I Won the Auction But Don't Want the Prize

MAX H. BAZERMAN
Sloan School of Management, MIT

WILLIAM F. SAMUELSON
Boston University School of Management

The "winner's curse" occurs in competitive situations when a successful buyer finds that he or she has paid too much for a commodity of uncertain value. This study provides an experimental demonstration of the winner's curse, and identifies factors that affect the existence and magnitude of this bidding abnormality. In an auction setting, two factors are shown to affect the incidence and magnitude of the winner's curse: (1) the degree of uncertainty concerning the value of the item up for bid and (2) the number of competing bidders. Increasing either factor will increase the range of value estimates and bids, making it more likely that the winning bidder will overestimate the true value of the commodity and thus overbid.

A number of researchers have suggested that the winner of a sealed-bid auction will often lose—that is, the object acquired will be worth less than the price paid. The winning bidder has fallen prey to the "winner's curse." This idea has been suggested theoretically (Case, 1979; Oren and Williams, 1975; Rothkopf, 1980; Winkler and Brooks, 1980) and has been applied to bidding on oil leases (Capen et al., 1971), stock market investments (Miller, 1977), and baseball players (Cassing and

AUTHOR'S NOTE: We thank Elizabeth Lepkowski for data collection and data analysis assistance. This article benefited from comments from Terry Connelly and seminars presented at Carnegie-Mellon University, the University of Texas at Austin, and Boston University, and was supported in part by National Science Foundation Grant #BNS-8107331 and a grant from Boston University School of Management.

JOURNAL OF CONFLICT RESOLUTION, Vol. 27 No. 4, December 1983 618-634

Douglas, 1980). The rationale for this overbidding is that (1) while the average bidder may accurately estimate the value of the commodity up for sale in an auction, some bidders will underestimate this value and others will overestimate it, (2) the bidder who most greatly overestimates the value of the commodity will typically win the auction and (3) the amount of overestimation will often be greater than the difference between the winning bidder's estimate of the value of the commodity and his or her bid. Thus the winner of a competitive auction should expect to find that the commodity acquired is worth substantially less than his or her prior estimate of its value. While the theory and applicability of this effect have been noted, the winner's curse has not been subjected to rigorous empirical investigation, and the conditions under which this effect is likely to occur have not been documented.

To begin the discussion, consider the following scenarios:

> You are a major oil company bidding against a dozen other companies for an off-shore oil lease. None of the bidding firms has good information on the actual value of the lease. Your bid is the highest, and you win the lease. Should you be pleased?
>
> You are a major conglomerate considering an acquisition. Many other firms are also considering this acquisition. The actual value of the target firm is highly uncertain. After six firms submit competing offers, your bid is the highest. Your offer is accepted, and you obtain the acquisition. Have you been successful?
>
> You are the owner of a baseball team. A sometimes great, sometimes terrible pitcher has declared free agency. Like most teams, you are in need of good pitching. In the free agency draft, 10 teams (including yours) appear interested in the player. After negotiating with each team, the player accepts your offer. Is it time to celebrate?

In each of these scenarios, the casual observer would note that you have won the competition. Moreover, you have obtained a commodity at a price that your best estimate suggests is a good value—otherwise you would not have made the offer. However, the following reasoning may raise some doubts. Perhaps the sole reason you were the highest bidder is the fact that you have significantly overestimated the actual value of the commodity. If this is the case, you may have fallen prey to the winner's curse.

Why does the winner's curse occur? With help of a few minor assumptions, Figure 1 graphically demonstrates the logic of the effect in an auction context. As depicted, the bidders' value estimates are normally distributed with a mean equal to the actual value of the commodity. In turn, the distribution of bids is determined by a leftward

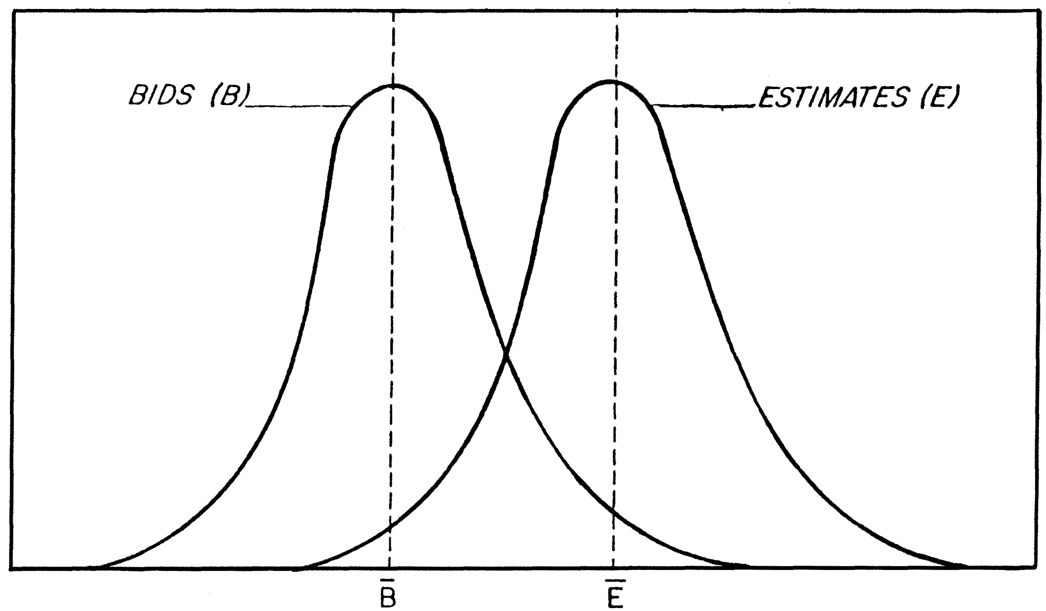

Figure 1: Graphic Illustration of the Winner's Curse
Variables: E = estimates; B = bid; D = (amount of disounting) = E – B.
Assumptions: (1) True Value $\approx \bar{E}$; (2) True Value will be equal for all bidders.

shift of the distribution of estimates—that is, on the average, bidders discount their estimates in making their bids. As Figure 1 shows, a winning bid drawn from the right tail of the bid distribution may exceed the actual value of the good. Likewise, when the winner's margin of overestimation exceeds the discount in making a bid, he or she will overpay for the item acquired. Why does the individual fall prey to the winner's curse? We argue that the answer lies in the exclusion of a relevant piece of information from the decision processes of the bidders. If an individual assumes that his or her bid will win the auction, this piece of data should indicate that the bidder has probably overestimated the value of the commodity in comparison to other competitors. When the correct inference is drawn, the bidder should revise the estimate of the true value of the item downward and lower the bid accordingly. By failing to take this inference into account, the winning bidder risks paying too much for the "prize."

This line of reasoning presupposes an objective value assessment—that is, the winner's curse is measured as the difference between the individual's bid and the objective (though unknown) value of the commodity. However, it is important to recognize that the individual may place a purely subjective value on the commodity.[1] For instance, it is possible for the individual to overbid for the commodity, be aware of the overbid, and yet experience no regret. This can occur when winning has some psychological utility in itself, or when the commodity has personal or intrinsic value (e.g., a painting). Conversely, a winning bidder may pay less than the value of the commodity yet experience a subjective winner's curse. For example, an individual who aspires to obtain the item at 85% of its objective worth will be dissatified if he obtains it at 92% of its worth.

The psychological literature suggests that the first case is more likely to occur than the second. Specifically, cognitive consistency theorists (Aronson, 1968; Festinger, 1957; Wicklund and Brehm, 1976) would predict that a bidder who has objectively overpaid for an item is likely to exaggerate its true value in order to rationalize his or her bid. Such attempts at dissonance reduction are likely if the acquired commodity does not have a clearly specified value, since this allows more degrees of freedom in the interpretation of value. While it is important to recognize the difference between the objective and subjective interpretations, our central theme concerns the existence of an objective winner's curse (using commodities that have clear objective values).

1. We are indebted to an anonymous referee for pointing out this key issue.

The key remaining question is this: How does one identify conditions under which the winner's curse is likely to occur? This article identifies two factors affecting the likelihood and magnitude of the winner's curse. The first factor is the degree of uncertainty concerning the value of the item up for bid. The greater the uncertainty about this value, the greater the variance of bidder values estimates. For example, if a $1 bill is auctioned off, there will be no uncertainty about the value of the item, and no variance in bidder estimates would be predicted. Excluding deviant bidding behavior and unusual auction rules (e.g., see Shubik, 1971), bids in excess of $1 would never occur. In contrast, if a jar with 100 pennies (this number unknown to the subjects) is auctioned, there will be far more uncertainty about the value of the item and greater variance in estimates, introducing the possibility of the winner's curse. The same point can be made graphically. Increasing the spread of estimates and bids in Figure 1 makes it much more likely that a winning bid, lying in the right tail of the bid distribution, will exceed the actual value of the item for sale.

When submitting a bid, the individual cannot use the actual variance of estimates and bids as a measure of commodity uncertainty since they cannot be observed. Instead, each bidder has only a personal assessment of the uncertainty surrounding the value of the commodity to rely on. In the experiment, personal uncertainty is measured by the range size of each individual's stated 90% confidence interval. The aggregate uncertainty of a given commodity is calculated as the average of these personal range sizes over all individuals. An initial question, then, is whether aggregate commodity uncertainty—while normatively relevant—is a useful indicator of the actual (and unobservable to the bidders) variance in estimates and bids.

A second question is whether or not the typical bidder recognizes this uncertainty and takes it into account when making a bid. We shall take as our starting point the following "null" hypothesis: The typical individual's bid depends only on that individual's value estimate and note on the perceived uncertainty concerning the item's value. A competing hypothesis is that for a given initial value estimate, greater value uncertainty lowers bids. This may occur for two reasons. The bidder may recognize this as the correct normative response in accordance with the argument above. Alternatively, a risk-averse bidder may assess a lower certainty equivalent amount for the item when its value is more uncertain and bid lower according. Under the null hypothesis, failure to discount bids in response to greater uncertainty will increase the likelihood and magnitude of the winner's curse. (Of course, the same result may occur under the competing hypothesis if discounting, though present, is insufficient to counteract the upward bias in the winning bid caused by the increased uncertainty in estimates.)

A second factor affecting the existence and magnitude of the winner's curse is the size of the bidding population. As the number of bidders increase, so will the range of estimates and bids. For example, if the bidding group size is 4, the likelihood of finding someone in the extreme right tail of the estimate curve (Figure 1) is far less than if the size of the bidding group is 26. This suggests that subjects, in environments where the winner's curse is likely, should increase their discounting as the bidding group size increases to counteract the greater likelihood of the winning bidder overbidding. Specifically, the individual should engage in the simple train of thought:

> If mine proves to be the winning bid, what can I conclude about the commodity's true value relative to my estimate and bid? The appropriate inference is that in all likelihood I've overestimated the true value. Furthermore, the implied margin of overestimation increases with the number of competing bidders, and I should lower my bid accordingly."[2]

In contrast, we predict that subjects will fail to increase their discounts as the number of competitors increases, for two reasons. First, they will fail to understand the inference to be drawn from the fact that their bid is the highest and will overlook the relevance of bidding group size as it influences the winners' curse. Second, bidders commonly reason as follows: "I will have to bid closer to the real value (my estimate) if I am going to win [so to speak] the auction with so many bidders." As a descriptive matter, it is difficult to say which effect—the tendency toward discounting (the normatively appropriate response) or toward increased bids—is stronger. As an initial attack on the issue, we adopt the null hypothesis that bids are insensitive to the number of competitors.

2. This discounting is necessary regardless of the a priori likelihood that the individual will win the auction. For instance, it is less likely that the individual will win against a large number of bidders; nonetheless he or she should discount appropriately and increase his or her discount as the number of bidders increases. What the result depends on is reasonable enough bidding behavior on the parts of the other bidders so the individual can infer that if he or she wins, his or her estimate will have an upward bias (the more so the greater the number of competitors). The experimental results amply confirm that the subject bids depend closely on estimates; therefore, supporting the inference that a winning bid means a high estimate.

Together, the null hypotheses concerning bidding behavior imply our main testable result: With the failure of bidding adjustments by subjects, the magnitude of the winner's curse will increase with increases in commodity uncertainty and the number of bidders.Capan, Clapp, and Campbell (1971) and Case (1979) previously suggested that the winner of a competitive auction will commonly pay more than the actual value of the acquired commodity. Their studies, however, did not attempt controlled experimentation to the conditions that lead to the existence of the winner's curse. Following the logic above, our experiment examines the following hypothesized effects:

(1) The winner of a sealed-bid auction of a highly uncertain commodity with a large number of bidders will typically pay more than the value of the commodity.
(2) As the aggregate uncertainty surrounding the commodity increases, so too the variance of bids.
(3) Individual bids depend on value estimates only; they do not depend on (a) the amount of uncertainty surrounding the item for sale, or (b) the number of bidders competing for the item.
(4) The likelihood and magnitude of the winner's curse will increase as (a) the uncertainty surrounding the commodity increases, and (b) the size of the bidding population increases.

METHOD

SUBJECTS

Subjects were M.B.A. students (N = 419) in 12 microeconomics classes at Boston University (class sizes varying from 34 to 54). The experiment as an introduction to "decision making under uncertainy" and provided data for this research.

PROCEDURE

Each class participated in four sealed-bid auctions, bidding on a different commodity in each of the auctions. Unknown to the subjects, all commodities had a value of $8.00 (e.g., 800 pennies, 160 nickels, 200 large paper clips assigned a value of four cents, and 400 small paper clips assigned a value of two cents. Subjects were told that the highest bidder would pay his or her bid and receive the defined value of the auctioned commodity in return. For example, if the highest bid was \$7.00, the individual bidding would receive a net payment of \$8.00 – \$7.00 (or \$1.00). Thus subjects bid on the value of the commodity, not the commodity itself. In addition to their bids, subjects provided their best estimate of the value of each of the commodities and placed 90% confidence bounds around these estimates. To promote the best possible estimates, a \$2.00 prize was given for the closest estimate to the true value in each auction. All information on one auction was completed before the next auction began, and no feedback was provided until all parts of the experiment were completed.

EXPERIMENTAL DESIGN

The analysis focused on two independent variables—commodity uncertainty and size of the bidding population—as separate factors affecting the magnitude of winning bids. For each item, commodity uncertainty was defined as the mean of the 90% confidence range sizes across subjects. Bidding size was manipulated by telling each subject, on a personal information sheet, the number of bidders in his or her auction group. Further, it was stressed that the subject was competing only against those bidders and not the whole class. The auction group sizes used where 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, and 26. All subjects in a class were given identical information on group size for each auction. Thus 48 observations were obtained through the participation of 12 classes in four auctions, for four different commodities, with four different bidding sizes in effect. In addition, a Latin Squares Design was used to eliminate any order effects or covariation between the two independent variables. The complete experimental design is displayed in Table 1.

ANALYSES

For each auction, we calculated the average value of the winning bid (AWB). Instead of assigning particular subjects to auction groups, we determined the highest bidder for each of the total possible combinations of auction groups that could be drawn from the total number of students in the class. Obviously a very large number of possible combinations existed for each of the 48 auctions. We then averaged the values

TABLE 1
Experimental Design

Class	Auction 1		Auction 2		Auction 3		Auction 4		Class Size
	Commodity	AGS	Commodity	AGS	Commodity	AGS	Commodity	AGS	
1	P	4	2¢	10	N	16	4¢	22	24
2	N	18	2¢	24	P	6	4¢	12	28
3	N	8	4¢	14	P	20	2¢	26	31
4	2¢	16	P	22	4¢	4	N	10	35
5	2¢	6	N	12	4¢	18	P	24	54
6	4¢	20	N	26	2¢	8	P	14	33
7	N	22	4¢	16	P	10	2¢	4	34
8	P	12	4¢	6	N	24	2¢	18	35
9	2¢	14	P	8	4¢	26	N	20	28
10	4¢	10	N	4	2¢	22	P	16	49
11	4¢	24	P	18	2¢	12	N	6	32
12	P	26	2¢	20	N	14	4¢	8	36

AGS = auction group size.
P = 800 pennies
N = 160 nickels
2¢ = 400 small paper clips (valued at 2¢ per clip)
4¢ = 200 large paper clips (valued at 4¢ per clip)

of the high bids over all possible auctions group combinations. Formally, the AWB is defined as:

$$AWB = \sum_{I=1}^{N} P_i B_i,$$

Where

$$P_i = [K/N-i+1]\,[1 - \sum_{j=1}^{i-1} P_j], \quad \text{for } 1 \leq i \leq N-K+1,$$

and

$$Pi = 0, \quad \text{for } N-K=1 < i \leq N.$$

Here, N is the number of students in the class, K is the number of bidders in the auction group, B_i is the value of the i^{th} highest bid in class, and P_i is the probability that the i^{th} highest bidder in the class will appear in and be the highest bidder in an auction group drawn at random (i.e., with all possible auction groups equally likely). The degree and severity of the winner's curse is indicated by the average magnitude of overpayment—the difference between the actual value of the commodity and the average bid.

RESULTS

PRELIMINARY ANALYSES

The effect depicted in Figure 1 assumes that the mean estimate of the value of a commodity will be approximately equal to the true value of that commodity. If estimates are lower on the average than the true value, any test of the winner's curse would be conservative since the tail of the distribution of bids is actually compared to the true value—not to the mean of the distribution of estimates. In fact, across the four commodities, the average value estimate was \$5.13 (\$2.87 below the true value). This underestimation should reduce the likelihood and magnitude of the winner's curse across all auction groups. We assume that the underestimation observed is specific to our task and does not represent a generalizable estimation bias.

Hypothesis 1. The mean AWB for the 48 auctions was \$10.01, with a standard deviation of \$5.48. Thus the average auction resulted in a loss of \$2.01 to the winning bidder. Twelve auctions had AWBs under \$7.00, 10 had AWBs between \$7.00 and \$8.00, 3 had AWBs between \$8.00 and \$9.00, and 23 auctions resulted in AWBs over \$9.00. Thus strong support for the winner's curse occurred despite significant underestimation of value. Had the subjects been unbiased in their estimates (i.e., had the true value been \$5.13), the average loss would have been \$4.88.

Hypothesis 2. The measure of aggregate commodity uncertainty (the mean 90% confidence range size across all 419 subjects) took on the following values for the four commodities: two cent pieces, \$5.20; pennies, \$5.40; nickels, \$6.02; and four-cent pieces, \$6.58. While commodity uncertainty affected the variance of bids in the predicted direction, the effect was far from precise. The relationship is specified by the following raw score regression equation (N = 48):

$$\begin{gathered} \text{SDB} = -2.0 + .83\ \text{UNC} + \epsilon \\ (p = .152) \\ R^2 = .14 \qquad F = 7.6 \end{gathered} \tag{1}$$

where SDB denotes the standard deviation of bids in each auction and UNC denotes aggregate commodity uncertainty. For this equation, the standardized regression weight is .15.

Hypothesis 3. To test the effects of commodity uncertainty and the number of competitors on bidding behavior, we estimated the following regression equation (N = 48):

$$\begin{gathered} \text{BID} = -.002 + .41\ \text{EST} + .025\ \text{UNC} - .009\ \text{K} + \epsilon, \\ (p < .001) \qquad (\text{ns}) \qquad (\text{ns}) \\ R^2 = .58 \qquad F = 19.98 \end{gathered} \tag{2}$$

where BID denotes the mean bid for each of the 48 auctions, EST the mean value estimate, UNC the aggregate commodity uncertainty, and K the number of bidders. Neither UNC nor K significantly affected the value of the mean bid. The equation indicates, however, that the mean bid was about 41% of the mean estimate and that the independent variables (primarily the mean estimate) explain a surprising amount of the variation (58%) of bids across auctions. For this equation, the standardized regression weights are .58, .02, and −.08 for EST, UNC, and K, respectively. Table 2 provides simple correlations among the four variables in the equation.

Like equation 1, equation 2 uses the auction groups as the unit of analysis. A similar result occurs when individual bids are examined. Consider the following raw score regression, which uses each bid as an observation (N = 1676):

$$BID_i = 1.31 + .53\ EST_i - .03\ UNC_i - .009\ K + \epsilon,$$
$$(p < .001)\ (p < .001) \qquad (ns)$$
$$R^2 = .45 \quad F = 463.0$$

where the subscripts i denote individual bids, estimates, and uncertainty, respectively. Note that the effect of UNC_i is significant and in the anticipated direction, but the size of the effect is very small. When other things are equal, a dollar increase in the individual's 90% confidence range reduces his or her bid by only three cents. The standardized regression weights for this equation are .69, −.12, and −.02 for EST, UNC, and K, respectively.

Hypothesis 4. Finally, to test the relationship between the average winning bid, commodity uncertainty, and the number of bidders, the following regression equation was estimated:

$$AWB = -13.64 + 3.61\ UNC + .18\ K + \epsilon. \qquad [4]$$
$$(P < .001) \quad (p < .005)$$
$$R^2 = .182,\ F = 5.018$$

The standardized regression weights for this equation are .36 and .23 for UNC and K, respectively.

A close inspection of the auction data reveals that AWB is sensitive to idiosyncratic bidding behavior (i.e., a handful of grossly inflated bids). For this reason the explanatory power of equation 4 is limited. In all, it explains only about 18% of the variation in AWB. Moreover, the

TABLE 2
Pearson Correlations

	Mean Value Estimate	*Commodity Uncertainty*	*Number of Bidders*
Average winning bid	.445**	.362**	.227*
Number of bidders	.109	.00	
Commodity uncertainty	.744**		

* $p < .005$; ** $p < .001$.

coefficient magnitudes should be taken to be no more than suggestive of the relative effects of the twin factors on the winner's curse. With these in mind, a number of rough conclusions can be drawn. First, the equation indicates that commodity uncertainty has the greater influence on the average winning bid. For instance, pegging UNC and K at their mean values ($5.80 and 15 respectively), one estimates AWB to be $10.00. A 20% increase in UNC (from $5.80 to $7.00) results in a 43% increase in AWB (from $10 to $14.30). In turn, a 20% increase in the number of bidders (from 15 to 18) increases AWB by only 5%. Second, by setting AWB equal to $8.00, one can determine the values of UNC and K at which the winner's curse is first predicted to occur. For instance, when two-cent pieces are up for bid (UNC = $5.20), the AWB first is expected to exceed $8.00 when the number of bidders (K) is 13. By contrast, when four-cent pieces, the most uncertain commodity, are auctioned, the winner's curse is predicted to occur with as few as 4 bidders (in which case AWB = $10.83). Finally, equation 4 can be used to indicate the correct bidding response to changes in UNC and K. For instance, suppose that all competitiors adjust their bids according to

$$\Delta\ BID_i = -3.61\ \Delta UNC - .18\ \Delta K. \qquad [5]$$

Individuals lower their bids $3.61 for each dollar increase in UNC and 18¢ for each additional bidder. With this adjustment, the AWB will remain constant across all auction conditions, eliminating the increased incidence of the winner's curse as UNC and/or K increase. Thus the estimated coefficients in equation 4 specify the size of the necessary adjustment by the population of bidders.

DISCUSSION

These results generally support the findings of Capen et al. (1971) and Case (1979) on the frequency of the winner's curse in an auction context. However, the current results find a great deal of variation in the existence and magnitude of this effect. Furthermore, two explanatory variables—commodity uncertainty and the size of the bidding population—have theoretically and empirically been shown to account for much of this variation. The explanation for these effects is that subjects fail to draw the appropriate inference under uncertainty and to adjust their bids sufficiently in light of this inference. The evidence suggests that subjects employ naive bidding strategies, basing bids upon unconditional value estimates and disregarding relevant information such as the uncertainty surrounding the commodity and number of bidders. The correct normative bidding behavior is more subtle. All participants should base their bids on the expected value of the commodity if their bid is the highest. Assuming reasonable bidding behavior by competitors, a participant can infer that he or she was the highest bidder because he or she had the most optimistic value estimate. If it is presumed that one bidder's information is neither better nor worse (though possibly different) than another's, then pooling all the individual assessments (taking a simple average if they are independent and unbiased) provides the best estimate of the item's value. Clearly the highest bidder's estimate (and the accompanying bid) will be upwardly biased. This bias increases with an increase in the uncertainty surrounding the commodity and/or an increase in the number of bidders, since either effect leads to a greater range of estimates and bids. The evidence strongly indicates that individuals fail to undertake this necessary inference and to adjust their bids accordingly. Thus while individuals recognize that uncertainty exists, they do not take this into account sufficiently when formulating their bidding strategies (equations 2 and 3). Nor do they adjust their bids with changes in the number of competitors. In the absence of bidding adjustment, one would expect the frequency and magnitude of the winner's curse to depend directly on the uncertainty surrounding the value of the commodity and on the number of competing bidders. This hypothesis was confirmed by the experimental evidence (equation 4).

While we join with other analysts (e.g., Wilson, 1977) in arguing that individuals should recognize the winner's curse and pursue appropriate normative bidding strategies, our data strongly suggest that untrained subjects fail to do so in predictable ways. By identifying the twin factors that contribute to overbidding, our study suggests appropriate remedies. For instance, a superficial analysis of the winner's curse would recommend staying away from auctions altogether. Our findings, in contrast, suggest that it is possible to determine a profitable bidding strategy by incorporating information on the number of bidders and commodity uncertainty (equation 5).

The subtlety of this inferential task raises additional questions concerning the sources of individual judgmental biases. For instance, if informed of the competing bids, would a winning bidder stick by a previous price offer or withdraw it if given the chance? What if the subject were shown the other competitors' value estimates—or, more suggestively, the mean of the competing estimates? Even in these "full information" cases, many winning bidders, overconfident of their estimated values, might be expected to stick by their bids. Indeed, it is interesting to speculate as to how many winning bidders, given full information about competing bids and estimates, would jump at the chance to obtain the item at a discount price equal to the highest competing bid. Even at this lower price, the purchaser falls prey to the winner's curse, suffering a small average loss on the transaction. A final experimental modification would allow syndicates (two or more individuals acting as a team) to submit bids. One would expect a group bid, based on a (presumably better) pooled-value estimate, to be less susceptible to inferential bias and to the winner's curse. The form of training that can lead to optimal improvement in bidding judgments is a topic for further investigation.

APPLICATIONS

In competitive procurements, it is commonly held that the contract winner may be simply the most optimistic firm (the one that most grossly underestimates program costs) rather than the most efficient. In bidding for off-shore oil tracts, a common belief is that the winner often pays too much for the lease. However, evidence bearing on the importance of the winner's curse in these contexts is sketchy at best. Frequent cost overruns in procurement stem partially from cost misestimates (the winner's curse) but are frequently due to poor contract incentives for the winning firm to seek cost economies. Estimates in the 1970s suggested that the U.S. government had received approximately the full monetary value for off-shore tracts sold. In aggregate, tract winners may not have been cursed, but perhaps the greater surprise is that oil companies have failed to earn excessive profits! The industry has not obtained the bargains that might have been expected.

The winner's curse plays a part in a variety of other bidding settings, from the free agent market in major league baseball to the practice of blind bidding for film exhibition rights. Teams that compete for baseball superstars should recognize that a player's past performance is a highly uncertain predictor of future performance. In line with the experimental results presented above, one would expect high-variance ball players sought by numerous major league teams would prove to be the most overpaid (vis-à-vis their actual performance). Frequently exhibitors must bid for movie rights before a given film has been seen or even completed. Favored by distributors, this practice of blind bidding has been resisted by exhibitors and banned in several states. Exhibitors complain of paying too much for films that prove to be flops. It appears that exhibitors may fall prey to the winner's curse, and, for this reason, that distributors have a positive incentive to keep the bidding blind.

The increase in the number of corporate takeovers in the 1980s has provided evidence that acquiring companies often pay too much for what they get. As many as one-third of all acquisitions prove to be failures, and an additional one-third fail to live up to expectations (Wall Street Journal, 1981). Our analysis suggests that potential acquirers should temper their optimism by recognizing that successfully acquired companies are likely to be worth far less than the expected value estimated by the acquirer. Indeed, an acquirer is in the greatest danger of falling prey to the winner's curse during a bidding war over a takeover candidate. Some of the largest and most publicized takeover contests—for example, Dupont's winning bid for Conoco against the competition of Mobil and Seagram—have resulted in purchase premiums more than 50% above market prices. The success or failure of these acquisitions remains to be seen.

This experiment demonstrates the presence of nonrational judgment in the domain of competitive bidding. In terms of the judgment literature, we suggest that more attention be given to competitive situations—the context in which most judgments take place. In terms of the bidding literature, we suggest that more attention be given to both descriptive models and controlled experimentation. Normative theory provides an anchor from which we can record judgmental deficiencies but is seldom, by itself, able to describe actual judgments. Future research in these directions should result in a better understanding of competitive judgments through the integration of descriptive models, normative theory, and actual problems.

This article introduces a new set of questions to the literature on conflict resolution. When multiple parties engage in negotiation and competitive bidding, how can an individual avoid a transaction in which he or she pays more than the agreement is worth? We offer a simple starting point for decision makers in conflict situations: Determine if new information would be available if you assumed you were going to "win" the competition. Often recognition of this information can keep a competitor from falling prey to the winner's curse. Future research should elaborate on determinants of the likelihood and magnitude of the winner's curse and extend our results to a variety of conflict domains.

REFERENCES

ARONSON, E. (1968) "Dissonance theory: Progress and problems," in R. Abelson et al. (eds.) Theories of Cognitive Consistency. Chicago: Rand McNally.

CAPEN, E. C., R. V. CLAPP, and W. M. CAMPBELL (1971) "Competitive bidding in high risk situations." J. of Petroleum Technology 23: 641-653.

CASE, J. H. (1979) Economics and the Competitive Process. New York: New York Univ. Press.

CASSING, J. and R. W. DOUGLAS (1980) "Implication of the auction mechanism in baseball's free agent draft." Southern J. of Economics 47: 110-121.

FESTINGER, L. (1957) A Theory of Cognitive Dissonance. Stanford, CA: Stanford Univ. Press.

MILLER, E. M. (1977) "Risk, uncertainty, and divergence of opinion." J. of Finance 32: 1151-1168.

OREN, M. E. and A. C. WILLIAMS (1975) "On competitive bidding." Operations Research 23: 1072-1079.

ROTHKOPF, M. H. (1980) "On multiplicative bidding strategies." Operations Research 28: 570-575.

SHUBIK, M. (1971) "The dollar auction game: a paradox in noncooperative behavior and escalation." J. of Conflict Resolution 15: 109-111.

Wall Street Journal (1981) "To win a bidding war doesn't insure success of merged companies." September 1: 1.

WICKLUND, R. A. and J. W. BREHM (1976) Perspectives on Cognitive Dissonance. Hillsdale, NJ: Lawrence Erlbaum.

WILSON, R. (1977) "A bidding model of perfect competition." Rev. of Econ. Studies 4: 511-518.

WINKLER, R. L. and D. G. BROOKS (1980) "Competitive bidding with dependent value estimates." Operations Research 28: 603-613.