

From E. Kwerel

At 08:21 PM 6/21/00 , Evan Kwerel wrote:

Hi Paul,

Here are some more questions about the benchmark design for package bidding. I truly appreciate all the time you have devoted to helping me out on this issue,

Evan

(See Below)

## Questions for Paul Milgrom about his “benchmark” design for package bidding

### Package-specific activity rule

1. In your e-mail of 06/20/00 you recommend the following package-specific activity rule: “Let A be a package on which a bidder has once placed a bid. Subsequent to that bid, if there are any two consecutive rounds in which (1) the bidder had not had a provisionally winning bid and (2) the bidder has not bid on package A, the bidder loses eligibility to bid on package A.”

Is the two round limit on inactivity on a package sufficient to allow a bidder to pursue a straightforward bidding strategy? You note that the theoretical model on which this rule is based assumes that bid increments are the same dollar amount on all packages, so equally profitable packages remain equally profitable as the bids rise. But the minimum acceptable bids would not necessarily go up by equal dollar amounts if they were determined by the rule:

Min bid = bidder’s own previous high bid + max (x% of own bid, y% of “deficit”).

*This is correct. As indicated in my notes, the reason for the every two rounds imposition of the rule was to achieve a partial correction of that defect by allowing the bidder to set relative paces. However, if the increments for the two equally profitable packages differ by a ratio of more than 2:1, then the adjustment is insufficient to accomplish its objective. Since it was my guess that few bidders are interested in both very small and very large packages, or at least that few will be in that position late in the auction when the rule binds most strongly, I concluded that any inefficiency this imposes is likely to be small compared to the risk of parking which the rule eliminates.*

2. Other than increasing the number of consecutive rounds in which the bidder is permitted to be inactive on a package, would you recommend any other changes in the package-specific activity rule?

*I have none to recommend right now.*

3. How should the choice of the rules for setting allowed bid increments (minimum and maximum) be affected by the form of the package-specific activity rule?

*The theory calls for allowing bidders to equalize the rate of price increases among their active packages. A simple way to accomplish that is to allow bidders to bid multiple increments. Using even two increment increases raises the ratio in my answer to question 1 from 2:1 to 4:1.*

### Minimum accepted bids and bid increments

1. How might we simplify the rule for determining minimum acceptable bids, while still ensuring an adequate pace of the auction and not significantly reducing efficiency?

What is your opinion of the following rule for the minimum acceptable bid on a package:

Min bid = bidder's own previous high bid + max (x% of own bid, "point increment"),

where the "point increment" is as described in the Public Notice (allocates the total increment, which is a percentage of total revenue, among licenses based on the license's share of bidding units)?

*This is certainly better than using just the x% rule.*

*The rule I had suggested was intended to create a minimum bid which is the larger of the previous bid plus x% or a bid that has "realistic" chance of becoming part of the winning package. The aim is both to ensure the progress of the auction and to make parking dangerous (because the acceptable bid has a chance of becoming winning). I understand that the computational burden of this rule is a concern, and with that in mind I offer the following simpler estimate of a "realistic" bid. Compute, for the previous five rounds, the lowest ratio of price/points  $z$  (\$/point) for any provisionally winning bid. The alternative minimum bid is the number of points in the package multiplied by  $z$ .*

*This rule not only simplifies the calculations but also tends to lead to an increase in the ratio  $z$  during the auction, which provides another measure of the progress of the auction. To the extent that points are a reasonable reflection of value, this also reduces the need for package-specific activity rules. It is consistent with the suggestion to use the package-specific rule only in a back-up way in Stage III of the auction.*

***Notice that this same rule could be adopted in the Wye River/Public Notice proposal with mutually exclusive bids between rounds.***

2. Should we establish maximum acceptable bids and, if so, how? Should bidders be allowed to make up the "deficit" on a package plus an increment, or the full "shortfall" on a package plus an increment in a single bid?

*I can see no good reason not to allow this.*

From: P. Milgrom  
To: E. Kwerel  
Date: June 22, 2000

Evan:

I've made some suggestions that I hope you will find constructive in reply to your queries.

Since we must by now be running out of time, I'd like to take the opportunity to make some general comments. Although the benchmark proposal is coming together into a practical form, the hurry is preventing us from refining and simplifying it as completely as I'd like.

I think that the main objections to the simpler Wye River/Public Notice proposal are completely resolved by (1) applying the concept that bids in earlier rounds are mutually exclusive to bids in the present round and (2) adopting a suitable minimum bid rule, such as the one mentioned in the attached Q&A. The benchmark proposal has a significant advantage over the Wye River proposal only if there are significant exposure problems that are not resolved by the packages proposed. I have not seen any assertion that such synergies exist, just concern about the consequences if they do exist. I hope you will continue to give serious attention to the Wye River/Public Notice proposal, which has the advantages of simplicity and familiarity.

Paul