Research Provided By:
Zisler Capital Views

What investors need to know about . . .

Red in tooth and claw: The winner's curse

Introduction. With a slowly recovering market comes the urge to buy and overpay. How can investors avoid the winner's curse?

The winner's curse states that the optimal property bidding strategy entails bidding a substantial amount below your assumed value for the property. The idea is that if you do not bid under your assumed value, your uncertainty about the actual value of the property will often lead you to win bids for properties on which you, after paying your high bid, lose money. In other words, the winning and highest bidder pays too much.

The incidence of the winner's curse is a direct consequence of the number of auction bidders and asset value uncertainty. Auction participants fail to adapt their bidding strategy to the degree of competition; behavior is suboptimal.

A cognitive illusion causes investors to make systematic errors. Do investor's learn from their errors? Are bidders repeatedly surprised? If so, then can markets indeed be rational? How should the intrepid navigate the bidding process and profit, while avoiding the winner's curse—the propensity for successful bidders to overpay?

In this paper, we offer some practical advice to buyers with fresh capital. We start with a somewhat apocryphal example.

Example: The leitmotif of this example is "bubble within the crash" and the venue is sunny Phoenix, land of "perpetual" growth. The firm, Red in Tooth and Claw, LLC ("**Claw**")[1], believes it can consistently buy low and sell high; it wants to determine the profit-maximizing bid for a portfolio owned by the seller, Innocent Lamb Properties ("**Lamb**") in Phoenix.

[1]Alfred Lord Tennyson's *In Memoriam A. H. H.* (1850) wrote "Tho' nature, red in tooth and claw", underscoring the Darwinian nature of life. The real estate downturn is a herd-thinning event. Bidding wars reflect selection. Will the winning investors be predators or will they be prey?

The IDEA Factory: Big ideas for practical investors

Encore Enterprises, Inc.

5005 LBJ Freeway, Suite 1200
Dallas, TX 75244

Phone: 214-259-7000
Fax: 310-948-9551

The Lamb, which embraced high leverage and assembled most of its portfolio at the market peak in 2007, has taken a fleecing; it, as many other investors, subscribed to Will Rogers' advice regarding land: "Buy land. They ain't [sic] making any more of the stuff." This portfolio, which is owned by a now impecunious and financially traumatized covey of co-investors, features land which either lacks entitlement or requires down-zoning. The exact value of this overleveraged portfolio is highly uncertain.

The downturn has savaged the investors and they are motivated to sell. The bidding will be intense, although the number of bidders is unknown. The number of players bidding against Claw will be no more than seven. The value of this portfolio is unknown as well, but it is equally likely to be any value between $10 million and $110 million. Each bidder's (including Claw's) estimate of the value of the portfolio is equally likely to be some number between 50% and 150% of the actual value of the portfolio. Based on past history, Claw believes that each competitor is equally likely to bid between 60% and 80% of their respective value estimates. Given this information, what fraction of Claw's estimate should Claw bid in order to maximize its expected profit?[2] Although the bidding process will be sealed bid, Claw has hired Zisler Associates, LLC, celebrated financial engineers, strategists, and raisers of capital, to tip the scales.

Zisler's approach. You may not feel compelled to study in detail how we calculate the best, if not the winning, bid. If not, then you may skip to the next section without fear.

We want to demonstrate with this example the way in which uncertainty and volatility affects optimal bidding strategy. The method of choice is stochastic constrained optimization which combines the power of genetic algorithms and Monte Carlo analysis.[3] The objective is to estimate what Claw should bid. Claw's base case analysis assumes that the actual value of the land, a random variable, follows a uniform probability distribution. The lowest and highest bounds are $10 million and $110 million, respectively.

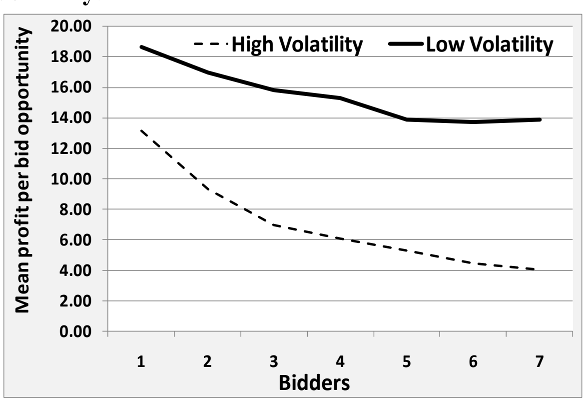
[2] Claw believes that high net worth investors have often outbid the institutions, probably because some wealthy individuals, focusing excessively on capital preservation, ignore the time value of money and overestimate the speed of recovery.

[3] Mercifully, Zisler refrains from uttering fighting words, such as "stochastic", in the presence of practical clients.

Claw's estimate of the actual value is drawn from a uniform random distribution, as well, between 50% and 150% of the actual value. (In market analysis, you never "see" the real value.)[4] Claw's bid is "drawn" from a uniform distribution of numbers bracketed by 50% and 150% of Claw's estimate of value—Claw acquisition team may be off as much as 50% either way, but that's the land business! Claw computes its bid as the bid fraction (of the estimate of value) times Claw's bid. The purpose of the analysis is to determine the optimal bid fraction. Each competitor's estimate of value reflects a stochastic or random process similar to Claw's, which is why we call this auction "a common value bidding process". If Claw's bid exceeds all other bids, Claw wins and pockets the actual value minus the bid, or its profit.[5]

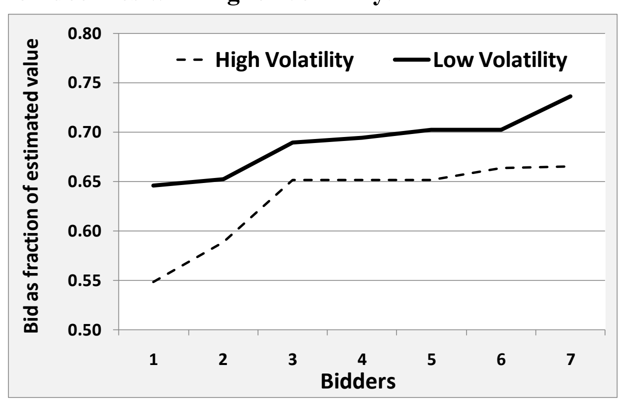
We used Monte Carlo analysis and a special search algorithm to calculate the optimal bid. Our estimate required over 100,000 calculations. Fortunately, we relaxed and enjoyed an all too brief scotch while the computer slaved away.[6]

Figure 1. Bid profitability falls as the number of bidders increase. Profitability falls with higher volatility.



Source: Zisler Capital Associates, LLC

Figure 2. The bid as a fraction of estimated value rises as the number of bids increase. The bid fraction declines with higher volatility.



Source: Zisler Capital Associates, LLC

[4]The real value is shrouded in uncertainty, which we attempt to penetrate with varying degrees of success. At best, we can only estimate this value, and the precision of this estimate reflects the uncertainty or dispersion of the underlying distribution and the sample size which our market research budget supports.

[5]A complete analysis including spread sheet is to be found in "Decision Making Under Uncertainty with Risk Optimizer" by Wayne Winston. Newfield, NY: Palisade Corporation. 1999. You will need Palisade's RISKOptimizer software to run the example.

[6]There are many real life complications we could add. For example, think of random samples as comparable sales statistics drawn from the market population. The population is shrouded in uncertainty. Our samples give us a highly refracted "peek" at real value. We could add a budget constraint that includes material and time costs per sample since market research is expensive. We could also record for each sample certain physical characteristics and run a hedonic regression to estimate the implicit price for the attributes of each land parcel, thereby increasing the precision of Claw's estimate of value.

Our results. Our simulation produces important practical insights, which we summarize below in words and graphs:

- The optimal bid is sensitive to the number of competing bidders. The greater the number of bidders, the higher is the optimal bid fraction. (See Figure 2.)
- However, the average profitability declines exponentially as the number of bidders increases. (Profit is realized value less the bid price. See Figure 1.)
- The higher is the volatility or uncertainty of value, the lower are both the optimal bid and bidding profitability.
- Profitability as a function of the number of bidders declines faster in more volatile or more uncertain markets.[7]

If you must engage in auctions, avoid crowded bidding situations. In order to win, you must increase you bidding fraction, which, in turn, dramatically increases the probability that you will lose. Remember, just because the mean profitability is low, but positive, does not mean that you do not face substantial downside risk.[8] If you must engage in auctions with many of your closest friends, be sure to avoid volatile markets or markets where you lack a competitive (informational) edge. Otherwise, you are playing roulette with someone's money, and it may not be just your own![9]

If you cannot avoid large auctions in volatile markets, especially if you and everyone else shares the same market study and the same short list of preferred "institutional" markets, then buy a "market" snorkel and go deeper than the competition. Make it your life's work to be the world's expert in the few markets in which you bid. Rather than acting as a skipping stone across placid lake, go deep and concentrate on a handful of theme markets where you know all the owners, their properties, and the bottom feeders. Increase your odds even further by raising discretionary capital so that you can offer immediacy and take properties off the market before your competitors have a clue. You should increase your information advantage by focusing on your special niche and not deviating in the search for short-sighted pyrrhic victories.

[7] We estimate mean profitability, which itself has a variance or standard deviation. Thus, depending on the circumstances, the left tail, or downside, could be quite large.

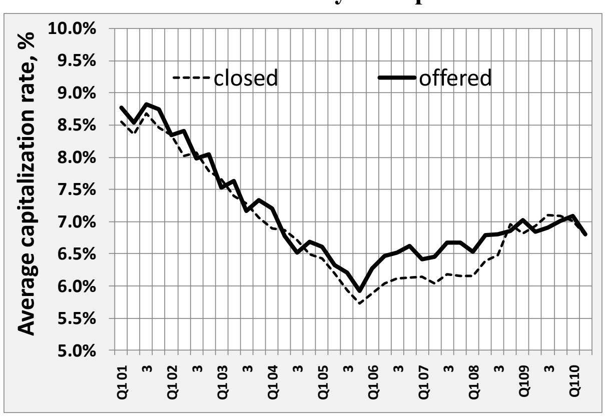
[8] Had we calculated value-at-risk (VAR), this point would be quite evident.

[9] Selling brokers are experts at running auctions; they make lots of money because they can create excitement and encourage irrational behavior, e.g., feeding frenzy, the cult of the "irreplaceable asset", the "train is leaving the . . ."

If you are an expert in complex, troubled deals, that is a great niche, so avoid core property. If you can write a big check, streamline the process so you can add immediacy. If your specialty is rust belt industrial property, do not fall prey to resort hotels.

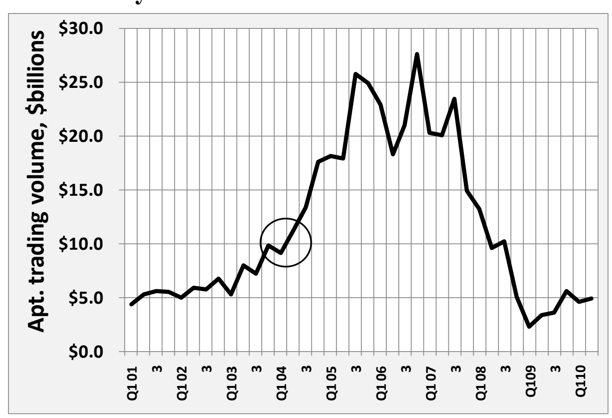
Market reflections. Caution is the order of the day. Capital is targeting a handful of markets as the economy weakens, thus possibly creating the bubble within the crash. Commercial property sales volume remains stubbornly low in this uncertain economy and estimating asset value is more challenging. Low transactions volume impairs price discovery, which in turn contributes to uncertainty. Consequently, this vicious, not virtuous, cycle pushes desperate "lambs" (with unsympathetic lenders) to the marketing block while more flexible owners defer action and keep their heads.[10]

Figure 3. U.S. average apartment cap rates have returned to 2004.I levels but may have peaked.



Source: Real Capital Analytics

Figure 4. U.S. aggregate apartment trading volume remains very low and at 2001-2002 levels.



Source: Real Capital Analytics

A valuation consensus is emerging, spreads are slowly narrowing, and sidelined capital is reentering the market, albeit with hesitation. The putative "smart money" is focusing on a narrow slice of the overall stock of US real estate; witness the intense bidding for favored property types in a few markets, such as Phoenix.[11] Apartment capitalization rates have returned to pre-2008 levels.[12]

[10]The option to defer is equivalent to a call option, the value of which increases with heightened market volatility.

[11]Capital flows are compressing property cap rates in favored markets, like Phoenix, at a time when underlying fundamentals are still weak and the pace of recovery is highly uncertain. The apartment supply response in Phoenix is especially elastic since there are few barriers to entry. Consequently, new construction will likely occur as prices asymptotically approach replacement cost, not after prices have exceeded replacement cost. Since property is an asset that trades infrequently in an inefficient market, losses surface slowly.

[12]Phoenix is the bubble within a crash. The pursuit of widely marketed apartments in Phoenix is risky, possibly a fool's errand. The real smart money, in our view, avoids crowded bidding situations.

Psychologists who have studied the winner's curse observe that bidders learn little from their errors; the average bid over a number of repeated trials drifts successively higher. The outcome may be worse if investor interests are misaligned, information is distributed asymmetrically, and projected holding periods are longer term.[13]

The winner's curse predicts that the average bid will be less than a property's or portfolio's value, while the winning bid will exceed the value. The winning bid is often much greater than the second-to-the-highest bid, and the dispersion of bids increases with the number of bidders and their uncertainty regarding true value. Since markets are prone to irrational exuberance or fads, certain "hot market" property bids, influenced more by capital flows than underlying fundamentals, may produce junk returns.[14] The winner, meanwhile, is cursed by a bid exceeding true value and an acquisition that is less profitable than expected.

Avoiding this problem is not easy, especially when bidders, wracked with conflict, must balance relatively certain asset management fees with uncertain future returns (and promotes). Many potential buyers do not appreciate the need for disciplined, conservative bidding.[15] However, as bidders increase in number, hope springs eternal and enthusiasm builds. Rational bidding requires that one distinguish between the expected[16] property value conditioned only on prior information available and the expected value conditioned on winning the auction. The two are usually quite different. Even if bidders understand this concept, they can still overpay if they underestimate the necessary adjustment to compensate for the presence of other bidders. The greater the number of bidders, the more aggressively one must bid in order to win, so a winning buyer is more likely to overestimate the property value. While the former point suggests that one should be more aggressive, the second point implies conservatism. What, then, is the optimal bid? What should an anxious investor do?

[13]A longer holding period and leverage heighten disposition uncertainty. The investment manager earns near-term fees, which partially reflect estimated gross asset value, and holds an option which pays off if the disposition value exceeds a threshold determined by leverage and the promote structure. Buyers often realize the expected return after a major capital event, such as a sale or a refinancing. Bidders expect slow revelation of real estate performance over an extended period. If the investor's investment advisor miscalculates, the investor is left holding the bag.
[14]Some investors confuse investment grade property with investment grade photographs. We submit that realized risk-adjusted returns may have little relationship to the quality of property photographs.
[15]We know some pension investment money managers who face the certainty of "returning" capital to the pension client if the managers cannot invest the money by year's end. This pressure must color their bidding decisions.
[16] "Expected" means "probabilistically most likely".

A seller usually possesses inside information and, therefore, a bidder must calculate the expected property value conditioned on the seller's bid acceptance. So, obviously, a successful bidder will almost certainly lose since the bidder is cursed at the outset. This makes playing a winning game very difficult.

An important qualification. In a low transactions volume, high volatility market, sometimes the opportunity cost of delay to the seller is so great that the seller accepts not the highest bid but the bid of that buyer who can provide the highest certainty of closing. Sellers who are capital rationed and face a large opportunity cost of capital generally have a high time value of money. We could modify the model accordingly to demonstrate this result.

Conclusion. Bidders make systematic errors due to greater market uncertainty and a large field of competing bidders. The way to avoid the winner's curse is to reduce a bid to some estimated value fraction, the optimal value of which declines with market volatility and the number of bidders. Unfortunately, by reducing a bid, the anxious investor decreases the likelihood of winning auctions. Investors may decide not to bid at all, which is a choice that over the last two years has resulted in historically low transactions volume, extensive layoffs across all economic sectors as sellers and buyers have retreated to the sidelines. Alternatively, the investor may succeed is exploiting certain informational or first mover advantages, thereby changing the odds favorably.

Controlled laboratory experiments as well as casual empiricism confirm that auction participants fail to adapt their bidding strategy to the degree of competition; their behavior is suboptimal. This failure is systematic and often repeats itself, as if there were no learning process. We ask, do market participants have the incentive and ability to adjust their behavior to informational complexities? If pricing is the outcome of a flawed bidding process, what conclusions should we draw from appraisals and comparable sales data, especially when transactions volume is low and bidding is frothy?

It is clearly an empirical question whether or not the winner's curse dominates. We believe that the winner's curse is a real risk today, especially in real estate markets whose chief characteristic is hidden, asymmetric information.

Encore Enterprises, Inc.. Our firm specializes in real estate investment banking. Our clients include developers, owners, money managers, pension funds, insurance companies, lenders, and investment banks. We raise equity and debt capital to fund acquisitions and development. Our firm provides an array of consulting services that include litigation support, market analysis, due diligence, risk management, workouts and restructurings, and corporate strategy. We design and market new financial products and prepare custom white papers to support the distribution of these products.

Zisler Capital Views is a research service of Encore Enterprises, Inc., that focuses on critical issues at the nexus of real estate capital markets, corporate finance, structured finance, and portfolio strategy. Our research is all about critical ideas for curious and thoughtful investors.

Why are we writing Zisler Capital Views? We believe that most (but not all) real estate research is either parochial, self-serving, bland, or just wrong-headed: (1) "Parochial" because much real estate research fails to look past the real estate sector and assess complex linkages affecting value and risk; (2) "self-serving" because some companies, which lack the long view, believe that uncompromising objectivity may be bad for business; (3) "bland" because some sponsors prefer " safe" or "so what" research rather than the alternative, which may be inconvenient or controversial; and (4) "wrong-headed" because much research fails to blend practice with the best that academia offers. However, the main reason we write Zisler Capital Views is, well, we just like to write and because we believe we have something important to say. We hope you agree.

Randall Zisler and Matthew Zisler have extensive experience in structured finance, research, derivatives, portfolio strategy, and real estate finance at leading global investment banks. The authors have advised some of the largest pension funds, institutions, corporations and developers, raised and managed (successfully) pension fund capital, structured complicated debt and equity transactions, and participated in REIT IPOs and CMBS issuance. Randy was a professor at Princeton University and has held senior positions at Goldman Sachs, Nomura Securities, Pension Consulting Alliance, and Jones Lang LaSalle. He has advised high net worth individuals including Marvin Davis and Merv Griffin.

Encore Enterprises, Inc. does and seeks to do business with certain, but not all, companies or investors covered in its research reports. However, in no instance, in any of its research reports, will Encore Enterprises, Inc. recommend for purchase specific securities. However, research reports may cite companies, or groups of companies, for purposes of illustrating investment concepts, ideas, valuation concepts, or strategies. Encore Enterprises, Inc. is not a fund manager. Nevertheless, because Encore Enterprises, Inc. may accept business from certain investment managers, pension funds, or other financial intermediaries, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report or any of its research, including public presentations. It is our policy to disclose any conflicts of which we are aware. Investors should consider this report as only a single factor in making investment decisions.