CORRIGENDUM TO "EXISTENCE OF EQUILIBRIUM IN SINGLE AND DOUBLE PRIVATE VALUE AUCTIONS"

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Jackson and Swinkels (2005) proved the existence of equilibrium with positive probability of trade for private value auctions (Theorem 15). This theorem was established with great ingenuity, but there is a slight error in the last part of its proof, on page 137. In the penultimate inequality, a δ appears on the right-hand side that is absent in the previous inequality. Thus, the term $\frac{\omega}{k}$ should be dropped from the right in the last inequality. This is not yet sufficient to break the argument, but the observation that ζ can be bounded above by $2M\frac{\omega}{k}$ is.

The following modification in the proof is sufficient. The definition of the modified auction $\mathcal{A}^x$ for $x \in \{3, 4, \ldots\}$ is changed to the following: With probability $1/x$, a nonstrategic player $n+1$ has endowment $e_{n+1} = \ell$ and submits ℓ sell offers that are all equal to a random variable uniform on $[\underline{w}, \overline{w}]$; with probability $1/x$, $e_{n+1} = 0$ and $n+1$ submits ℓ buy offers that are all equal to a random variable uniform in $[\underline{w}, \overline{w}]$. For such a game, most of the arguments given in the original proof work without changes.[2] The modification is in what follows.

Because the player in $i^x \in H$ is (occasionally) a buyer, there is a probability $\zeta > 0$ that such a player has an endowment of at most $\ell - 1$ units.[3] Define E_1'' as the event where $Q_{B,n+1}^x > 0$ and i^x has endowment of at most $\ell - 1$ units. Define E_1' and E_1 as before. Again, we have $\Pr_x(E_1) \geq \zeta \hat{\mu}_x$.[4]

If $E_1 = E_1'$, i^x has no sell bids at or below $\overline{w} - 2\delta$ and there is at least one buy bid above $\overline{w} - 2\delta$. If $E_1 = E_1''$, i^x has at most $\ell - 1$ sell bids at or below $\overline{w} - 2\delta$ (because she has only $\ell - 1$ units), while there are at least ℓ buy bids above $\overline{w} - 2\delta$. Then, under $E_1 \cap E_2 \cap E_{3j}$, j sells at least one extra object by d_j.

The rest of the argument works.[5]

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[2] The limitation to the probability $\Pr_x(Q_B^x > \ell)$ was based on the argument that this event will occur only if more than two players bid above $\overline{w} - 2\delta$. This remains true.

[3] Such ζ cannot be limited by $2M\frac{\omega}{k}$ as before.

[4] This limitation is also sufficient to use the consequences of (6). I thank Professor Swinkels for this observation.

[5] There is a typo in (5): the n in the right-hand side should be $n+1$. Similar replacements should be done in its consequences.

REFERENCE

JACKSON, M. O., AND J. M. SWINKELS (2005): "Existence of Equilibrium in Single and Double Private Value Auctions," *Econometrica*, 73, 93–140. [1723]