

## Mechanism Design in M&A Auctions

Steven J. Brams<sup>\*</sup>

Joshua R. Mitts<sup>†</sup>

### Abstract

The recent controversy over “Don’t Ask, Don’t Waive” standstills in M&A practice highlights the need to apply mechanism design to change-of-control transactions. In this Essay, we propose a novel two-stage auction procedure that induces honest bidding among participants while potentially yielding a higher sale price than an open ascending, a sealed-bid first price, or a Vickrey second-price auction. Our procedure balances deal certainty with value maximization through the Nobel Prize-winning principle of *incentive compatibility*, making participation in the M&A auction and honest disclosure of reservation prices in the parties’ interests rather than relying solely on heavy-handed ex-post enforcement. Moreover, the social benefits of our two-stage auction mechanism—greater transparency regarding the distribution of bids, avoidance of the winner’s curse, certainty in the M&A auction environment, and fairness to buyers and sellers—justify reduced judicial scrutiny of transactions utilizing the procedure under *Revlon* and Chancellor Strine’s recent dicta in *Ancestry.com*.

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<sup>\*</sup> Professor of Politics, New York University.

<sup>†</sup> J.D. Candidate, May 2013, Yale Law School.

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## I. INTRODUCTION

Boards of directors of target companies in merger-and-acquisition (“M&A”) transactions face a recurring challenge between maximizing the sale price of the firm and promoting deal certainty. To prevent interlopers from placing topping bids after a merger agreement has been signed, target firms are increasingly utilizing ever-more-restrictive *standstills*, which are agreements with potential bidders to make offers solely through a formal auction process. The recent trend toward “Don’t Ask, Don’t Waive” standstills takes these deal protections to a new level by prohibiting bidders from even requesting—and target boards even considering—a waiver of the standstill.

But as the recent cases of *Genomics* and *Ancestry.com* have shown, Delaware courts are suspicious of devices that prevent a target firm’s board of directors from considering subsequent offers for the company at a higher price. While the justification for standstills seems plausible on its face—encouraging robust ex ante participation in a formal auction by neutralizing the chilling effect of potential future topping bids—it also seems self-contradictory: If the formal auction is intended to maximize shareholder value, why prevent subsequent bidders from making higher offers? If standstills are used, they should encourage, not discourage, the highest possible sale price.

We suggest that the Nobel Prize-winning theory of mechanism design holds the key to unlocking a new paradigm for designing M&A auctions that both promotes efficiency and maximizes shareholder value. Traditional auction theory has investigated the properties of standard auction procedures but not generally proposed new procedures that balance the interests of buyers and sellers. In this Essay, we rigorously apply the principles of mechanism design to forge an auction process that makes participation and honest disclosure of reservation prices in the parties’ best interests. We show that it is even possible to neutralize the winner’s curse while exploiting uncertainty to yield a higher sales price than a second-price—and possibly even a first-price—auction.

In a prior article, we discussed the application of mechanism design to the law generally, and bargaining in particular, and argued that algorithmic procedures can

“eliminate the incentive to engage in costly strategic bargaining, reduce transaction costs, and thereby facilitate efficient trade.”<sup>‡</sup> We focused on the application of mechanism design to bilateral negotiations, showing its potential with respect to settlement negotiations and disclosure under section 13(d) of the Securities Exchange Act of 1934. In this Essay, we extend these insights to the multilateral setting of M&A auctions to demonstrate how incentive compatibility can promote efficiency and maximize shareholder value in change-of-control transactions.

This Essay proceeds as follows. In Part II, we provide an overview of structuring M&A auctions and discuss the recent controversy in the Delaware courts over Don’t Ask, Don’t Waive standstills. Part III introduces a novel two-stage auction procedure that neutralizes the winner’s curse and makes the honest disclosure of reservation prices optimal while introducing beneficial uncertainty that can yield an even higher sale price. We argue that our two-stage procedure not only comports with a board’s *Revlon* duties but also has substantial social benefits by promoting transparency, stability, and fairness, entitling it to favorable treatment by the Delaware courts. Finally, we conclude this Essay in Part IV.

## **II. M&A AUCTIONS AND DELAWARE CASE LAW**

### **A. Structuring M&A Auctions: Bidding Procedures, Confidentiality Agreements, and Standstills**

Once a company has decided to put itself up for sale, it has a variety of means by which to structure the sale process. As these have been discussed extensively elsewhere,<sup>§</sup>

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<sup>‡</sup> Steven Brams & Joshua Mitts, *Law and Mechanism Design: Procedures to Induce Honest Bargaining*, 68 NYU ANN. SURV. AM. L. (forthcoming, 2013), at \*7.

<sup>§</sup> For a thorough discussion of the various structural issues involved in a sale of corporate control, as well as an overview of relevant auction theory literature and recent cases, see generally Christina M. Sautter, *Auction Theory and Standstills: Dealing with Friends and Foes in a Sale of Corporate Control* (working paper, 2013), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2207693](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2207693) (citing BRUCE WASSTERSTEIN, *BIG DEAL: MERGERS AND ACQUISITIONS IN THE DIGITAL AGE* 689 (2000)).

in this Section we provide a brief overview of the essential issues. In general, boards of directors of target companies face a fundamental challenge between maximizing the sale price and ensuring that the transaction is, in fact, consummated.\*\* While this tension is present with any sale of goods, it is particularly heightened in the market for corporate control because the sheer size and the complexity of these transactions substantially raise the stakes of failure.

A firm that puts itself up for sale but is unable to obtain a suitor is likely to be viewed as “damaged goods.” Potential buyers will conclude that the parties previously interested in acquiring the firm (who received confidential information regarding its financial and business prospects as a result) must have discovered something unacceptable. Because of confidentiality agreements, other potential buyers are often unable to identify the cause of failed negotiations and will withdraw from the process out of sheer risk-aversion. This is very different from the typical sale of goods in “thick” competitive markets, wherein an abundance of buyers and sellers often leads to a settlement at a competitive price in equilibrium.††

At the same time, despite the damaged-goods risk, target companies cannot simply prize certainty above all else and take the first offer they receive. Under the Delaware Supreme Court’s decision in *Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc.*,‡‡ the board of directors of a target company is obligated “to seek the transaction offering the best value reasonably available to the stockholders.”§§ This principle not

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\*\* See generally Christina M. Sautter, *Promises Made to be Broken? Standstill Agreements in Change of Control Transactions*, 37 DEL. J. CORP. L. 929, 933 (2013) (“A board’s *Revlon* duties, along with the possible protections afforded to deal protection devices under *Unocal*, may create an irreconcilable conflict during the pre-closing period if a third party attempts to overbid.”).

†† Cf. IAN AYRES, *OPTIONAL LAW: THE STRUCTURE OF LEGAL ENTITLEMENTS* 20 (2005) (quoting Carol M. Rose, *The Shadow of the Cathedral*, 106 YALE L.J. 2175, 2183 (1997) (“Ayres and Talley are interested in situations in which two parties are stuck with each other, thin markets instead of ‘thick’ ones. Neighboring landowners seem to fit that bill.”)).

‡‡ 506 A.2d 173 (Del. 1986).

§§ *Paramount Communications Inc. v. QVC Network Inc.*, 637 A.2d 34, 43 (Del. 1993) (citing *Mills Acquisition Co. v. Macmillan, Inc.*, 559 A.2d 1261 (Del. 1989); *Revlon, Inc. v. MacAndrews & Forbes*

only precludes ignoring the potential for a higher-priced offer, but it also prohibits taking into account any other consideration such as those related to bondholders, employees, or the company’s long-term business prospects.<sup>\*\*\*</sup> However, when evaluating an offer, the board of directors may consider not only the deal price but also other aspects relevant to the likelihood of consummation of the transaction, such as financing certainty and antitrust or other regulatory approvals.<sup>†††</sup>

To ensure that a sale withstands judicial scrutiny in subsequent shareholder litigation, boards often adopt structured bidding procedures intended to obtain the highest price among bidders that are similarly qualified with respect to deal certainty.<sup>‡‡‡</sup> These procedures frequently include several rounds of letters of intent and due diligence, but eventually a handful of serious bidders submit final offers at specific prices—e.g., \$40 per share. While these offers may vary slightly with respect to non-price terms—e.g., consideration in the form of cash vs. stock of the acquiring firm, or the extent of required regulatory approval—the primary competition at the final stage is on the price.<sup>§§§</sup> As the board is obligated under *Revlon* to take the highest price among otherwise equally qualified bidders, even a difference of \$0.50/share could make the difference between winning and losing the auction.

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Holdings, Inc., Del.Supr., 506 A.2d 173 (1986)). For a general discussion of a board’s *Revlon* duties, see Clark W. Furlow, *Reflections on the Revlon Doctrine*, 11 U. PA. J. BUS. L. 519 (2009).

<sup>\*\*\*</sup> See *Revlon*, 506 A.2d at 182 (emphasizing that once it “became apparent to all that the break-up of the company was inevitable . . . [t]he directors' role changed from defenders of the corporate bastion to auctioneers charged with getting the best price for the stockholders at a sale of the company. . . . [C]oncern for non-stockholder interests is inappropriate when an auction among active bidders is in progress, and the object no longer is to protect or maintain the corporate enterprise but to sell it to the highest bidder.”)

<sup>†††</sup> See *In re Topps Co. Shareholders Litigation*, 926 A.2d 58, 72 (Del. Ch. 2007) (permitting a target board to take into account factors such as ability to obtain financing, risk of antitrust delay, and proposed reverse termination fee).

<sup>‡‡‡</sup> See generally Sautter, *supra* note §, at 27-28 (citing WASSTERSTEIN, *supra* note §, at 746-47) (describing typical bidding procedures)).

<sup>§§§</sup> WASSTERSTEIN, *supra* note §, at 747 (“[p]rice often is the determining factor in an auction”).

Moreover, even if the board announces an agreement with a winning bidder at the highest price among participants in the auction, the transaction is always vulnerable to subsequent interlopers who might make a topping bid.<sup>\*\*\*\*</sup> The board's duty to maximize the sale price compels it to consider any offer received prior to closing the transaction, even one made by a third party subsequent to the board's agreement with the winning party. This means that, in principle, a bidding war is always possible—an interloper need only wait until a transaction is announced in order to free ride on the due diligence and associated costs that have been already incurred by the winning bidder. While a true bidding war could lead to a higher sale price for the target firm, the ex ante risk that a winning bidder might lose to a free-riding interloper will sometimes deter many potential bidders from participating if the probability of losing to an interloper is sufficiently high.<sup>†††</sup>

Accordingly, target companies utilize various mechanisms to achieve the twin goals of (i) robust participation in the auction and (ii) attainment of the highest possible price for the company. One mechanism is the confidentiality agreement, particularly when combined with a standstill provision. Such agreements prohibit potential bidders not only from disclosing nonpublic information they receive but also from making any bid for the company outside of the formal auction procedure.<sup>††††</sup> Target firms routinely demand such agreements as a prerequisite to participating in the auction,<sup>§§§§</sup> ensuring

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<sup>\*\*\*\*</sup> See *Omnicare v. NCS Healthcare*, 818 A.2d 914, 938 (Del. 2003) (prohibiting a target firm's board of directors from refusing to consider future bids that might be superior offers).

<sup>††††</sup> One might observe this dynamic and conclude that because the potential for topping bids renders the auction procedure inherently unstable, it is unclear why the structured process has not already been replaced by a free-for-all procedure. As we explain, firms use confidentiality agreements and standstills to attempt to lock in potential bidders to the auction procedure. However, that does not imply that the use of a sealed-bid or open ascending auction is optimal. While accepting the need to constrain bidders to an explicit auction procedure, we offer what we believe is a superior alternative to these standard procedures.

<sup>††††</sup> See *In re Celera Corp. S'holder Litig.*, Civ. Action No. 6304- VCP, 54 (Del. Ch. Mar. 23, 2012); Sautter, *supra* note \*\*, at 932, 946.

<sup>§§§§</sup> See Sautter, *supra* note \*\*, at 945 (“No matter the form in which they appear, standstills are *de rigueur*.”).

that, at the very least, none of the auction participants can suddenly reappear as an interloper.

Another means by which target companies attempt to protect against interlopers who did not participate in the original auction is by granting the winning bidder a matching right in the purchase agreement.<sup>\*\*\*\*</sup> This confers upon the winning bidder of the formal auction the right to match any subsequent topping bid. While this might seem to deter interlopers by preventing their topping bids from succeeding, an interloper can always top this matching bid, depriving the match right of its force. The potential for a bidding war remains unless interlopers are restricted—say, to one topping bid, which then can be matched.<sup>††††</sup> However, such a restriction is arbitrary, which is likely to prevent a company from realizing its full value in a sale.

Even if deal-protection mechanisms are effective at deterring interlopers, their fundamental tension with maximizing the sale price remains. It might be true that preventing topping bids, or restricting their number, benefits shareholders by encouraging participation in an auction, which leads to a higher price than one in which only a few bidders participate. But denying a firm the opportunity to consider a concrete offer at a significantly higher price makes these mechanisms difficult to reconcile with a board of director's duty to maximize the sale price for shareholders.

The ad hoc nature of standstills suggests they are crude and overbearing—it is difficult to determine whether a standstill is truly creating value for shareholders by maximizing the sale price, or simply protecting favored bidders from future competition.<sup>††††</sup> Indeed, target firms have lately become even more aggressive in their

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<sup>\*\*\*\*</sup> See generally Brian JM Quinn, *Re-Evaluating the Emerging Standard of Review for Matching Rights in Control Transactions*, 36 DEL. J. CORP. L. 1011 (2011) (providing a comprehensive overview of matching rights and advocating a stricter standard of review).

<sup>††††</sup> The general standard for evaluating deal-protection devices is found in *Unocal Corp. v. Mesa Petroleum Co.*, 493 A.2d 946 (Del. 1985), which prohibits coercive mechanisms that are disproportionate to the threat posed. See Sautter, *supra* note \*\*, at 955-56.

<sup>††††</sup> See Sautter, *supra* note \*\*, at 963, 987 (discussing how a target firm may “[u]se[] a Standstill to Favor Board Members' Individual Interest” and advocating a standard where “the basic question a court will face



efforts to clamp down on interlopers, as evidenced by the recent controversy over the “Don’t Ask, Don’t Waive” standstill.

## **B. Recent Controversy over “Don’t Ask, Don’t Waive” Standstills**

A “Don’t Ask, Don’t Waive” (DADW) standstill is a particularly aggressive form of protecting the winning bidder in a formal auction. The standstill consists of two components: a provision in confidentiality agreements made with potential bidders prohibiting them from requesting a waiver of the standstill to pursue an offer outside the formal bidding procedure, and a prohibition on waiving the standstill, which applies to the target firm in its purchase agreement with the winning bidder.<sup>§§§§§</sup> The former protects a target firm’s board of directors from having to consider a request to waive the standstill, which may signal that the bidder is prepared to make a topping bid. By prohibiting even a request to waive the prohibition on making the higher-priced offer, the target firm can claim to its shareholders that it never had the opportunity to consider allowing a topping bid from this bidder. In addition, by committing to the winning bidder not to waive the standstill, the target firm’s board may claim that it is contractually bound not to consider any offer made by a firm subject to a standstill—while ameliorating fiduciary concerns by leaving open the possibility of external interloper offers.

Naturally, the use of DADW standstills has led to litigation in the Delaware Court of Chancery.<sup>\*\*\*\*\*</sup> In a November 2012 hearing in the case of *In re Complete Genomics, Inc. Shareholder Litigation*, Vice Chancellor Laster struck down a DADW standstill, holding that

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is whether the target board can justify its affirmative determination that a bidder has a bona fide intent and ability to close a deal that maximizes shareholder value”).

<sup>§§§§§</sup> *Id.* at 968-69.

<sup>\*\*\*\*\*</sup> For further discussion, see Steven M. Davidoff, *A Technical Debate With Broader Implications for Deal-Making*, N.Y. TIMES DEALBOOK (Jan. 25, 2013), <http://dealbook.nytimes.com/2013/01/25/a-technical-debate-with-broader-implications-for-deal-making/>; see also Sautter, *supra* note §, at 48-57.

a Don't Ask, Don't Waive Standstill is impermissible because it has the same disabling effect as the no-talk clause, although on a bidder-specific basis. By agreeing to this provision, the Genomics board impermissibly limited its ongoing statutory and fiduciary obligations to properly evaluate a competing offer, disclose material information, and make a meaningful merger recommendation to its stockholders.<sup>†††††</sup>

*Genomics* involved a topping bid from an external bidder at 5% above the winning bid at the formal auction, which the Board rejected due to antitrust concerns.<sup>†††††</sup> However, Vice Chancellor Laster emphasized that the rationale for his decision derived from the ex ante chilling effect of a DADW standstill, regardless of whether a topping bid was actually made.<sup>§§§§§§</sup> His decision sparked concern among M&A lawyers representing target firms who claimed that it is difficult to force bidders to participate in the formal auction without a DADW provision.<sup>\*\*\*\*\*</sup>

Shortly thereafter, Chancellor Strine weighed in on the validity of a DADW standstill in the case of *In re Ancestry.com Shareholders Litigation*. While the dispute in *Ancestry.com* did not concern the application of the DADW standstill, Strine noted that the DADW standstill is a “pretty potent provision,” and “directors need to use these things consistently with their fiduciary duties, and they better be darn careful about

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<sup>†††††</sup> Telephonic Oral Argument and the Court’s Ruling at 18, *In re Complete Genomics, Inc. Shareholder Litigation*, C.A. No. 7888-VCL (Del. Ch. Nov. 27, 2012) available at [http://www.wlrc.com/docs/In\\_re\\_Complete\\_Genomics\\_Sholder\\_Litigation\\_CA\\_No\\_7888-VCL\\_%28Del\\_Ch\\_Nov272012%29%2800232324%29.PDF](http://www.wlrc.com/docs/In_re_Complete_Genomics_Sholder_Litigation_CA_No_7888-VCL_%28Del_Ch_Nov272012%29%2800232324%29.PDF).

<sup>†††††</sup> *Id.* at 22-23.

<sup>§§§§§§</sup> *Id.* at 13.

<sup>\*\*\*\*\*</sup> See, e.g., William Savitt, *Don’t Ask, Don’t Waive Standstills*, Harv. L. Sch. Forum on Corp. Gov. & Fin. Reg. (Dec. 18, 2012), <http://blogs.law.harvard.edu/corpgov/2012/12/18/dont-ask-dont-waive-standstills/>.

them.”<sup>††††††††</sup> However, Strine emphasized that he was “not prepared to rule out that they can’t be used for value-maximizing purposes.”<sup>‡‡‡‡‡‡‡‡</sup> He continued, explaining that

the value-maximizing purpose has to be to allow the seller as a well-motivated seller to use it as a gavel, to impress upon the people that it has brought into the process the fact that the process is meaningful; that if you’re creating an auction, there is really an end to the auction for those who participate. And therefore, you should bid your fullest because if you win, you have the confidence of knowing you actually won that auction at least against the other people in the process.<sup>§§§§§§§§</sup>

The board of Ancestry.com had waived the standstill, but Strine concluded that if it had not, the DADW provision would not have been used for a value-maximizing purpose under the facts of *Ancestry.com*.<sup>\*\*\*\*\*</sup>

These narrow and somewhat contradictory holdings illustrate the challenge with the current approach to protecting the bidding process. The ad hoc use of blunt instruments such as DADW standstills renders the injury to shareholders very salient but the hypothetical benefits of increased auction participation quite distant. Shareholders must believe that the one-shot sealed bid nature of the formal auction maximizes value. But as we explain in the following Part, auction theory suggests that this is not the case. As in any negotiation under incomplete information, potential purchasers have an incentive to shade their bids to avoid the winner’s curse.

The presence of asymmetric information, however, often renders such shading suboptimal, causing bids to be lower than would otherwise be the case. Indeed, the very emergence of an interloper suggests that the formal auction process did not yield the optimal (i.e., maximum) purchase price. In the following Part, we propose a new

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<sup>††††††††</sup> The Court’s Ruling on Plaintiffs’ Motion for Preliminary Injunction at 22, *In re Ancestry.com Inc. S’holder Litig.*, C.A. No. 7988-CS (Del. Ch. Dec. 17, 2012).

<sup>‡‡‡‡‡‡‡‡</sup> *Id.* at 23.

<sup>§§§§§§§§</sup> *Id.*

<sup>\*\*\*\*\*</sup> *Id.* at 24-25.

procedure based on mechanism design—a two-stage auction—which removes the incentive to shade bids and possibly yields a higher settlement price than a sealed-bid auction, all without subjecting bidders to the winner’s curse.

### III. MECHANISM DESIGN IN M&A AUCTIONS: A TWO-STAGE AUCTION PROCEDURE

#### A. Auction Theory and Mechanism Design in M&A Auctions

Several scholars have applied auction theory to mergers and acquisitions.<sup>††††††††</sup> Much analysis has focused on the distinction between private and common valuation of the target firm.<sup>‡‡‡‡‡‡‡‡</sup> Summarizing this literature, Christina Sautter recently concluded that the debate over private vs. common valuation is largely misplaced because “[a]ctual bidders rarely have identical valuations for an auctioned object nor are their valuations completely uncorrelated.”<sup>§§§§§§§§</sup> Sautter concludes that this mix of private and common valuations is unlikely to permit deducing an optimal M&A auction procedure because of the complexity of change-of-control transactions.<sup>\*\*\*\*\*</sup>

By contrast, we suggest that by shifting the focus from the analysis of standard auction procedures to the design of new procedures, mechanism design theory can provide innovative and compelling alternatives. As we explained in a recent piece on mechanism design in the law, mechanism design “is ‘the art of designing the rules of the game (a.k.a. mechanism) so that a desirable outcome (according to a given objective) is

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<sup>††††††††</sup> E.g., Peter Cramton & Alan Schwartz, *Using Auction Theory to Inform Takeover Regulation*, 7 J. L. ECON. & ORG. 27 (1991); Alexander Gorbenko & Andrey Malenko, *Strategic and Financial Bidders in Takeover Auctions*, J. FIN. (forthcoming); Sautter, *supra* note §, at 12.

<sup>‡‡‡‡‡‡‡‡</sup> E.g., Gorbenko & Malenko, *supra* note ††††††††, at \*4.

<sup>§§§§§§§§</sup> Sautter, *supra* note §, at 15 (citing Crampton & Schwartz, *supra* note ††††††††, at 29).

<sup>\*\*\*\*\*</sup> *Id.* at 17-18.

reached despite the fact that each agent acts in his own self- interest.<sup>\*\*\*\*\*</sup> Indeed, the 2007 Nobel Prize in Economics was awarded for the development of mechanism design and the principle of *incentive-compatibility*, whereby parties are induced to report their reservation prices, or “bottom lines.” In auctions, this motivates parties to be truthful by rendering their bidding behavior compatible with their sincere economic interests.<sup>\*\*\*\*\*</sup>

In our prior piece, we proposed two mechanisms that reduce transaction costs in the bilateral-negotiation setting: the Bonus Procedure and Two-Stage Procedure.<sup>§§§§§§§§</sup> Each gives the parties incentives to honestly disclose their reservation prices. Here we argue that a novel auction procedure can do something analogous: structure bidding incentives to make the parties more forthcoming, reducing if not eliminating the strategizing, and concomitant inefficiencies, of standard procedures.

As we noted previously, there are several sources of inefficiency in the conduct of M&A auctions today. In a sealed-bid auction, the winning bidder is subject to the *winner’s curse*, i.e., the risk of overpayment beyond the actual value of the firm. This is especially acute when the winning bid substantially exceeds the second-highest bid, causing the winner to pay more than he needed to in order to acquire a firm. If a topping bidder can jump in before the sale is final, it can avoid the winner’s curse by bidding the smallest acceptable amount that exceeds the winner’s bid. Assuming that the participants in the regular auction know that this can happen, they have little reason to participate and bid honestly in it.

In an open, ascending auction, there is no winner’s curse, because the bidders always know the present highest bid. But in these auctions, there is no incentive to be

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<sup>\*\*\*\*\*</sup> Brams & Mitts, *supra* note ‡, at \*12 (quoting Tuomas Sandholm, *Automated Mechanism Design: A New Application Area for Search Algorithms*, in PRINCIPLES AND PRACTICE OF CONSTRAINT PROGRAMMING – CP 2003 (Francesca Rossi, ed. 2003)).

<sup>\*\*\*\*\*</sup> Royal Swedish Academy of Sciences, *Press Release: The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2007*, [http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2007/press.html](http://www.nobelprize.org/nobel_prizes/economics/laureates/2007/press.html) (last visited Mar. 29, 2013).

<sup>§§§§§§§§</sup> *See id.*

honest, because it is always better to pay less than one thinks the company is worth, knowing later that one can raise one's bid if necessary. On the other hand, if more than one bidder is determined to win, the resulting competition can set off frenzied bidding. This has the same effect as the winner's curse, whereby emerging as the winner may cause one to regret one's success. \*\*\*\*\*

Uncertainty about the behavior of other bidders compounds the difficulties of bidding in sealed-bid auctions. To see how this can occur, consider a hypothetical sealed-bid auction where bidder A's reservation price is \$50/share and bidder B's is \$40/share. Assuming an element of common value—i.e., that A's reservation price is related but not identical to B's—it is plainly irrational for A to bid \$50/share and realize no profit. If A had complete information—i.e., if it knew B's reservation price—it could avoid overpaying (the winner's curse) by bidding some small amount  $\epsilon$  just over \$40/share. But if A has incomplete information—i.e., if it does not know B's reservation price with certainty (which is always the case in the real world) but knows only its probability distribution—it will have to ascribe some probability to the different reservation prices B might have. Then it could place a bid at the expected value of B's reservation price plus  $\epsilon$ .

For example, assume that A estimates the probability distribution of B's reservation price as follows:

Reservation Price	Probability
\$30	10%
\$35	15%

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\*\*\*\*\* See, e.g., Jill R. Altoro, *Buyer's Remorse?*, WASH. BUS J. (Mar. 1, 2013), <http://www.bizjournals.com/washington/print-edition/2013/03/01/buyers-remorse.html?page=all>; Tom Groenfeldt, *HP and Autonomy – Buyer's Remorse, or Worse?*, FORBES (Nov. 20, 2012), <http://www.forbes.com/sites/tomgroenfeldt/2012/11/20/hp-and-autonomy-buyers-remorse-or-worse/>; Brenon Daly, *A Severe Case of Buyer's Remorse for SAP*, Inorganic Growth: The 451 Take on M&A (Nov. 24, 2010), <http://blogs.the451group.com/techdeals/application-software/a-severe-case-of-buyers-remorse-for-sap/>.

\$40	20%
\$45	40%
\$50	15%

The expected value of B's reservation price is \$41.75.<sup>††††††††††</sup> It would seem that A should bid slightly more—say, \$42. But the key point is that regardless of whether A has complete or incomplete information, it is *never* rational for it to bid \$50 and realize no profit.

Clearly, parties always have an incentive to bid less than their reservation prices to try to avoid the winner's curse, especially if they believe they may be the highest bidder and, therefore, may win. However, bidding \$42 is no panacea for A, because 40% + 15% = 55% of the time its bid will be too low (i.e., below \$45), and B will win. If A's primary goal is to win, and with some profit, it would be preferable for it to bid  $\$45 + \epsilon$  and win 85% of the time, losing only when B bids \$50. Manifestly, the goals of bidders, as well as the auction rules themselves, matter in determining bidding strategies, as we indicated earlier in describing the frenzy of bidding that sometimes occurs in open, ascending auctions, often to the detriment of the winning bidder.

Is there a procedure that induces honest bidding—i.e., bidding one's reservation price—protects against the winner's curse, and affords a bidder an expected profit? If so, this would be a substantial improvement over extant auction procedures. As we show in the following Subsection, our two-stage procedure does just that, while also making it possible for the firm to receive a higher settlement price than standard auction procedures produce.

Interestingly, little literature has considered whether different types of procedures can bring improvements over the status quo in M&A auctions. Paul Povel and Rajdeep Singh advocate a sequential selling procedure, whereby the seller does not begin an auction with competitive bidding until after first offering exclusive deals to each bidder

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<sup>††††††††††</sup> The calculation is as follows:  $\$30(0.10) + \$35(0.15) + \$40(0.20) + \$45(0.40) + \$50(0.15) = \$41.75$ .

in sequential order.<sup>††††††††††</sup> They argue that their procedure is optimal under certain assumptions, particularly that the “the target commits not to change the rules of the sequential procedure once it has started,” and that no outside bidder may top the exclusive deal reached in the first stage.<sup>§§§§§§§§§§</sup>

In our view, Povel and Singh’s procedure is both unrealistic and fundamentally contrary to a board’s fiduciary duty under *Revlon*. As a practical matter, it seems unlikely that target firms would be willing to consider only single bids in sequential, exclusive negotiations. From a legal standpoint, a commitment to refuse to consider any bids for the company other than the current bidder in the sequence seems antithetical to the principle of competition and value maximization for shareholders. Moreover, negotiating exclusive deals would almost certainly violate a board’s *Revlon* duty to maximize shareholder value, which has been interpreted as requiring the consideration of topping bids even after a merger agreement is signed.<sup>\*\*\*\*\*</sup>

Indeed, when discussing Povel and Singh’s sequential approach, Christina Sautter contends that “commitment to the rules in a M&A sales process may be too much to hope for.”<sup>††††††††††</sup> We beg to differ; there is a well-designed auction procedure that can bring substantial benefits to all the parties.

How is this possible? It is one thing to argue—as we will shortly—that a mandatory auction procedure that is pro-competitive, fair, and open to all interested bidders satisfies *Revlon* by obtaining the highest price reasonably attainable under the circumstances. It is quite another to foreclose any competition through a series of exclusive negotiations and claim that is value-maximizing. In the following Section, we

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<sup>††††††††††</sup> Paul Povel & Rajdeep Singh, *Takeover Contests with Asymmetric Bidders*, 19 REV. FIN. STUD. 1409 (2006).

<sup>§§§§§§§§§§</sup> *Id.* at 1415.

<sup>\*\*\*\*\*</sup> See *Omnicare v. NCS Healthcare*, 818 A.2d 914, 938 (Del. 2003) (“[T]he NCS board was required to negotiate a fiduciary out clause to protect the NCS stockholders if the Genesis transaction became an inferior offer. By acceding to Genesis’s ultimatum for complete protection *in futuro*, the NCS board disabled itself from exercising its own fiduciary obligations at a time when the board’s own judgment is most important, i.e. receipt of a subsequent superior offer.”)

<sup>††††††††††</sup> Sautter, *supra* note §, at 18.



describe a two-stage auction procedure that is fair, pro-competitive, and offers substantial benefits over the status quo.

## **B. A Two-Stage Auction Procedure**

### *1. Brief Description of the Procedure*

We propose an auction procedure consisting of two stages.<sup>\*\*\*\*\*</sup> As we noted previously, this procedure is most useful when the initial screening has been conducted, and non-price terms have been largely standardized, such that the primary competition is over price. (We discuss how differing non-price terms affect our analysis below.) Accordingly, this procedure could usefully be employed, after negotiations on non-price terms have been concluded, as a mechanism for selecting the winning bidder.

In stage 1, the interested buyers independently submit bids to the company. Note that it is not necessary for a human being to manage the bidding process—it could be handled entirely by a third-party referee, or even a computer program operated by the target company or an external regulator. The submission of bids in the first stage must be effectively simultaneous—prior to some deadline—and no party’s bid would be revealed to any other party until all bids were received. Upon conclusion of the first stage, the bid amounts would be disclosed to all parties (including the target company), although the identity of the bidders need not be—some bidders might prefer confidentiality about their identity.

In stage 2, each bidder independently chooses either to affirm its existing bid or “usurp” another bidder. *Usurping* means that, instead of repeating (i.e., affirming) its stage 1 bid, a bidder chooses the bid of another participant, which may be either higher or lower than its own bid. If lower, a bidder may effectively “bail out,” i.e., withdraw from the auction at this stage, by usurping the very lowest bid.

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<sup>\*\*\*\*\*</sup> Portions of the two-stage auction procedure are derived from an earlier work by one of us (Brams) and Alan D. Taylor on fair division by auctions. Steven J. Brams & Alan D. Taylor, *Fair Division by Auctions*, in STEVEN J. BRAMS & ALAN D. TAYLOR, *FAIR DIVISION: FROM CAKE-CUTTING TO DISPUTE RESOLUTION 178* (1996).

At the conclusion of stage 2, the highest bidder wins the auction. If two or more bidders affirm or usurp the highest bid, the highest bidder in stage 1 breaks the tie and wins the auction.

In the following Subsection, we show that with two intuitive assumptions—the Judicial Bidding Assumption and the Competitiveness Assumption—this simple procedure induces honest bidding in stage 1, i.e., bids which reflect the parties’ reservation prices, thereby removing the incentive for suboptimal bidding. At stage 2, the participants choose strategies that in general yield a higher settlement price for the target firm than procedures that do not encourage honest bidding. But before offering details on optimal bidding strategies, it is worth pointing out two features that we recommend the two-stage procedure include.

First, the initial choice to utilize the procedure should not irrevocably bind the target firm to a transaction. Before the bidding begins, the company would be permitted to indicate a secret reserve price, below which it will not sell. If all the bids are below this price in stage 1, the company could terminate the procedure at this stage. But the company could also wait until stage 2, when the winning bid, and the identity of the winning bidder, is known.

The reserve price would not be binding on the company. For example, if the company were pleased with the winning bidder even though it thought its bid was too low, it would not be forced to back out. The company might realize that, after seeing all the bids, it will not be able to do better. That said, if the reserve is met, the company would be bound by the procedure. We return to this point in Section III.C, when we discuss legal treatment of the two-stage auction mechanism.

Second, non-price terms could be incorporated into the procedure. All that would be required is a simple conversion of non-price terms to price amounts. This could be done, for example, by empirically comparing prior transactions at similar prices that varied on non-price terms to estimate an approximate value for each non-price term. Companies might also be permitted to set a specific value for each non-price term, which could be conveyed to the parties in advance of using the procedure so they would know that the company’s valuation of a certain non-price term will be incorporated into their bids.

## 2. *Inducing Honesty in Bidding: Sincere Bids* <sup>§§§§§§§§§§</sup>

In a review article on auctions, McAfee and McMillan remark that “the essence of the auction problem is the unobservability of bidders’ valuations.”<sup>\*\*\*\*\*</sup> Our two-stage procedure is designed to ameliorate this problem by making the bids in the first stage common knowledge in the second stage, whose rules we recapitulate below:

*Stage 1.* The parties submit sealed bids, all of which are opened and made public. The parties have no prior information about each other’s sealed bids or valuations.

*Stage 2.* Each party chooses exactly one of the stage 1 bids by affirming its own bid or by usurping another player’s bid.

*Payoffs.* If there is only one party that makes the highest bid in stage 2, that party wins the auction, regardless what it bid in stage 1. If there is more than one party that makes the highest bid in stage 2, the party that made the highest bid in stage 1 wins the auction.

In terms of the information they provide, these rules give two-stage auctions elements of both an English auction, in which bids are oral, open, and ascending, and a sealed-bid auction. Unlike an English auction, bids are revealed all at once (in stage 2), not sequentially; but like an English auction, bids can be revised. Unlike a sealed-bid auction, the initial bids are not decisive; but like a sealed-bid auction, they are made simultaneously, albeit in two different stages.

Define a *sincere bid* as one in which a party bids its estimate of the true worth of a company, or its *valuation*, in stage 1, making it indifferent between winning at that bid and losing the auction. Under plausible conditions, it is rational for the parties to bid sincerely in stage 1.

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§§§§§§§§§§ This section is adapted from STEVEN J. BRAMS & ALAN D. TAYLOR, FAIR DIVISION: FROM CAKE-CUTTING TO DISPUTE RESOLUTION 181-198 (1996).

\*\*\*\*\* R. Preston McAfee & John McMillan, *Auctions and Bidding*, 25 J. ECON. LIT. 711 (1987).

Consider first the case of a *private-value auction*, wherein valuations are strictly the parties' own and are unaffected by the parties' knowledge of other parties' valuations or their bids. To derive optimal bidding strategies in such an auction, we make two assumptions:

1. *Judicious-Bidding Assumption (JBA)*. A party will never make a stage 1 bid, or choose a stage 2 option, such that, if it wins the auction, it might suffer a loss.
2. *Competitiveness Assumption (CA)*. A party will choose a strategy, comprising a stage 1 bid and a stage 2 option, by successively eliminating dominated strategies.

JBA implies that parties do not take risks, given their private valuations. CA says that, in the absence of having a *dominant strategy*, which a party prefers whatever strategies the other parties choose, the parties successively narrow down their possible choices by ruling out strategies that are definitely inferior. CA may be replaced by a No-Regret Assumption (NRA), which says that a party will never make a stage 1 bid, or choose a stage 2 option, such that it should turn out be the party with the highest valuation, it might lose the auction. Given JBA and CA (or NRA), we can state the following theorem.

*Theorem.* Consider a two-stage, private-value auction with multiple parties. Assume the following are true and common knowledge:

- (i) Different parties never have equal valuations and never make equal bids in stage 1.
- (ii) All reservation prices are in the interval  $[0,1]$ , and the value of 1 is common knowledge.
- (iii) JBA, CA (or NRA), and they are common knowledge.

Then iterative elimination of weakly dominated strategies leads all parties to bid their valuations in stage 1.<sup>††††††††††</sup> In stage 2, the highest bidder will usurp the second-highest bid, winning the auction at a price lower than its valuation (and thereby ensuring itself of a profit). The other bidders will affirm their bids.

Intuitively, no bidder will usurp a higher stage 1 bid in a private-value auction, because it will suffer a loss if it wins. Given that this will not happen according to JBA, the highest bidder can rest assured that it will not only win but also profit from usurping the second-highest bid, so it has no reason to confirm its highest bid and only break even.

Knowing this, the other bidders, anticipating that they will lose, can do no worse than confirm their bids. In the unlikely event that one wins, its payoff will be the same (zero) as if it lost. Carrying this reasoning back to stage 1, the parties should make sincere bids, because if a party's bid (and valuation) is the highest, it will profit, whereas if it bid lower than its valuation, another party might bid higher and win.

This outcome of a two-stage private-value auction is identical to that of a one-stage Vickrey second-price auction, which is a sealed-bid auction in which the party that makes the highest bid wins but pays only the second-highest bid. Unlike a Vickrey auction, however, the outcome in a two-stage auction, or *Vickrey outcome*, is not the product of dominant strategy choices by the parties. Rather, it is based on the parties' successive elimination of *dominated strategies*, which are inferior to other strategies of the parties.<sup>††††††††††</sup>

While two-stage auctions implement the Vickrey outcome, they do so in a way that obviates certain practical problems of Vickrey auctions, which have inhibited their adoption.<sup>§§§§§§§§§§</sup> Thus, by allowing the highest stage 1 bidder in a two-stage auction

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<sup>††††††††††</sup> If we replace CA with NRA, which is a slightly stronger assumption, then the theorem follows immediately (i.e., without the need for "iterative elimination").

<sup>††††††††††</sup> For further details, see BRAMS & TAYLOR, *supra* note ††††††††††, at 182.

<sup>§§§§§§§§§§</sup> Vernon L. Smith, "Auctions," in THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS 138-44 vol. 1 (2008); Michael H. Rothkopf, Thomas J. Teisberg & Edward P. Kahn, *Why Are Vickrey Auctions Rare?* 98 J. POL. ECON. 94 (1990).

to learn the second-highest bid in stage 2, this bidder is able to choose whether to usurp it or not, whereas in a Vickrey auction the highest stage 1 bidder *must* pay the second-highest bid.

Two-stage auctions also provide a public means for the elimination of cheating or fraud in a Vickrey auction. Fraud can occur in a Vickrey auction if bogus bids are surreptitiously introduced by confederates in order to increase the amount that the highest bidder must pay when it usurps the second-highest bid.

Even without bogus bids, the winner in a Vickrey auction may end up paying almost what it bid, giving it only a minimal profit. By contrast, in a two-stage auction, unless *everyone else* bids only slightly less than the highest stage 1 bid, the highest bidder can effectively “bail out” by usurping the lowest bid. The ability of the parties to “correct” their bids in stage 2 attenuates the winner’s curse.

We believe that two-stage auctions offer a persuasive and sensible alternative not only to second-price Vickrey auctions but also to other kinds of auctions that have been proposed or used. By making the stage 1 bids common knowledge in stage 2, they alleviate the “unobservability-of-bidders’-valuations” problem alluded to earlier. In the process, they enable bidders to reduce uncertainty and thereby make more informed and, hence, intelligent choices in stage 2, when their choices count.

This is even more true in *common-value auctions*, in which everyone has the same valuation of an item (e.g., based on the price it commands in the market place), but about which they may have incomplete information. In a two-stage auction, parties are able to discover in stage 2 that they may have overbid (or underbid) in stage 1.

M&A auctions are probably closer to common-value than private-value auctions. Although the merger or acquisition of a company may create different synergies for different bidders, most serious bidders will probably value a company similarly—if not in stage 1, then in stage 2, when they learn the bids of their competitors. Indeed, if some bidders were to change their minds, then contrary to Theorem, they might want to usurp *higher* bids in an attempt to win the auction, as we discuss later.

We point out that two-stage auctions differ qualitatively from one-stage auctions in having an initial stage that “does not count.” Of course, this is not literally true,

because the stage 1 bids provide the menu from which players select their bids in stage 2, as well as determine the winner if there is a tie in stage 2.

Thus, if a party is the highest bidder in stage 1, it can usurp any lower bid that it thinks might be a more reasonable estimate of the common value. If it wins, it will only have to pay this bid. By contrast, if a party is the lowest bidder, affirming its own bid ensures that it loses, no matter what the other parties do.

Divorcing, for the most part, what a player bids in stage 1 from what it pays in stage 2 (if it wins) affords the parties the opportunity to be sincere in stage 1. This divorce is complete in a Vickrey auction, which is why all parties have a dominant strategy of being sincere. The divorce is not as complete in a two-stage auction, so additional assumptions are required to render sincere bidding in stage 1 optimal.

To investigate the robustness of sincerity in common-value auctions, we need to make some assumption about the common value of a company. Unlike one-stage auctions, we assume that a party's stage 1 bid will not, in general, be determinative. On the contrary, we assume that other parties' bids, which each party observes in stage 2, not only matter but also play a critical role in a party's choice of a stage 2 bid.

To give the problem greater structure, assume that the parties believe that the best estimate of the common value of a company is the median bid in stage 1—that is, this is most likely to be its true value. Therefore, the most competitive, yet still profitable, bid each party can make in stage 2 is to affirm or usurp the next-lower bid to the median bid.

The choice of the median as the best estimate in stage 2 is arbitrary, even when all the other players are sincere in stage 1. Moreover, the choice of the next-lower bid as an appropriate amount to bid in stage 2 seems questionable in certain situations. For example, consider the two cases, C1 and C2, in both of which 95 is the median bid (underscored)—half the bids lie below this bid and half above:

C1: 99, 98, 97, 96, 95, 4, 3, 2, 1

C2: 99, 98, 97, 96, 95, 94, 3, 2, 1

In C1, the 99-party would win at 4, whereas in C2 this party would win at 94 if, as we assume, all parties usurp (or affirm) the next-lower bid to the median.

Notice that these vastly different bids stem from only one different bid in the two cases. Intuition suggests that with this much on the line, parties may invoke other estimation procedures, based on standards other than the median.

For example, assume that the mean, which is 55 in C1 and 65 in C2, is the best estimate. As before, the 99-player would usurp 4 as its highest profitable bid in C1; by comparison, in C2, the 99-player would usurp 3, not 94. Even if one believed in the median as the appropriate standard, bidding 94 in C2 seems an extremely tough call because of its enormous significance for profits.

In a common-value two-stage auction, parties are likely to change their minds if their bids are outliers, especially if they are on the low side. Assume the median sincere bid is the best estimate of common value. Then there are situations in which low bidders will leapfrog over higher bidders in stage 2, though all the parties still have an incentive to be sincere in stage 1. By the same token, if a party's bid is on the high side, it can avoid the winner's curse by usurping the bid just below the median (if this is the best estimate of common value), or going even lower if it wishes to bail out. In either event, the median—or some other estimate of common value—serves as a beacon that minimizes strategizing, leads to an appropriate valuation of a company, and is fair to both the winning buyer and the seller.\*\*\*\*\*

To highlight the differences between private-value and common-value auctions, consider these two examples of sincere bids in stage 1:

E1: 9, 6, 5, 4

E2: 11, 10, 7, 4, 3

In a private-value auction, Theorem says that the 9-bidder in E1 will usurp the 6-bid, and the 11-bidder in E2 will usurp the 10-bid, and each will win. Notice in E1 that the 9-

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\*\*\*\*\* For more details, including examples and proofs of results, see BRAMS & TAYLOR, *supra* note ¶¶¶¶¶¶¶¶¶¶, at 191-98.





### 3. Additional Benefits of the Procedure

In addition to inducing sincere bidding and improving the efficiency of M&A auctions as a result, there are three additional benefits to utilizing the two-stage auction procedure. First, the two-stage auction procedure not only gives an incentive to bid honestly in stage 1, but it also removes the winner's curse in stage 2, yielding the results of a second-price Vickrey auction but one which is relatively immune to collusion.<sup>\*\*\*\*\*</sup> It also may lead to a higher settlement price than is possible with an ordinary first-price or second-price auction.

To see this, consider the possibility that a bidder, other than the highest bidder in stage 1, wishes to maximize its chance of winning the auction in stage 2. Such a bidder should usurp the highest bid in stage 1. While this is not the outcome our theorem predicts, its possibility generates uncertainty for the highest bidder in stage 1—unless it affirms its stage 1 bid. So if the goal of a bidder is to win, whatever the cost, the price it pays may be the highest stage 1 bid.

The *potential* to induce a higher settlement price for the firm is a substantial benefit of the two-stage auction procedure. As we discuss in the following Section, this is another reason why the two-stage auction procedure should pass judicial scrutiny under the *Revlon* test as yielding the maximum possible value for shareholders that is reasonably attainable under the circumstances. Unlike other procedures such as Povel and Singh's, our mechanism is plainly value maximizing by not only permitting all bidders to participate in a pro-competitive manner but also making it possible to achieve a settlement at a higher price than the second-highest bid. In fact, given the other strengths of the procedure, we suggest that it receive favorable legal treatment such as reduced judicial scrutiny, as we explain in the following Section.

A second advantage of the two-stage auction procedure is the benefits to society of increased information, transparency, and the stability that it produces if it is not subject to topping-off bids. The presence of positive social externalities is a compelling reason

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<sup>\*\*\*\*\*</sup> Brams and Taylor describe a test for ensuring that no bids are fraudulent (i.e., inserted by confederates). Brams & Taylor, *supra* note ††††††††††, at 187-88.

for lawmakers, regulators, and courts to give favorable legal treatment to mechanism design, as we advocated in our prior piece on law and mechanism design more generally.<sup>§§§§§§§§§§§§§§§§</sup> The two-stage auction procedure permits learning of the distribution of honest reservation prices in stage 1, which can have substantial informational benefits.

For example, regulators could evaluate the difference between bidders' reservation prices and actual bids in stage 2 to determine whether the winner's curse is being prevented in practice, as well as ascertain the extent to which the procedure facilitates higher-than-expected settlement prices for target firms. Information regarding the distribution of reservation prices—e.g., the mean, median, difference between the highest and next-highest reservation price, and the like—could also help policymakers in setting tax policy, for example, or otherwise determine whether purchase prices in the takeover market reflect an efficient allocation of social resources. Similarly, it would give courts a better understanding of the environment of the transaction in subsequent litigation.

What is especially important in light of the recent controversy over DADW standstills is that the two-stage auction procedure promotes stability in the M&A auction environment by removing any incentive for bidders to bypass the formal auction process by placing topping bids. One of the most compelling strengths of the two-stage procedure is that it is not in a party's interest to bypass the procedure, because all parties are made privy to the bids before they need to make a choice in stage 2 and so are not deprived of information about the competition.

No party can *assuredly* be made better off by usurping a higher bid, because the higher bidder, by affirming, can always beat the usurping bidder. By giving parties an opportunity to adjust their stage 1 bids in light of learning the other stage 1 bids, the winner's curse is neutralized, providing the benefits of a second-price auction that is

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<sup>§§§§§§§§§§§§§§§§</sup> See Brams & Mitts, *supra* note ‡, at \*26 (discussing the benefits of mechanism design for legal and regulatory policymaking and inducing optimal levels of private contracting).

relatively immune to collusion while giving the company the benefit of bidders' uncertainty about who will emerge on top.

Finally, the two-stage mechanism is truly fair to all parties, because it gives each an escape valve. It allows the company to put in a reserve price and use it to back out, and for the bidders to back out by usurping the lowest first-stage bid in the second stage of the procedure. \*\*\*\*\* In addition, it does not discriminate between bidders, which is likely to have instrumental benefits. For example, it is likely to mitigate agency costs by preventing management from arbitrarily favoring certain bidders instead of promoting shareholder value. As we explain in the next Section, we suggest that these benefits of utilizing the two-stage auction procedure—not only to firms and bidders but to society more broadly—render it worthy of reduced judicial scrutiny.

### **C. Legal Treatment of the Two-Stage Auction Procedure**

There are two aspects to the legal treatment of the two-stage auction procedure. First, the potential for unfavorable legal treatment of the mechanism by the Delaware courts might deter target firms and bidders from its use. To dispel these concerns, we show how the procedure maximizes shareholder value and often yields a sale price higher than sealed-bid auctions currently in use today. Second, we suggest that the positive social externalities of utilizing the procedure described in the preceding Section justify favorable legal treatment to encourage firms that might not be inclined to utilize the procedure due to unfamiliarity, uncertainty, or various cognitive biases.

#### *1. Maximizing Shareholder Value*

With respect to the first concern, it is essential to demonstrate that, as a legal matter, use of the two-stage auction procedure would not run afoul of a board's *Revlon* duties to maximize the sale price for a firm undergoing a change-of-control transaction.

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\*\*\*\*\* To be sure, if all but the lowest bidder usurps the lowest bid, the highest of these usurpers will win, but at a presumably much reduced price which, if below the seller's reserve, would enable even this bidder to bail out.



inducing the honest disclosure of reservation prices, the two-stage procedure is relatively immune to this problem, producing a winning bid that is no less than the second highest-bidder's reservation price.

The second problem with this critique is that unlike a traditional second-price auction, our procedure not only removes the winner's curse but also "channels" uncertainty to the benefit of the target firm. The highest bidder in stage 1 who wishes to be absolutely certain that it will emerge victorious, may choose to affirm its bid, and other bidders will have some incentive to try to usurp higher bids, sometimes yielding the company a higher sale price than the second-highest bid and precluding the winner's curse.

Note that because all bids are all on the table in stage 2, no bidder is in the dark about where it stands vis-à-vis the other bidders. On the other hand, there remains uncertainty about what it takes to win, which will induce the bidders to make their best offers in light of the knowledge they acquired in stage 1.

This is particularly likely to be the case when our procedure is utilized repeatedly. Consider the original example of A and B with reservation prices of \$50 and \$40, respectively, and A's estimation of B's reservation price at \$41.75. If A affirms its highest bid 20% of the time, our procedure yields a higher sale price, on average than the sealed-bid auction gives.\*\*\*\*\*

In our view, these two reasons demonstrate that the two-stage auction procedure is value-maximizing for target firms; without doubt, they satisfy the *Revlon* test of obtaining "the best value reasonably available to the stockholders."\*\*\*\*\*  
Accordingly, there is no reason to doubt whether use of the procedure will pass judicial scrutiny in subsequent shareholder litigation.

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\*\*\*\*\* Usurping \$40 80% of the time and affirming \$50 20% of the time yields an expected value of  $(\$40)(.8) + (\$20)(0.2) = \$42 > \$41.75$ .

\*\*\*\*\* *Paramount Communications Inc. v. QVC Network Inc.*, 637 A.2d 34, 43 (Del. 1993) (citing *Mills Acquisition Co. v. Macmillan, Inc.*, 559 A.2d 1261 (Del. 1989)).

## 2. Favorable Judicial Treatment

At first glance, the need for favorable legal treatment of the two-stage auction procedure seems misplaced for the simple reason that underlies why mechanism design is such a compelling approach: incentive compatibility. By structuring the parties' incentives to remove the winner's curse and potentially yield a higher sale price for the target firm, the two-stage auction mechanism aligns use of the procedure with the interests of all of the parties. Accordingly, fully rational sellers and bidders should be attracted to the mechanism, whether or not courts give it favorable treatment.

But it is possible that cognitive biases may impede use of the procedure, at least in the initial period. In light of the social benefits of the mechanism—information, transparency, stability, and fairness—we suggest that Delaware courts should not only find that the procedure comports with a board's *Revlon* duties but also apply reduced judicial scrutiny. This could be as simple as applying the business-judgment rule to sales utilizing the procedure, giving the company's board a presumption that it fulfilled its duty of care. This may only be rebutted by showing the decision to utilize the two-stage auction procedure was uninformed or made in bad faith.\*\*\*\*\* This would give firms a strong incentive to utilize the two-stage auction procedure, benefitting society by providing policymakers with information regarding the distribution of reservation prices and promoting increased transparency, stability, and fairness in M&A auctions.

An additional aspect of reduced judicial scrutiny relates to mechanisms by which the board may enforce use of the procedure and prevent subsequent topping bids. As we have explained, the mechanism mandates that the target firm consummate a transaction with the winning bidder, precluding the possibility of subsequent topping bids. While the incentive-compatible nature of the mechanism implies that no rational party should attempt to bypass the procedure and place a topping bid ex post, it is possible that

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\*\*\*\*\* See *Smith v. Van Gorkom*, 488 A.2d 858, 872 (Del. 1985), *overruled on other grounds* by *Gantler v. Stephens*, 965 A.2d 695 (Del. 2009) (“[T]he party attacking a board decision as uninformed must rebut the presumption that its business judgment was an informed one.”).





Moreover, we believe that the benefits to society from utilizing the two-stage auction procedure justify granting it favorable legal treatment in the form of reduced judicial scrutiny. Specifically, applying the business-judgment rule to two-stage auctions would give firms a powerful incentive to overcome cognitive biases and utilize the procedure. Society would be better off from greater information, transparency, stability, and fairness in M&A auctions.

Indeed, as we showed in our first piece on law and mechanism design, focusing on rendering incentives compatible through structured procedures represents a legal paradigm shift—from evaluating substantive contract conditions to considering “the structural conditions under which such agreement takes place.”<sup>††††††††††</sup> M&A auctions are a prime example of settings in which the legal rules traditionally have been focused on the limits of acceptable types of contracts—i.e., which types of deal protections violate a board’s fiduciary duty to maximize the sale price under *Revlon*. But as the two-stage auction procedure demonstrates, incorporating structured mechanisms for contract formation can enhance shareholder value and facilitate an open, transparent, and stable bidding process in M&A auctions by rendering participation in the bidders’ interests.<sup>§§§§§§§§§§§§§§§§</sup>

In this Essay, we have attempted to demonstrate the power of mechanism design and incentive compatibility to open up a new paradigm of contractual formation in the M&A context. But mechanism design is much broader in scope and could be incorporated in numerous areas of law, such as alternative dispute resolution.<sup>\*\*\*\*\*</sup> It is our hope that the simple application of mechanism design in

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<sup>††††††††††</sup> Brams & Mitts, *supra* note ‡, at \*48.

<sup>§§§§§§§§§§§§§§§§</sup> Two-stage auctions could also be used to determine the buyer of a company instead of other ad hoc, destabilizing mechanisms for value maximization such as “go shops,” which are often used in private-equity transactions. See Steven M. Davidoff, *A Flawed Bidding Process Leaves Dell at a Loss*, N.Y. TIMES, Apr. 24, 2013, <http://dealbook.nytimes.com/2013/04/23/a-flawed-bidding-process-leaves-dell-at-a-loss/>

<sup>\*\*\*\*\*</sup> See, e.g., Brams & Mitts, *supra* note ‡, at \*33 (applying mechanism design to settlement negotiations).

this Essay will inspire further research to develop procedures that reduce inefficiencies and render outcomes compatible with the parties' interests.