid premium discourages competition offer and associate with lower target management resistance; Betton et al. (2000) examine the first, second and final public bid in 1,353 tender offer contests between 1971 and 1990 and conclude that only characters of initiator's offer can influence the outcomes probabilities of a takeover; Aktas et al. (2010) suggest that bidders increase premium to avoid potential competitors.

As Boone and Mulherin (2007) clearly stated, the corporate takeover contest observed in the public stage is just "the tip of the iceberg," the main story of competition lays out in the private bidding phase. Many papers illustrate that, while around half of M&A transactions are found to

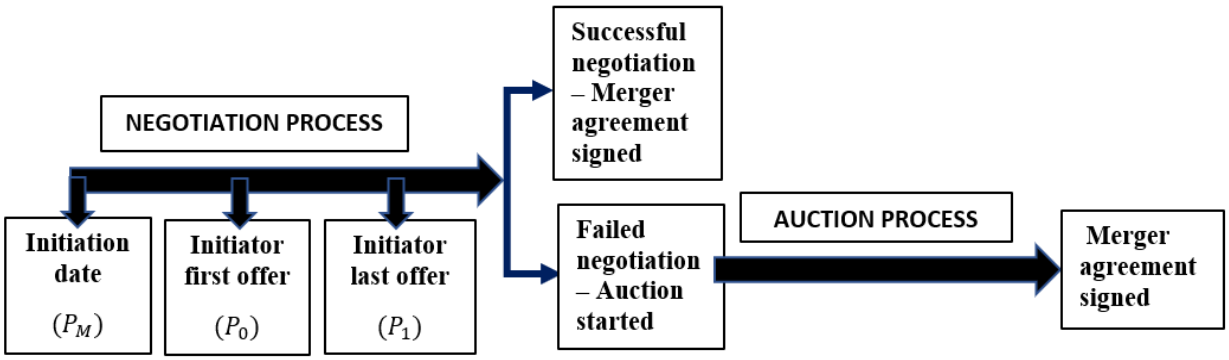
have more than one bidder in the private deal phase, only 5% of public deal phases exhibit more than one bidding party (Eckbo, 2008; Aktas, Bodt and Roll, 2010; Dimopoulos and Sacchetto, 2014). Hence, the role of bidders in setting up a selling procedure should be further explained in the private bidding contest. Fidrmuc et al. (2012) – investigate a simultaneous model including the selling mechanism, the type of buyer (private equity versus strategic buyers) and the ultimate premium being paid – conclude that sellers make the preliminary decision on the selling mechanism. The selling mechanism subsequently affects the type of bidder. Their results refuse an active role for bidders in determining the selling mechanism, contrasting with theoretical literature that forwards a tension between buyers and sellers regarding the consequence of the selling procedure. The authors, however, do not investigate the impact of the level of offer prices during the private negotiation phase. These offers do precede the auction decision in time, in case of bidder-initiated transactions.

In this paper, we aim at filling the gap between existing theory and empirical evidence by answering the question of how the bidder's bidding behavior in the private deal phase impacts the likelihood of successfully closing the deal through a negotiation rather than a competitive auction. We proxy the bidding behaviors by the magnitude of the first bid premium and the revision of premium offering by the initiator. Our empirical study tests how these behaviors impact the target's decision on sale procedures defined by the information of bidder during private bidding process. We also analyze how the speed of bids influences the above relationships. In addition, considering a current vast literature stress on the possible choice of target toward strategic or financial buyers (Bargeron *et al.*, 2008; Fidrmuc *et al.*, 2012), we further extend our analysis to see if bidder types impacts their possibility to close the deal without anticipating competition. Hence, we include the

type of initial bidder to our study and examine if the initiator's identity can influence the relationship between bidding strategy and the decision of sale procedure.

Our empirical analysis relies on Boone and Mulherin (2007) to categorize a deal as a negotiation if the initiator succeeds in buying the target and as an auction if the seller signs a confidentiality contract with more than one bidder following a failed negotiation. Our sample contains 496 all-cash bids in 329 bidder-initiated transactions in the U.S takeover market between January 2005 and December 2016. For each deal, we hand-collect the first offer and the revised offer provided by the initiator during the private bidding process. The revised offer is the written offer right before the negotiation process done by each of the following reasons: (1) the target decides to start the auction process by signing the second confidential contract with another bidder; (2) the target decides to sign a merger agreement with the initial bidder and publicly announce the merger. We also count the number of days between the first and revised bids and record whether bidders who initiate the deals are financial or strategic. **Figure 1** demonstrates the structure of a deal process and the various offers we collect in the private bidding phase for our sample. We only focus on bidder-initiated transactions. Following Betton et al. (2009) and Aktas et al. (2010), we consider two stages in the transaction process. When the bidder initiates the deal, the private negotiation phase starts. In case the bidder fails to convince the target to accept the offers made in the negotiation phase, the target can still decide to move forward with the sale by starting a formal auction process. In that case, we define the auction date as the day sellers sign a confidentiality contract with the second bidder. Complementary to the current literature (Liu and Mulherin, 2018), our sample demonstrates that 60% of the transactions initiated by bidders are settled through a private negotiation.

Figure 1: Two phases private bidding process



Our empirical result confirms the influence of the initiator's bidding strategies on the possibility of facing competitors. The higher the initiator revises its first offer, the higher the opportunity to complete a deal by negotiations. Our results demonstrate that, for 1% of premium increases, the possibility for the initiator to complete the deal by negotiation increases 9,2%. Besides, we prove that, type of initiator does not influence the relationship between jump-bidding premium and sale-procedure decision.

Our paper offers three main contributions to the literature. The most significant contribution of this paper is that we are the first to provide empirical evidence that the bidder's bidding strategy in the pre-deal phase affects the selling mechanism in mergers and acquisitions, supporting earlier theoretical predictions in the public phase. This finding also supports the rationality of the target management concerning the choice of sale procedure. It proves that regulatory efforts to limit target's management behavior might be less appropriate and inefficient. Second, the unique hand-collected data for a set of bidder-initiated transactions allows us to structure an empirical setting in which the offers precede the decision on the selling mechanism. At the same time, prior research focused on a simultaneous model including the final premium paid and the selling mechanism (Fidrmuc et al., 2012). Therefore, our study also contributes to the growing literature using private

bidding competition data (Boone and Mulherin, 2007; Gorbenko, 2019; Masulis and Simsir, 2018; Heitzman and Klasa, 2021). If the actual competition is rooted in the private bidding process, it is more reasonable to examine the bidding strategies using bids before the public phase. We point out that the first private bid is offered at a premium of 36% higher than the market share prices and the jump between the first and the last bids is 48%, on average. The premium revision in deals closed by negotiation is 24% higher than in deals completed by auctions, at 55% and 31%, respectively. Among 248 contests, there are only 33 contests in which initial bidders reduce their first bids premium. We also examine the speed of the bids, which is currently lacking notice by the pre-deal literature (Welch *et al.*, 2020). In negotiations, it takes the initiator 48 days to revise the first bid, five days shorter than the revision period which leads target management to sign a confidentiality contract with the second bidder. Finally, our work answers whether target management is biased toward a specific type of initiator. We show that strategic bidders successfully procure targets more often through private negotiations than financial bidders because they have more aggressive bidding strategy. In our sample, 66% of the sales started by strategic bidders are finalized through a negotiation, while this ratio only amounts to 43% for deals initiated by financial bidders. On average, strategic bidders revise their bids at 36% higher than those of financial bidders. This data is in line with empirical data provided by current literature (Fidrmuc et al., 2012; Gorbenko and Malenko, 2018). Our results do not support the agency hypothesis and confirm that target management is rational in making decisions regarding sale-procedure. This result is in line with Boone and Mulherin (2007) and in contrasts to the conclusion of Firdmuc (2012), who said that the target preferred a typical type of bidder.

Our paper is organized as follows. Section 2 summarizes the literature to form our hypotheses. Section 3 presents our data collection process and empirical methodology. Section 4 analyses our results and explores a possible explanation. Section 5 concludes.

II. LITERATURE REVIEW AND HYPOTHESES

This section reviews the existing literature which subscribes to the relationship between the bidding strategies and the outcome of sale procedures. Initiating an acquisition is indeed a risky business because an acquisition represents a common profit opportunity to several buyers and a possible deal placed on the market might alert other bidders to enter and compete. To the extent that bidding strategies exist, initiators should adjust their bids to deter the participation of potential competitors. In compliance with that driving force, the famous pre-empty bidding theory is a compelling explaination. In addition, management resistance theory will work as another suggestion. The increase in offered premium is conductive to a lower level of management resistance, allowing the initiator to close the deal quickly. More importantly, the revised offer's speed is also taken into account because if the pending period is extended, competitors have more opportunities to enter the takeover contest. Especially, we discuss our results under the challenge of target's choice of bidder type since target management's preference on a typical type of buyers may impact the relationship between bidding strategy and the outcome of sale-procedure.

Hypothesis 1: The bidding strategy performed by the initiator can influence the likelihood of negotiations relatively to auctions.

Hypothesis 1a: Higher first bid premium and higher premium revision increase the opportunities for the initiator to complete the deal by negotiations.

It is well-known that initial bids in takeover auction are placed at a premium of the target market price. This notion has been explained as the acquisition contains profit from synergy gain for acquirers. Fishman (1988) describes this premium through pre-empty bidding theory and suggests that the initial bidder signals his high valuation to lower the intention of another bidder to compete with him. Daniel and Hirshleifer (2018) and Hirshleifer and P'gn (1989) expand this theory with the assumption of costly entry and costly bidding environment. As the first bidder must pay cost to accumulate information about the target and signal his high valuation through his bids, the second bidder's expected revenue of the acquisition shall reduce as the value of the first bid increases. Following this theory, a high enough offer from the first bidder can discourage potential competitors. Empirical evidence also supports the assumption that a higher first bid premium[13] can reduce competition. Examining the structure of initial public bids on the decision of other takeover participants, Jennings and Mazzeor (1993) find that the initial offer's premium is inversely related to the possibility of observing a competitor's offers.

Besides pre-empty bid theory, which talks about the initial offer, Avery (1998) build more general theoretical framework for two-stages auction, using jump-bidding as a signaling device. In his model, jump-bid is the increase of the first offer by the initiator himself. Jump-bid is a signal sent by the initiator to inform about his potential aggressive bidding strategy, which aims to drive potential competitors to drop out quickly. When the bidder offers jump-bid, the author interprets that he wants to send the message, "*Don't compete with me on this item. Beating me in this auction will cause you to suffer a Winner's Curse and lose money*". This message deters competition because it implies that this bidder values target higher than anyone else; thus, if another bidder

[13] First bid premium is also called jump-bid as the offer is higher than the market price of target. See Isaac et al., (2007).

wins over him, that bidder must be overpaid. In an experimental study, Yuri Khoroshilov and Donodova (2014) also support the signaling hypothesis behind this jump-bidding, saying that their result is in line with Fishman (1998) and confirming that higher jump-bid is more likely to deter competition.

Besides signaling to competitors, jump-bid is also used to reduce target resistance and thus avoid competition. Literature confirms that management resistance is positively related to the likelihood of having competitors (David P . Baron, 1983; Giammarino and Heinkel, 1986). Theoretical work on managerial resistance theory suggests that target management typically resists a tender offer because they think the bid is inadequate[14] (Baron, 1993). So, to reduce managerial resistance, making jump-bid can be the proper strategy. For instance, Betton *et al.* (2000) report that target management is more likely to have opposite reactions toward offers with lower premiums. Hence, initiators increase the bids if there is a rumor that target management may decline the offers. Gorbenko, Alexander S. (2014)[15] claim that the target only agrees to sign a definitive merger agreement with the bidder who the target management believes proposing the highest possible offer. This consideration is also reasonable because the cost of the terminational fee[16] prevents the target's manager from signing a merger agreement at a price that is potentially beaten off by other bidders when that offer comes to the public (Boone and Mulherin, 2007). Thus,

[14] Here we examine completed takeover so we do not analyse the reason in which the target management resist the offer because they want to retain their power.

[15] When target public the offer of highest bidder, the private process is ended. Gorbenko and Malenko (2014) assume that bidder will not let other competitor to win at the value lower to their valuation.

[16] The target termination fee is more popular since 1980s (Betton et al., 2009). An amount of fee equal to about 3-4% of the total deal value must be paid to the bidders if target terminates the merger agreement signed with him because other bidder offers higher (Eckbo, 2008).

initiators are expected to increase their bids to gain support from target management and prevent competition.

Based on the aforementioned arguments, we proxy bidding strategy as the premium of the first private offer by the initiator and the revision of that first offer (Jennings and Mazzeor, 1993; Betton et al., 2000). We hypothesize that the first bid premium and its revision are invertly related to the possibility of the initiator to encounter a competition contest.

Hypothesis 1b: A quicker revision of premium increases the possibility of initiator completing the deal by negotiation.

Target resistance is to raise the expected premium and give time for the competitor to enter. Hence, the relationship between premium revision and the chance of completing without competitors can be influenced by the speed of the correction. It is believed that hurrying to close the deal may contain risk for bidders from overvaluing. However, shared knowledge is that a delay in deal-making may give adequate time to allow bidding competition to develop (Baron, 1983; Luo, 2005; Luypaert and De Maeseneire, 2015; Calcagno and Bodt, 2021). In addition, more extended time of negotiations increases the possibility of an agreement being abandoned because of legal change (Bainbridge, 1990) and management frustration (Dikova et al., 2010). So, to a better understanding the relationship between bid revision and competition outcomes, we examine this relationship under the variation of the revision speed. We expect that the revision speed shall increase the effect of the premium revision on the chance for the initiator to complete the deal by negotiation.

Hypothesis 2: The type of initial bidder will not impact the relationship between bidding strategy and negotiation possibility.

A challenging question that may arise from our first hypothesis is whether the target prefers one type of bidder to the other type. Suppose the target management favors a typical type of bidder over the other, the bidder type may impact the relationship between strategy and the possibility of closing a deal by negotiation because target may require their non-preferred type to fight harder than the other type. Existing literature classified a typical bidder into strategic and financial types. A strategic bidder is a firm operating in the same or related industry, and its primary motivation to acquire a target is integrating the target's business into its system. Unlike a strategic buyer, a financial buyer treats typically target as an investment object which can be improved in value and resold later for a profit.

To address this question, we refer to the agency conflict theory, which has been discussed largely as an essential topic in merger and acquisition (Jensen and Meckling, 2019; Walking and Long, 1984). Empirical evidence confirms that target shareholders receive lower premia if the target's management is offered more significant benefits from the acquirer (Hartzell, Ofek and Yermack, 2004). Following a growing body of literature on the difference between premium paid by strategic and financial bidders, Bargeron (2008) argues that agency conflict explains why strategic acquirers pay higher premiums than financial acquirers. He comments that financial bidders may offer better conditions for target managers, such as allowing them to keep their job or receive a large payoff when the target firm goes public again in the post-merger stage. If this agency conflict argument is prevailing, we expect that the type of initial bidder impacts the relationship between bidding strategy and sale procedure decision.

However, more recent literature suggests another view which said that strategic and financial bidder have different bidding strategy, and thus their bidding strategies create the difference in their opportunity to close the deal by negotiations. The bidding decisions of strategic and financial

initiators might be different from each other because they are different in motivation (Gorbenko and Malenko, 2018). As the high initiation offer signals very high potential synergy gain (Giammano and Heinkel, 1986), we expect strategic initiators to offer higher premiums and revise the bid higher than the financial bidders. Unlike strategic bidders, the biggest challenge posed to financial bidders is how to generate profit from the investment assets after acquisition. Thus, they compete for the anticipated value of targets such as low market-to-book, high cash flow generating ability, or management restructuring possibilities (Gorbenko and Malenko, 2014). When competing for common values that other competitors also realize, the competition is more feasible to induce a winner's curse than the auction scenario for a specific value (Kagel and Levin, 1986; Bulow et al., 1999). As a result, the caution against the winner's curse effect may influence financial bidders' behaviors and induce them to bid non-aggressively (Smith, 1981). Regarding the speed of revision, it is believed that during the private bidding process, financial bidders with more substantial experience in due diligence may finish the deal quicker than strategic bidders (Kaplan and Stro, 2008). However, as strategic bidders are firms working in the same or close industries, they better understand the target's operating and structure than financial bidders. Thus, they can be quickly in deal-diligence. In contrast, financial bidders pay more attention to the target's value-enhancing after mergers, so they may want to take more time to estimate the value of the target. In sum, as financial and strategic bidders have different strategies, they will encounter distinct possibilities of completing the deal by negotiation.

In conclusion, how the initial identity impacts on the relationship between bidding strategy and negotiation possibility remains an empirical question. We use the binary variable proxied for type of initiator to investigate the true effect of initiator type on that relationship.

III. DATA AND METHODOLOGY

3.1 Contest design and characteristics

As presented in **Figure 1**, the private bidding process analyzed in our sample has two phases. The first phase is the negotiation phase, which starts from the initiation date and finishes at the auction date. After a bidder initiates an official suggestion to purchase 100% control shares, two parties sign a confidentiality contract. The initiator then works with the non-public information provided by the seller through the due-diligence process and provides the first offer after examining public and partially private information of the target. According to the legal base of takeover defenses (Eckbo, 2008), Delaware sanctions the right of the target's management to "just say no" to an unsolicited bid after considering fiduciary duty and business judgment rules. However, after making decision to enter a sales of control, Revlon-duties ask for manager's obligation to seek for the bid providing the best shareholders' interest (Eckbo, 2008). The activities of signing a confidentiality contract are considered the target's decision to enter the sale of control. Therefore, the target management must exercise their Revlon duties to select the best offers to maximize shareholders' benefit. After examining the first offer by the initiator, target management can provide a counteroffer or express their disagreement with the first offer and requires a higher premium—the initiator can increase his first offer with or without requiring more private information from the target. In some cases, the bidder might even reduce the premium if they find disadvantaged information during their due-diligence process. If the target management accepts the revised offer and signs a definitive merger agreement with the initiator, the deal is finished by negotiation and the initiator becomes the winner. If the target management is disappointed with the revised offer premium, they can call for other bidders to participate, and the auction phase starts. Other competitors can enter and sign a confidentiality contract with the target and examine

the target's private information. Thus, we classify the initiator's success based on competitors' participation: If the announcement is made through private negotiation without the intervention of any competitor, the initiator succeeds in winning the deal by negotiation (Betton *et al.*, 2000). If the target management signs a confidentiality contract with other bidders and the auction begins, the initiator has to face competition. This classification is also in line with Jennings and Mazzeor's (1993) prediction since they suggest that the target management resistance is associated with the likelihood of having competitors.

3.2 Data

We structure our sample from all completed deals announced between 2005 and 2016 from the Thomson One Banker Securities Data Company database (SDC). The deals must satisfy the following conditions: (1) Acquirers and targets are both US public firms; (2) Only targets that are non-financial and not active in the utility industry are retained (SIC codes 6000-6999 and 4000-4999 are excluded); (3) A change in control is realized where bidders held less than 50% of target shares before the transaction and ended up owning 100% of the target's common shares after the transaction; (4) The deal is not an undisclosed value merger, spin-off, recap, self-tender, repurchase, minority stake purchase, acquire remaining interest, and privatization; (5) Forms of the deals are "merger" and "acquire major interests"; (6) Deal value exceeds $50 million.

As we will measure the first bid premium and premium revision of the initiator, we select deals with stock price information available on the Center for Research in Securities Prices (CRSP). We also search for target characteristics data from the Compustat database because we control target antecedents when examining the influence of bidding strategy on sale procedure. This step yields 1031 deals.

To collect the bidding information in the private stage, we check on Edgar files from the U.S. Securities and Exchange Commission (SEC) for the availability of the following files: DEFM14A, PREM14A, SC-TO-T, and S4. From the "Background of the mergers," we can collect data on the initiation date, the identification of the initiator such as target, strategic bidder or financial bidder, date of signing the second confidentiality contract, which we are going to define as the private auction date, date and price of each confidential bids and the type of bidders who offer those bids. This step comes up with 545 deals in which we can identify all of the above information during the private bidding process.

Finally, since we are going to examine how initiation bidder bargaining strategy to influence selling procedure during private process following the two-steps model built by Betton, Eckbo, and Thorburn (2009), we select only deals initiated by bidders and have the bargaining process happening before the auction date to construct our sample. We also choose only deals with cash bids to discuss the process because our sample contains of deals completed by not only strategic but also financial bidders who can not offer a stock swap. Moreover, Fishman (1989) suggests that target management is less likely to resist cash bids than an offer involving equities. In the same vein with Liu and Officer (2021), most of the bids we collected are provided after confidentiality agreement after carefully analyzing of public and unpublic information of targets. Thus, the proposals reflect an effort of bidders to negotiate with sellers, not to perform a hostile acquisition. Suppose the second confidentiality contract is signed before the initiator places the first offer. In that case, the deal will be excluded from our sample because these deals do not reflect the model we follow. We follow Boone and Mulherin (2007) to identify negotiation as deals with only one bidder signing a confidentiality contract and auction with more than one bidder signing the

confidentiality contract. We came up with our final sample of 329 deals initiated by the bidder and that bidder provides offer/offers before sale-procedure decision is made.

Our empirical analysis focuses on the data of non-bidding bids, following Liu and Officer (2021). There are several reasons to justify the seriousness of the non-binding bids. First, on average, the first bid is offered after 52 days from the initiation date, and the revision bid has 50 days from the date of the first bid. This information indicates that bidders submit the non-binding proposals with extensive analysis about the target's value from public and private information. Second, this private bidding process is not free of charge since the initiator has to pay for gathering information and to perform due diligence (Eckbo, Malenko, and Thorburn, 2020). Finally, our data is based on bidder initiating deals. As discussed above, the bidder bears the risk of losing their confidential information about business strategy when making the initial offer to the target, so they will not make the offer without a serious intention.

3.3 Variables

We examine the possibility of a deal to be a negotiation/an auction, so we use dependent variable as a binary variable named NEGOTIATION which carrying the value of 1 if the initiator completes the deal without the participation of any rival; This variable weights 0 if the target decides to sign a confidentiality contract with the second bidder after the initiator makes its offers (the negotiation fails).

We use the first bid premium and the premium revision to proxy for initiator's jump-bidding behavior. These represent bidder's effort to discourage potential competitors and tackle the target's management resistance. The premium is more convinced than the absolute value. As per evidenced by Heitzman and Klasa (2020), informed investors trade on new personal information and lead to

target's public share prices increasing after the initial offer; besides, Luo (2005) confirms that mergers companies extract information from market reaction to complete the deal.

The *First_Bid_Premium* is calculated by the initial offer scaled by the public price at the initial date. The *Premium_Revision* represents the percentage increase of premium based on the *First_Bid_Premium*. It is calculated by the difference between the revised offer and the first offer, scaled by the difference between the first bid and the public price at the initiation date. Using hand-collected information from the Edgar files for each transaction, we obtain the initial offer and the revised offer before the auction date. If the deal is negotiation, the revised offer is the last offer before the date that the merger agreement was signed. If the deal is auction, the revised proposal is the one before the auction date. Our calculation of bid revision follows Betton *et al.* (2000).

$$First\ bid\ premium = \frac{First\ bid\ price}{Market\ price\ at\ the\ initiation\ date}$$

$$Premium\ Revision = \frac{Revised\ bid\ price - First\ bid\ price}{First\ bid\ price - Market\ price\ at\ the\ initiation\ date}$$

The variable DURATION is calculated by the logarithm of the number of days from the first bid to the revised bid provided by the initiator. We also examine the effect of initial bidder type through a binary variable (TYPE_OF_INITIATOR) carrying the value of 1 if the initiator is financial and 0 if the initiator is a strategic bidder.

Appendix 1 presents all definitions, and **Table 1** reports the descriptive statistics for all variables used in our analysis.

3.4 Methodology

In order to test our first hypothesis, we perform the logit regressions with the binary dependent variable *NEGOTIATION*. We control deal characteristics, target characteristics, market conditions, and liquidity index as existing literature comment that these variables impact the sale procedure decision (Schliemann *et al.*, 2002; Aktas, 2010; Fidrmuc *et al.*, 2012; Axelson *et al.*, 2013; Schlingemann and Wu, 2015). We also hold industry-fixed effects by Fama-French 5 industry classification scheme. We model our logit estimator with the following equation:

$$\boldsymbol{NEGOTIATION} = \alpha_1 + \beta_1 FIRST\_PREMIUM + \beta_2 PREMIUM\_REVISION + \beta_3 DEAL$$

$$+\beta_4 TARGET + \beta_5 LIQUIDITY + \beta_6 MARKET + \beta_7 INDUSTRY + \varepsilon$$

DEAL: Deal characteristics are the dummy variable for TOEHOLD and TENDER.

TARGET: Target's features such as SIZE, R&D EXPENSES, CASH_FLOWS, MTB, LEVERAGE, TANGIBLE ASSETS, CHANGE_IN_ROA, CHANGE_OF_SALES.

LIQUIDITY: LIQUID_INDEX

MARKET: STOCK_RETURN, CREDIT_SPREAD.

INDUSTRY: FF5

Then, in order to test the hypothesis 1b, we examine how the relationship between the PREMIUM_REVISION and the possibility of NEGOTIATION is influenced by the duration of the revising period. Thus, we add the interaction term (PREMIUM_REVISION x DURATION) into our logit estimation. Besides, it is also interesting to see if a fast revision influences the possibility of completing a deal by negotiation, taking into account the same final premium. So we

control the PREMIUM which is collected from the SDC as the premium four weeks before the public date to see what a smart strategy could be.

Finally, we extend our analysis to examine how the type of initiator (strategic and financial initiators) influences the relationship between bidding strategy and the possibility of negotiation/auction. Firstly, we include the independent variable TYPE_OF_INITIATOR in the Equaltion (2). If the significance of the variables proxied for bidding strategies (PREMIUM_REVISION, DURATION, PREMIUM_REVISION x DURATION) are reduced as we add the binary variable TYPE_OF_INITIATOR into our list of control variables, it means the initial identity impacts on the decision of negotiation/auction. Secondly, we also add the interaction term (TYPE_OF_INITIATOR x PREMIUM REVISION) to the regression. If the interaction term is significant, we find evidence to show that target is biased against a typical type of bidder.

IV. RESULTS

4.1 Univariate analysis

Our univariate results in **Table 1_Panel A** indicate that while the *First_Bid_Premium* is not significant, the two variables, *Premium revision* and *Duration*, are statistically different between negotiations and auctions, at 5% and 1% respectively. In negotiations, the initial bidder revises its premium at 55%, 24% higher than the average revision level that lead to auctions. The time of revision between two bids in auctions is also longer, suggesting a slower reaction of the initiator in auctions. Our sample contains 81 cases in which the initiator does not revise the premium. For those cases, the revision premium is recorded as zero. The information of the duration, however,

is unobservable for these cases. The robustness test will include the result of the sample including these cases.

The univariate result in **Table 1_Panel B** signals that strategic and financial initiators are divergent in their bidding strategies. Mainly, their *First_Bid_Premium* and the *Premium_Revision* are significantly different at 1% level. Strategic bidders offer 11% higher for the first bid premium compared to financial bidders. Impressively, they revised the first bid at 33% higher than financial bidders, at 44.1% compared to11.2%, respectively. These results suggest that strategic initiators are more potent and aggressive than financial initiators. However, there is no significant difference between the time it takes both types of initiators to revise the first offers.

Table 1_Panel C and Panel D present univariate tests for the difference between strategic and financial bidders in negotiation and auction samples, respectively. In both samples, strategic bidder offers much higher than financial bidder for the first bid premium and the difference is significant at 1% level. Strategic initiator revises the premium at 42% higher than financial bidder does in negotiation sample. However, the premium revision of both is not statistically different in the auctions sample, suggesting that strategic bidders are more likely to acquire target by negotiations than financial bidders because they are more aggressive, especially in jump-bidding strategy.

Table 1: Statistic descriptions

This table shows the statistic for three variables of interest in our analysis. *First_Bid _Premium* is the first offer price relative to the market price at the initiation date. *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Duration* is the natural logarithm of the number of days between the first and the revised offer by initiators. Panel A presents bidding strategies according to sale procedures. Panel B presents bidding strategies as per type of initiator. Panel C presents the same information of Panel B but for negotiation sample. Panel D presents for auction sample.

PANEL A: SALE PROCEDURE

	AUCTION			**NEGOTIATION**				
Variables	N	mean	sd	N	mean	sd	t-statistic	p-value
First_Bid_Premium	129	.370	.266	200	.364	.272	0.209	0.834
Premium_Revision	129	.512	.045	200	.902	.064	-3.920	0.000
Duration	67	3.716	1.223	181	3.185	1.188	3.084	0.002

PANEL B: INITIATOR

	STRATEGIC INITIATOR			**FINANCIAL INITIATOR**				
Variables	N	mean	sd	N	mean	sd	t-statistic	p-value
First_Bid_Premium	254	.392	.279	75	.282	.214	3.151	0.001
Premium_Revision	254	.445	.810	75	.112	.661	3.255	0.001
Duration	206	3.315	1.264	42	3.387	.967	-0.349	0.728

PANEL C: NEGOTIATION SAMPLE

	STRATEGIC INITIATOR			**FINANCIAL INITIATOR**				
Variables	N	mean	sd	N	mean	sd	t-statistic	p-value
First_Bid_Premium	168	0.381	0.281	32	0.274	0.198	2.055	0.041
Premium_Revision	168	0.571	0.879	32	0.152	0.957	2.437	0.016
Duration	153	3.158	1.222	28	3.326	0.983	-0.685	0.494

PANEL D: AUCTION SAMPLE

	STRATEGIC INITIATOR			**FINANCIAL INITIATOR**				
Variables	N	mean	sd	N	mean	sd	t-statistic	p-value
First_Bid_Premium	86	0.412	0.2755	43	0.287	0.228	2.568	0.011
Premium_Revision	86	0.201	0.587	43	0.083	0.301	1.234	0.219
Duration	53	3.767	1.286	14	3.508	0.959	0.699	0.487

4.2 Results

4.2.1 Bidding strategy

The results in **Table 2** support our first hypothesis. Column (2), (4) and (5) present that *Premium_Revision* variable is always significant at 1%. This result means that as the bidder revises his bid upward, the premium can compensate for the benefit from competition, and thus target management decides to agree with the offer from the initiator. This result is also in line with the finding by Boone and Mulherin (2007) that target manager is rational in choosing between negotiation and auctions following information cost theory. Moreover, the effect of Premium Revision also set up a premise for the presence of pre-empty bidding effect in the public phase that explain why the number of competitors in the public bidding process is so rare as demonstrated by the existing literature. Supposed that an initiator and a seller together publicize the merger agreement with a premium resulting from the private due-diligence process. Potential bidders do not know if they can pay target a higher premium unless they pay cost for due-diligence to gather information about the target. These challenging decision causes competitors to be unwilling to enter the deal. Furthermore, if the target cancels the merger agreement to go with the new buyer, the termination fee paid for initial bidder will enter the total cost of purchasing and farther reduce the expected earnings from purchasing, finally discouraging the rival to compete.

While *Premium_Revision* specifies a strong impact on the possibility of completing the deal by negotiation, the coefficient of the variable *First_Bid_Premium* is not significant. Although the first bid premium does not impact sale procedure, Hansen (2001) mentions in his text a possibility to explain why the first bidder does not pay very high at the beginning. As per his document, since the target may consider the first offer as a reserved price, initial bidder will encounter a difficulty situation in adjusting the price downward in the later rounds of bidding process. This consideration

can be a trade-off against the desire of the initiator for a pre-empty bidding strategy for its private first bid.

Table 2: Bidding Strategies influence Private Sales procedures

This table shows the results of five logit regressions whereby the dependent variable *Negotiation* equals one if a the deal is finished without competitions and equals zero if the deal is eventually finished with an auction contest. *First_Bid _Premium* is the first offer price relative to the market price at the initiation date. *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Other control variables* are defined in **Apendix A**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
First_Bid_Premium	-.088		.174		.386
	(.415)		(.479)		(.484)
Premium_Revision		.767***		.999***	1.006***
		(.274)		(.334)	(.335)
LIQUID_INDEX			-.065	-.034	-.033
			(.121)	(.12)	(.12)
TOEHOLD			.11	.237	.267
			(.583)	(.565)	(.561)
TENDER			-.099	-.092	-.079
			(.274)	(.273)	(.272)
SIZE			-.005	.008	.018
			(.117)	(.117)	(.119)
MTB			-.071	-.076	-.077
			(.076)	(.075)	(.075)
LEVERAGE			-.461	-.402	-.448
			(.403)	(.394)	(.402)
CASH_FLOW			.623	1.095	1.359
			(1.485)	(1.467)	(1.508)
RD_EXPENSES			-.183	.339	.224
			(1.776)	(1.72)	(1.709)
CHANGE_IN_ROA			-.057	-.065	-.063
			(.062)	(.066)	(.065)
SALE_GROWTH			.306	.27	.266
			(.189)	(.193)	(.192)
MARKET_RETURN			-2.382**	-2.687**	-2.669**
			(1.051)	(1.095)	(1.097)
CREDIT_SPREAD			-.336*	-.475***	-.494***
			(.174)	(.181)	(.185)
_cons	.471**	.205	1.69*	1.654*	1.492
	(.19)	(.138)	(.949)	(.934)	(.962)
INDUSTRY F.E.	**NO**	**NO**	**YES**	**YES**	**YES**
Observations	329	329	329	329	329
Pseudo R^2	0.01	.040	.060	.113	.115

Table 3 strongly confirms our hypothesis 1b that the correction time is associated with the higher possibility of completing a deal by negotiation. The variable *Duration* is highly significant at 1% in **Columns (1) and (2),** the level of significant is unchanged despite that we control for all the difference in deals, target characters and market conditions. In **Column (3),** we control for the *Premium_Revision* and the result remains significant. In **Column (4),** we present the interaction term *Premium_Revision x Duration.* The interaction term is negative significant at 5% level which means that given the same level of revision, the quicker the initiator revises his first bid, the higher the opportunity that he can obtain a merger agreement without the intervention of any competitors. This result confirms our first hypothesis. Finally, to check if the bidding strategies are still prevailing holding the final premium unchanged, we control the final premium four weeks before the public date in **Column (5).** Our results do not change. Thus, the initiators can choose a smart bidding strategy to avoid competitors holding premium the same. We also present the marginal effect of the logit estimations for the last two regressions on **Columns (6) and (7**).

In general, the results presented in **Table 3** support our first hypothesis that bidding strategy can impact the possibility that an initiator completing a deal by negotiations/auctions.

Table 3: Duration and Private Sales procedures

This table shows the results of five logit regressions (Columns 1 – 5) whereby the dependent binary variable NEGOTIATION equals one if the deal is finished without competitions and equals zero if the deal is eventually finished with an auction contest. The last two columns present the marginal effects of regressions in columns (4) and (5). *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Duration* is the natural logarithm of the number of days between the first and the last offers by initiator. *Other control variables* are defined in **Appendix A**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Duration	-.391***	-.421***	-.468***	-.317*	-.324*	-.049	-.050
	(.139)	(.147)	(.159)	(.171)	(.173)		
Premium_Revision			.588**	2.603***	2.589**	.403	.400
			(.252)	(.999)	(1.021)		
Duration x Premium revision				-.459**	-.455**	-.071	-.070
				(.214)	(.218)		
Premium					-.288		-.044
					(.285)		
First_Bid_Premium			.16	.162		.025	
			(.619)	(.615)			
LIQUID_INDEX		-.203	-.161	-.16	-.15	-.024	-.023
		(.154)	(.15)	(.146)	(.147)		
TOEHOLD		1.448	1.578	1.555	1.862**	.181	.200
		(1.12)	(1.099)	(1.142)	(.83)		
TENDER		.004	.019	-.043	-.023	-.006	-.003
		(.362)	(.363)	(.371)	(.374)		
SIZE		-.053	-.045	-.03	-.038	-.004	-.005
		(.142)	(.15)	(.149)	(.15)		
MTB		-.103	-.103	-.087	-.077	-.013	-.011
		(.103)	(.102)	(.102)	(.101)		
LEVERAGE		.865	.878	.906	1.088	.140	.168
		(1.605)	(1.616)	(1.65)	(1.631)		
CASH_FLOW		.625	1.184	1.334	.84	.207	.130
		(1.847)	(1.981)	(1.995)	(1.996)		
RD_EXPENSES		1.434	1.785	1.621	2.226	.251	.344
		(2.298)	(2.259)	(2.286)	(2.337)		
CHANGE_IN_ROA		-.145*	-.144*	-.169**	-.162*	-.026	-.025
		(.079)	(.081)	(.083)	(.085)		
SALE_GROWTH		.639**	.577*	.516*	.498	.080	.077
		(.284)	(.302)	(.312)	(.308)		
MARKET_RETURN		-3.488**	-3.812***	-4.16***	-4.124***	-.645	-.638
		(1.399)	(1.439)	(1.478)	(1.475)		
CREDIT_SPREAD		-.374*	-.53**	-.621**	-.61**	-.096	-.094
		(.225)	(.252)	(.25)	(.248)		
INDUSTRY	**YES**	**YES**	**YES**	**YES**	**YES**		
_cons	2.347***	4.283***	4.384***	4.063***	4.207***		
	(.525)	(1.354)	(1.378)	(1.388)	(1.381)		
Observations	248	248	248	248	248		
Pseudo R^2	.034	.153	.178	.192	.195		

4.2.2 Type of initial bidders

We subject our finding to more critical analysis as per the discussion in Hypothesis 2. As target may prefer a typical type of bidder to the other, we control *Type Of Initiator* in our logit estimation for the influence of bidding strategy on sale-procedure. In **Column (1) – Table 4,** the variable *Premium_Revision* is significant at 1%, identifying that the importance of bidding strategy is standstill despite of controlling for bidder identity. The variable *Type_Of _ Initiator* is also negative significant at 1%, suggesting that financial initiators have less chance to finish the deal by negotiations compared to strategic initiators. This result is different from Bargeron *et al.*, (2008) who said that target prefers financial bidder so that financial bidder paid lower premium. In **Column (2)**, we add the interaction term *Type_of_Initiator x Premium_Revision* to test if the bidder identity influences the relationship between bidding strategies and the likelihood of negotiation relative to auction**.** However, this interaction term is not significant, so there is no evidence to conclude that the initiator identity can moderate the effect of bidding strategy on the negotiation likelihood. In **Column (3),** we add *Duration* and both *Duration* and *Premium_Revision* is significant at 1%, while the *Type_Of_Initiator* dummy turns to be insignificant, indicating that the speed of revision outpaces the impact of bidder type on negotiation possibility. In **Column (4),** again, the *Type_Of_Initiator* variable remains insignificant while the interaction term *Premium_Revision x Duration* is negative significant at 5%. In general, we do not find any evidence to argue that the influence of bidding strategy on the sale-procedure is moderated by the type of initiator. Hence, we conclude that the first argument of our second hypothesis about the target's preference on a typical type of bidder is not testified. In contrast, we also find that the likelihood for strategic initiator to complete a deal by negotiation is higher than that of financial initiator, because **Column (1) Table 4** shows that the variable *Type_of_Initiator* is negative

significant at 1% level. This result is consistent with our analysis from **Panel B, C,** and **D** in **Table 1** and supports the second argument of our second hypothesis that strategic and financial initiators have different bidding strategy.

To futher confirm this argument, we perform three simple OLS estimations where dependent variables are *First_Bid_Premium, Premium_Revision*, and *Duration*. The result of OLS regressions in **Table 5** support our second view in Hypothesis 2 as it point out that strategic bidders are more aggressive with higher first offer and jump-bidding. This result also provides evidence to explain why strategic bidders close a deal by negotiations more often than financial initiators. In **Table 5 - Column (2)**, the *First_Bid_Premium* and *Premium_Revision* are significantly different between strategic and financial bidders. The coefficients of 0.084 and 0.347 indicate that after controlling for other differences in deal terms and target characteristics, strategic initiators paid the first bid at 8.4 percentage point and revise the first bid premium by 34.7 percentage points higher than financial initiators. We do not find that the *Duration* variable is significantly differences between strategic and financial initiators and this result is also consistent with our univariate analysis. In general, our result suggests that the type of bidder impact possibility of negotiations because strategic and financial bidders are different in their bidding strategy, not because of the preference of target management on any specific bidder type.

On overall, our result suggests a different view from the findings of Fidrmuc et al. (2012). We prove that initial bidder can use the bidding strategy to impact sale-procedure. The higher and quicker the first bid is revised, the higher the possibility of the initiator to acquire the target without any intervention of potential competitors.

Table 4: Bidding Strategies influence Private Sales procedures

This table shows the results of four logit regressions whereby the dependent binary variable NEGOTIATION equals one if the deal is finished without competitions and equals zero if the deal is eventually finished with an auction contest. *Type_Of_Initiator* is a binary variable equal to 1 if the initiator is financial and zero if initiator is strategic. *First_Bid _Premium* is the first offer price relative to the market price at the initiation date. *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Duration* is the natural logarithm of the number of days between the first and the last offers by initiator. *Other control variables* are defined in **Table 1**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**	**(4)**
Type of Initiator	-.817***	-.675**	-.183	.045
	(.302)	(.327)	(.442)	(.493)
Premium_Revision	.913***	1.195**		2.615***
	(.342)	(.509)		(1.009)
Type_of_Initiator x Premium_Revision		-.78		
		(.668)		
Duration			-.424***	-.32*
			(.148)	(.17)
Premium_Revision * Duration				-.461**
				(.215)
LIQUID_INDEX	-.056	-.05	-.208	-.158
	(.119)	(.118)	(.153)	(.146)
TOEHOLD	.41	.538	1.503	1.54
	(.584)	(.605)	(1.147)	(1.158)
TENDER	-.097	-.079	.01	-.042
	(.272)	(.276)	(.362)	(.372)
SIZE	-.01	-.025	-.055	-.029
	(.12)	(.119)	(.142)	(.151)
MTB	-.101	-.103	-.108	-.086
	(.073)	(.074)	(.104)	(.102)
LEVERAGE	-.71	-.733	.847	.945
	(1.117)	(1.123)	(1.613)	(1.636)
CASH_FLOW	1.009	1.131	.639	1.215
	(1.482)	(1.515)	(1.851)	(1.895)
RD_EXPENSES	-.072	-.104	1.274	1.716
	(1.689)	(1.725)	(2.321)	(2.338)
CHANGE_IN_ROA	-.046	-.038	-.14*	-.172**
	(.067)	(.069)	(.081)	(.085)
SALE_GROWTH	.205	.204	.625**	.516
	(.193)	(.197)	(.284)	(.314)
MARKET_RETURN	-2.488**	-2.492**	-3.418**	-4.168***
	(1.102)	(1.11)	(1.411)	(1.489)
CREDIT_SPREAD	-.455**	-.483**	-.371	-.614**
	(.186)	(.19)	(.227)	(.249)
_cons	2.175**	2.225**	4.37***	4.08***
	(.917)	(.927)	(1.358)	(1.388)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**
Observations	329	329	248	248
Pseudo R^2	.129	.134	.153	.192

Table 5: Strategic and Financial Initiators

This table shows the results of three OLS regressions. The dependent variable in column (1) is *First_Bid _Premium* which is the first offer price relative to the market price at the initiation date. The dependent variable in column (2) is *Premium_Revision* which is measured by the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. The dependent variable in column (3) is *Duration* which is calculated by the natural logarithm of the number of days between the first and the last offer by initiators. *Type_Of_Initiators* is a binary variable equal to 1 if the initiator is financial and zero if initiator is strategic. *Other control variables* are defined in **Table 1**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**
Type_of_Initiators	-.084**	-.347***	-.07
	(.033)	(.102)	(.193)
LIQUID_INDEX	-.003	-.023	-.065
	(.013)	(.038)	(.082)
TOEHOLD	-.041	-.086	.264
	(.07)	(.203)	(.327)
TENDER	-.025	-.111	.178
	(.035)	(.091)	(.176)
SIZE	-.026**	-.03	-.061
	(.013)	(.047)	(.076)
MTB	.007	-.015	-.079
	(.01)	(.022)	(.053)
LEVERAGE	.308***	.129	-.05
	(.114)	(.479)	(.643)
CASH_FLOW	-.459**	-.533	-.413
	(.216)	(.538)	(1.032)
RD_EXPENSES	.28	-.348	-.219
	(.257)	(.741)	(1.3)
CHANGE_IN_ROA	-.003	-.014	.005
	(.007)	(.028)	(.037)
SALE_GROWTH	-.001	.055	-.093
	(.025)	(.086)	(.126)
MARKET_RETURN	.004	.304	.336
	(.136)	(.309)	(.815)
CREDIT_SPREAD	.036**	.153**	.044
	(.018)	(.072)	(.109)
_cons	.391***	.409	3.958***
	(.112)	(.387)	(.652)
INDUSTRY F.E.	**YES**	**YES**	**YES**
Observations	329	329	248
Pseudo R^2	.134	.065	.049

4.2.3 Robustness tests

As bidder sometimes insists on their first offer and does not provide any other written offer before the sale decision is made, there are 81 among 329 deals in which the sale-procedure is decided after only one bid made by initiator, so that we the duration variable is unobservable. In other to view the whole picture, we include these cases in our sample by calculating duration value as following: (1) For auctions, we record the *Duration* as the number of days from the first bid to the date that the second confidentiality contract is signed; (2) For negotiations, the *Duration* is the number of days from the first bid to the date that the merger agreement is signed between target and intiator. In this robustness test, we repeat the regressions in **Table 3** and show our result in **Table 6**. The results are still robust, except for the Duration variable in column (1). However, the coefficient still carries the expected sign. The variable *Duration* in columns (2) and (3) are significant at 10% level. Our results are robust as the interaction term in Columns (4) and (5) are highly significant at 1% level.

Table 6: Robustness test _ Including sample without revisions

This table shows the results of five logit regressions whereby the dependent variable equals one if a the deal is finished without competitions and equals zero if the deal is eventually finished with an auction contest. *First_Bid _Premium* is the first offer price relative to the market price at the initiation date. *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Duration* is the natural logarithm of the number of days between the first and the last offer by initiators. *Other control variables* are defined in **Table 1**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Duration	-.135	-.178*	-.173*	-.032	-.027
	(.095)	(.1)	(.101)	(.107)	(.108)
Premium_Revision		1.012***	1.004***	4.431***	4.428***
		(.327)	(.327)	(1.236)	(1.24)
Duration x Premium Revision				-.804***	-.805***
				(.251)	(.252)
Premium			-.057		-.059
			(.046)		(.046)
LIQUID_INDEX	-.082	-.053	-.05	-.044	-.041
	(.122)	(.121)	(.121)	(.122)	(.122)
TOEHOLD	.089	.247	.252	.29	.296
	(.596)	(.592)	(.593)	(.599)	(.598)
TENDER	-.093	-.066	-.065	-.106	-.106
	(.277)	(.279)	(.279)	(.286)	(.286)
SIZE	-.019	-.009	-.01	.005	.004
	(.117)	(.124)	(.124)	(.124)	(.124)
MTB	-.098	-.104	-.103	-.096	-.095
	(.076)	(.075)	(.075)	(.081)	(.081)
LEVERAGE	-.971	-.824	-.822	-.775	-.771
	(1.04)	(1.091)	(1.092)	(1.095)	(1.096)
CASH_FLOW	.176	.807	.66	.636	.48
	(1.471)	(1.494)	(1.511)	(1.534)	(1.555)
RD_EXPENSES	-.133	.37	.444	.007	.086
	(1.809)	(1.778)	(1.786)	(1.797)	(1.805)
CHANGE_IN_ROA	-.052	-.055	-.053	-.094	-.092
	(.061)	(.066)	(.066)	(.068)	(.068)
SALE_GROWTH	.294	.252	.243	.198	.189
	(.188)	(.192)	(.192)	(.207)	(.208)
MARKET_RETURN	-2.422**	-2.732**	-2.72**	-3.202***	-3.186***
	(1.036)	(1.079)	(1.081)	(1.196)	(1.2)
CREDIT_SPREAD	-.307*	-.457**	-.453**	-.546***	-.543***
	(.176)	(.185)	(.185)	(.18)	(.18)
_cons	2.457**	2.502**	2.51**	2.219**	2.227**
INDUSTRY	**YES**	**YES**	**YES**	**YES**	**YES**
	(1.003)	(1.011)	(1.008)	(1.025)	(1.023)
Observations	329	329	329	329	329
Pseudo R^2	.064	.12	.121	.155	.156

Furthermore, the first bid premium may influence the level of revision. A high first bid premium may lead to lower revision and vice versa. So, to test the robustness of our results on that aspect, we split the sample into two sub-samples according to the median of the *First_ Bid_Premium*. The Low-sample presented in **Table 7** is consistent with our main result. However, when controlling for *Premium_Revision* and *Duration*, the variable *First_Bid_Premium* in column (4) and (5) are negative significant which mean the higher the fist bid, the lower the possibility for negotiation. A possible explaination for this result is because the Low sample containing deal with low value first bid premium, which is associated with high premium revision. Since the revision has stronger impact on the possibility of negotiation, the higher the first bid, the lower the revision and these influence result in the lower possibility of negotiation.

The High-sample is presented in **Table 8** and shows consistent results with the primary sample. However, **Column (5)** shows that the interaction term is insignificant. The duration of the revision does not impact the relationship between modification and negotiation opportunity. This result may emphasize the importance of revising the premium in this sub-sample. As the first bid premium is high, if the revision is higher, it is a signal for very high valuation from the initiator and thus good enough for them to overcome target resistance and deter potential competitors. In this situation, the shorter time of revision is no longer as important as expected.

Table 7: Low First Premium

This table shows the results of five logit regressions whereby the dependent variable equals one if a the deal is finished without competitions and equals zero if the deal is eventually finished with an auction contest. *First_Bid _Premium* is the first offer price relative to the market price at the initiation date. *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Duration* is the natural logarithm of the number of days between the first and the last offer by initiators. *Other control variables* are defined in **Table 1**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
First_Bid_Premium	-6.099			-7.881**	-8.82***
	(3.772)			(3.481)	(3.347)
Premium_Revision		.753**		.608**	3.693**
		(.309)		(.297)	(1.45)
Duration			-.221	-.391**	-.142
			(.185)	(.194)	(.208)
Premium_Revision * Duration					-.667**
					(.305)
LIQUID_INDEX	-.202	.08	-.255	-.197	-.178
	(.19)	(.163)	(.199)	(.194)	(.195)
TOEHOLD	1.788	.497	2.075	2.518	2.332
	(2.071)	(.707)	(1.501)	(2.211)	(2.663)
TENDER	1.107	.264	.858	1.093	1.032
	(.733)	(.436)	(.752)	(.735)	(.753)
SIZE	.174	.132	.222	.251	.224
	(.229)	(.166)	(.218)	(.226)	(.23)
MTB	-.126	-.173	-.186	-.167	-.143
	(.182)	(.124)	(.197)	(.205)	(.198)
LEVERAGE	3.539	-.393	.076	.017	.189
	(2.515)	(.551)	(.806)	(.86)	(.894)
CASH_FLOW	4.589	2.912	4.462	5.763	5.684
	(4.092)	(3.038)	(3.989)	(3.985)	(4.127)
RD_EXPENSES	.696	-.284	1.618	2.432	1.908
	(4.082)	(2.899)	(4.026)	(4.395)	(4.597)
CHANGE_IN_ROA	-.212	-.003	-.169	-.216	-.251*
	(.134)	(.115)	(.122)	(.141)	(.15)
SALE_GROWTH	1.355***	.95***	1.375***	1.321***	1.165**
	(.423)	(.336)	(.44)	(.474)	(.496)
MARKET_RETURN	-1.888	-2.091	-1.819	-3.054	-3.013
	(2.378)	(1.711)	(2.25)	(2.705)	(2.812)
CREDIT_SPREAD	.292	-.437	.122	.212	.032
	(.416)	(.308)	(.394)	(.445)	(.461)
_cons	-.308	.212	-.05	1.13	1.085
	(2.026)	(1.416)	(1.962)	(2.339)	(2.343)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**	**YES**
Observations	122	165	122	122	122
Pseudo R^2	.191	.142	.146	.227	.265

Table 8: High First Premium

This table shows the results of five logit regressions whereby the dependent variable equals one if a the deal is finished without competition and equals zero if the deal is eventually finished with an auction contest. *First_Bid _Premium* is the first offer price relative to the market price at the initiation date. *Premium_Revision* is the difference between the last and the first bid offered by initiators before the auction stage relatives to the difference between the first offer price and the market price at the initiation date. *Duration* is the natural logarithm of the number of days between the first and the last offer by initiators. *Other control variables* are defined in **Table 1**. Coefficients significant at 10%, 5% and 1% levels are marked with *, ** and ***, respectively. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
First_Bid_Premium	-6.099			1.104	1.079
	(3.772)			(1.442)	(1.444)
Premium_Revision		1.425***		1.231**	-.181
		(.454)		(.489)	(1.934)
Duration			-.637***	-.647**	-.746**
			(.247)	(.253)	(.296)
Premium_Revision * Duration					.347
					(.451)
LIQUID_INDEX	-.202	-.266	-.33	-.289	-.32
	(.19)	(.204)	(.28)	(.287)	(.301)
TENDER	1.788	-.556	-.726	-.791	-.76
	(2.071)	(.389)	(.482)	(.513)	(.515)
SIZE	1.107	-.11	-.178	-.134	-.156
	(.733)	(.182)	(.208)	(.222)	(.222)
MTB	.174	-.022	-.057	-.041	-.043
	(.229)	(.099)	(.125)	(.125)	(.127)
LEVERAGE	-.126	-.305	-.441	-.544	-.573
	(.182)	(.579)	(.756)	(.756)	(.785)
CASH_FLOW	3.539	.198	-1.772	-1.105	-1.155
	(2.515)	(1.848)	(2.256)	(2.401)	(2.389)
RD_EXPENSES	4.589	-2.021	-1.801	-2.852	-2.782
	(4.092)	(2.351)	(2.984)	(3.217)	(3.263)
CHANGE_IN_ROA_3Y	.696	-.127	-.146	-.177	-.164
	(4.082)	(.082)	(.113)	(.118)	(.12)
SALE_GROWTH_3Y	-.212	-.122	.232	.211	.24
	(.134)	(.274)	(.372)	(.427)	(.433)
MARKET_RETURN	1.355***	-3.693**	-6.422**	-7.304**	-7.275**
	(.423)	(1.748)	(2.558)	(2.974)	(3.031)
CREDIT_SPREAD	-1.888	-.639**	-.752**	-1.121***	-1.112***
	(2.378)	(.265)	(.313)	(.418)	(.42)
_cons	-.308	3.681**	8.042***	7.829***	8.379***
	(2.026)	(1.456)	(2.14)	(2.642)	(2.785)
INDUSTRY F.E.	**YES**	**YES**	**YES**	**YES**	**YES**
Observations	122	164	126	126	126
Pseudo R^2	.191	.114	.198	.24	.242

V. CONCLUSION

Since Boone and Mulherin (2007) scrutinized the private bidding process and redefined the sales procedure as negotiations and auctions, many studies have stressed on the importance of competition in this private bidding process and several questions that challenge academic scholars for decades have been answered. However, the relationship between the bidding strategies and the consequence of sale procedures remains controversial. Our research provides empirical evidence for this relationship by investigating how the initiator's decisions influence his chance encountering competition. We also relate this result with the pricing behavior of strategic versus financial initiators. Our data is specialized in 329 completed deals with cash bids during the private bidding process. Bidding strategies are hypothesized to overcome target management resistance and to deter potential competitors, thus it is positively related to the chance of finishing a deal without facing competitors. While the first private bid does not show up as an important determinant, the level of bid revision is found to be the primary cause that helps the initiator to improve his possibility of completing a deal by negotiation. Furthermore, the time for the bid to be revised enhances the relationship between level of price revision to the chance of negotiation. Besides, our results also confirm the difference strategy of strategic and financial bidders in their initiation of a takeover. Strategic bidders on average revise their bids at a higher rate. This explains why strategic bidders have finished their deals more often by negotiations comparing to financial bidders. Finally, our results indirectly support the presence of pre-empty bidding theory and we also suggest that target management resistance is an action on behalf of shareholder welfare.

. Our research, however, does not explore the roles of bidders within other contests such as target or investment bank initiation. We also have not explored the issue of bidders returns as a result of their bidding strategies. Future researches might base on our framework for the link

between the private and the public bidding stages to study the behaviors of market participants throughout the whole takeover process and answer the question of how they can impact the magnitude of bidder's returns. The samples can be expanded to involve the establishment of consortium influence to the possibility of a negotiation and how the bidders improve their returns when competing in the takeover market.

Appendix A: Explanatory variables and hypothesized impact

This table presents the definition of all explanatory variables. All control variables are measured in the year before the announcement.

Variable	Definition
Variable of interest	
First_Bid_Premium	The first offer price relative to the market price at the initiation date
Premium_Revision	The difference between the last and the first bid offered by initiators before the completion of negotiation process is relatives to the difference between the first offer price and the market price at the initiation date
Duration	The natural logarithm of the number of days between the first and the last offer by initiators
Type_Of_Initiator	Binary variable is equal to 1 if initiators are financial bidders, zero for the strategic initiators.
Control variables	
TENDER	Binary variable, a deal arranged by tender offer =1, otherwise=0
TOEHOLD	Binary variable, first bidder with toehold =1, otherwise=0
LIQUIDITY INDEX	The value of transactions during a year relative to the total book value of assets of firms in each two-digit SIC code
CHANGE_IN_ROA	The absolute change in the industry adjusted ROA over the past three years. ROA is calculated by Ebit/total assets (according to 2-digit US SIC code). Industry adjusted ROA is calculated by EBIT/Total assets (according to 2-digit US SIC code)
MTB	Market value of equity relative to the book value of equity.
CASH FLOW	Operating activities Net cash flow relative to total assets
LEVERAGE	Total book value of long-term debt relative to the enterprise value (market value of equity plus book value of long-term debt minus cash and short-term investments)
SALES_GROWTH	Three years changes in Sales
RD_EXPENSES	Research and development expenses relative to total assets
TANGIBLES	The net value of plant, property, and equipment (PPE) relative to total assets

SIZE	Natural logarithm of target book value.
CREDIT SPREAD	The rate on Moody's Baa bonds minus the rate on a 10-year Treasury bond. Both are taken on the preceding day of the target's fiscal year-end date, one year before the announcement year.
MARKET RETURN	Accumulated return on the S&P 500 index for the 12 months before the month of announcement.

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CONCLUSION

This thesis presents three empirical studies focusing on the private bidding process of corporate takeover in the US market. We are particularly interested in the competition among bidders and the impact of the difference between strategic and financial buyers on the outcome of the mergers. In this conclusion, we focus on summarizing the research questions, the main findings, the limitations of our work, and the suggestions for future researches avenues. Our studies are based on unique hand-collected data of 1,031 completed deals between 2005 and 2016 in the US corporate takeover market. We search information in the "Background of the mergers" presented in Edgar files (DEFM14A, PREM14A, SC-TO-T, and S4) from the U.S. Securities and Exchange Commission. For each deal, we firstly collect the name of the party who initiates the deal. The bidder starting the deal is classified as financial or strategic. Then, we collect the number of bidders attending the bidding process, the type of each bidder, the number of the bids, the date, and the value of each bid offered by each bidder during the whole bidding process. We also identify if the initiating bidder is finally the winner.

In the first article of our project, we aim to answer whether strategic and financial bidders are different in their interest, persistence, and competition regarding the target's antecedents. We use the information available about bidder type in 606 takeovers from initiation to completion to perform several measurements using the data of the number of bidders each type participation in each phase of the private bidding process. Our results show that technology innovation, sales growth, and cash flows influence bidder's interest from the initiation stage while market-to-book, leverage, and industry outperformance impact the persistence of financial bidders throughout the process. Interestingly, our finding supports the view that the target's leverage is an important determinant for financial bidders' interest because of both buyout benefit and bondholder

expropriation effect. Besides the main questions, our findings also mention a new insight about the relationship between market condition and the initiation decision of financial versus strategic bidders. Since we examine the bidder's motivation at the initiation stage, not the final price paid, our result indicates that while paying lower for the deal, equity funds are more active than strategic bidders in seeking opportunity when the credit spread increases or the stock market declines.

In the second paper, we are curious why the existing empirical evidence provides a contestable answer about the importance of competition in improving the seller's revenue. To tackle the issue of bidder valuation, we construct a new measurement using both the number of bidders and the number of bids offered during the takeover. While the number of bidders cannot represent the competition because it fails to measure the strength of each bidder, the number of bids is included to control the difference in each's bidder valuation. The impact of the new measurement of competition to premium was tested on a sample of 5,698 bids and 2,417 bidders in 923 deals. Our results support the argument that stimulating competition brings higher benefits for sellers as long as the additional bidder is stronger. The number of bidders is less likely to associate with the increasing premium if the additional bidder offers fewer bids than the current bidders. Besides, we confirm that the participation of financial bidders improves competition's influence on the seller's premium.

In the last article, we are interested in the initiating bidder's strategy to finish the private bidding process by a negotiation. As it is undenied that sellers prefer to stimulate competition while bidders prefer negotiation, we investigate how bidders can overcome the target's resistance and deter potential competitors to negotiate one-to-one with their prey. We test on a sample of 329 deals with all offers made by cash within the private negotiation process. Our result shows that a bidding strategy with a higher level of bid revision is more likely to increase the possibility of

negotiation. The revision speed also has a positive impact on the above relationship. We also show that strategic and financial bidders are different in their bidding strategies, which leads to the difference in their takeover outcomes. Strategic bidders finish a deal by negotiation more often than financial bidders because they are more aggressive. The strategic bidders typically revise the offering premium at a higher rate and take a shorter time to adjust the price.

Our research, however, remains a certain number of limits. The first limitation is the range of our data ended in 2016. If we have more recent data, we can cover the pandemic period and the more robust growth of private equity firms to observe the impact of this crisis on the takeover activities of two types of bidders. Also, a larger sample size shall help us solve some econometric problems and improve our empirical results, especially for part three, where we have only 329 cases. Another way to answer our research question is to use a case study. As we may find out, rich information in the merger background may allow researchers to perform more profound research with a theoretical approach.

Finally, we want to end this thesis with some propositions so that potential research can extend in several aspects. In part two, our study can be developed for the possible influence of management compensation in the post-merger stage on the relationship between competition and premium. The relationship between competition and premium in the negotiation sample can also be further explored by considering the pressure from potential competition. In part three, one can increase the sample size and apply the matching technique to match the deals started by financial and strategic bidders for targets with similar characters in the same period. That technique may allow researchers to have a more precise result on the difference of strategies between two types of bidders. One additional investigation can also be valuable if we consider the payment method. Since our thesis focuses on financial buyers, we constantly focus on cash payments. Future

research can investigate the relationship between the payment method applied in the bidding strategy we suggested in part three and the return of bidders./.