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January 9, 1994

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Professor John McMillan
University of California, San Diego

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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Dear John:

The meeting last Thursday was enlightening and interesting, if a bit surprising. (I'd expected more of a focus on the comparison of alternative auction procedures, rather than on the refinement of a single scheme.) As the FCC gets closer to announcing its decision, I think there are a few points still worthy of consideration. Perhaps the final choice of procedure is still open; if not, then it is at least worth listing issues which still need to be addressed.

The three primary concerns I've had all along concerning simultaneous ascending-bid auctions in the form proposed by Pacific Bell/Nevada Bell are that they (1) present difficult strategic problems to the bidders *when complementarities are present* (and hence make inefficient allocations quite likely in a setting such as PCS licensing), (2) bring relatively little meaningful information into the public domain until very near the end, and (3) are administratively fragile. [The paper on simultaneous auctions which I wrote last summer was intended to discuss the use of such auctions on a somewhat more limited scale.]

(1) In my paper last summer discussing simultaneous ascending-bid auctions, I indicated that they could be quite effective in achieving efficient allocations when bidders face capital constraints. However, when complementarities exist among the items being sold, there is the possibility of bidders ending up with very illogical (uneconomic) packages of items. The experiment run on Thursday provides anecdotal evidence in support of this. One bidding group assigned a substantial premium to obtaining a particular set of three licenses. Unaware that another group assigned a very high value to one of the three, the first group bid at a bit of a premium for the two others, and then found itself in a guaranteed losing position (hold just those two and lose, or bid so much for the contested third that, even with the complementarity premium, they would lose). [The bidding group bid *too* aggressively. In fact, my advice to them earlier in the auction was to bail out, and finish empty-handed — Advice, of course, that they didn't take. But even with more sensible bidding, the inefficiency possibilities are rife. Paul's observation that the simultaneous experiment brought in greater revenues than the sequential experiment is explained primarily by the bidders screwing up in a complex strategic environment.]

Sequential sales of batches of geographically-separate licenses (such as those with large population coverage at first, then working down to smaller coverages) do not eliminate the possibility of such results, but lessen it substantially. Anecdotal evidence comes from the second experiment run Thursday, in which the same group of bidders sought a pair of complementary licenses. They obtained one in an early sale, and therefore knew their exact position when the sale of the second rolled around. [The group ended up losing \$400 in the first simulation, and winning \$300 in the second. While this evidence might all be anecdotal, please note that the results are exactly as I predicted in my reply comments.]

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There was a discussion of bid withdrawal/default on Thursday afternoon, but I had trouble understanding the focus of the discussion. Is the goal to *facilitate* withdrawal, in order to provide bidders with an escape from gross inefficiencies, or to *discourage* withdrawal, in order to keep bidders from entering speculative bids that they have little intention of fulfilling? Both goals obviously cannot be met.

(2) How will the early stages of the auction progress? Two possibilities exist. Perhaps some firms will seek to make preemptive bids, using the 5%-increase rule (in early rounds) to freeze out competitors. This will serve to bring the auction to a more-rapid conclusion, but can increase the likelihood of inefficient allocations. Certainly, the discussion of starting prices and maximum bid increments seemed to be seeking ways to eliminate such behavior. The other possibility is that bidding will begin at prices substantially below those at which sale is expected to take place. But, in this case, bidders will have no reason at all to bid "seriously" (i.e., to enter bids which are informative concerning their actual acquisition intentions) until late in the auction. (And what information *does* become available late will be difficult for bidders to analyze accurately on a daily basis.)

[A separate issue raised by the experiments on Thursday is the handling of ties. With a minimum bid increment in place, ties can certainly be anticipated. Will all tied high bids be considered active? This will not only slow down the progress of the auction (by making it easier for firms involved in ties to meet the next day's activity requirement), but will open to firms the strategy of intentionally seeking day-by-day ties on licenses still short of their expected selling prices (in order to delay the time when they must start to reveal their true acquisition strategies).]

(3) I didn't hear any specific discussion of how daily bid submissions will take place. This might appear to be a minor issue, but, when only a single sale is taking place over an extended period of time, and when activity requirements must be met in every round, even the tiniest of errors can have drastic consequences.

Will disks have to be hand-delivered to the FCC? Then small rural operators seeking a few BTA licenses within a single MTA will need to maintain a presence throughout the entire auction. And how will submission of a damaged disk be dealt with? If there is no penalty, such submission becomes a "strategic" possibility. If there *is* a penalty, how will the FCC be able to confidently blame the submitter, instead of its own internal disk-handlers?

Or will files be submitted electronically? Interrupted or incomplete transmissions must be dealt with. What if weather brings down transmission lines from some region of the country?

Or will 200 or more bidders submit long typed bid lists (by hand or fax) on a daily basis? Can a foolproof data-entry system be devised?

[And, of course, beyond the questions raised above is the likelihood that some bidder will internally do something "wrong" on some day during the auction, and face dire consequences.]

In summary: We all seem to agree on several points. Any auction procedure is likely to yield an allocation of licenses somewhat more efficient than would be yielded by a lottery, so it will be possible to label the license auction a "success" no matter what happens (barring a catastrophic crash). And any procedure that can be carried out in an acceptable amount of time *must* involve some degree of simultaneity.

Still, it seems to me that a series of sequential sales of batches of licenses (with each batch sold in "real" time), beginning with small numbers of MTA licenses and proceeding to larger numbers of BTA licenses, will be likely to yield a more efficient allocation, will bring the most important information into the public domain early, and will be much more robust than will be a simultaneous sale of all licenses. [The choice of a real-time procedure — auctioneer-led or electronic, oral bid or "Japanese" — is much less critical than is the choice of whether to conduct the overall sale in a series of stages. And the large-to-small sequencing of MTA licenses is *not* ad hoc, since most regional hubbing will be centered around the licenses with large population coverage.]

Finally, I wholeheartedly support the notion of conducting the sale of narrow-band licenses before the wide-band auction. This would provide the opportunity to try several different procedures. [And anecdotal evidence is better than none at all!] At the very least, if only a single procedure were to be used, it would facilitate the "debugging" of what is shaping up (in the case of simultaneous sales with daily bid submissions) to be a rather complex set of rules.

I'll be attending the CalTech event later this month, and hope to see you there. Note that I'm sending a copy of this letter to Evan also, both for his interest, and to remove any concerns you might have by making the letter part of the public record.

Best regards,

Bob Weber

cc: Evan Kwerel