The Role of Coordination Bias in Platform Competition Online Appendix

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A Heterogeneous buyers: It is optimal for platform A to capture the non-loyal buyers

Suppose that $d_A = d_D = d$. Then, platform A's profit from serving the loyal buyers is: $\Pi^A_{loyal} = \hat{n}(dv - K) + d_A Q$. We first consider the case where $Q = 0$. To show that platform A makes higher profit than Π^A_{loyal} when serving the non-loyal buyers as well, we consider each combination of business models:

Both platforms attracting sellers. Substituting $X = (1-\alpha)(1-\gamma)(1-d) + \gamma(1-d)$ into $\Pi^A_{\textit{sellers-pay}}$, platform A's profit when both platforms are attracting sellers is:

$$\Pi^A_{\textit{sellers-pay}} = -\hat{n}K + v\hat{n}\big[2\alpha(1-d)(1-\gamma) + (1-d)\gamma - 1 + 2d\big] .$$

Therefore,

$$\Pi^A_{\textit{sellers-pay}} - \Pi^A_{loyal} = v\hat{n}(2\alpha - 1)(1-d)(1-\gamma) > 0,$$

where the inequality follows because $\alpha > 1/2$, $0 < d < 1/2$ and $0 < \gamma < 1$.

Platform A attracts buyers and platform D attracts sellers. Substituting $X = (1-\gamma)(1-d) + \gamma d$ into $\Pi^A_{\textit{sellers-pay}}$, platform A's profit when platform A attracts buyers and platform D

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attracts sellers is:

$$\Pi^A_{\textit{sellers-pay}} = -\hat{n}K + v\hat{n}\big[\alpha(1-d)(1-\gamma) - 1 + 2d + 2\gamma - 3d\gamma\big]\,.$$

Notice that $\Pi^A_{\textit{sellers-pay}}$ is increasing with α. Therefore, $\Pi^A_{\textit{sellers-pay}} > \Pi^A_{\textit{loyal}}$ iff

$$\Pi^A_{\textit{sellers-pay}} - \Pi^A_{\textit{loyal}} = v\hat{n}\big[\alpha(1-d)(1-\gamma) + 2\gamma - 3d\gamma - 1 + d\big] > 0\,,$$

or

$$\alpha > \frac{(1-\gamma)(1-d) - \gamma(1-2d)}{(1-\gamma)(1-d)}\,.$$

Notice that the right-hand side is α_D. Since platforms A and D adopt *sellers-pay* and buyers-pay when $\alpha > \alpha_D$, $\Pi^A_{\textit{sellers-pay}} > \Pi^A_{\textit{loyal}}$ whenever both platforms adopt it.

Both platforms attract sellers. Substituting $X = (1-\gamma)(1-d) + \gamma d$ into $\Pi^A_{buyers-pay}$, platform A's profit when both platforms are attracting sellers is: $\Pi^A_{buyers-pay} = \hat{n}(dv - K) = \Pi^A_{\textit{loyal}}$.

The effect of Q. Finally, notice that if $Q > 0$, $\Pi^A_{\textit{sellers-pay}}$ and $\Pi^A_{buyers-pay}$ have the additional term of $Q(1-d_D)$, while $\Pi^A_{\textit{loyal}}$ has the additional term of $d_A Q$. Since $1 - d_D > d_A$, it follows that the gap $\max\{\Pi^A_{\textit{sellers-pay}}, \Pi^A_{buyers-pay}\} - \Pi^A_{\textit{loyal}}$ is increasing with Q. This implies that $\max\{\Pi^A_{\textit{sellers-pay}}, \Pi^A_{buyers-pay}\} > \Pi^A_{\textit{loyal}}$ for all $Q > 0$. When platform A attracts buyers, $\max\{\Pi^A_{\textit{sellers-pay}}, \Pi^A_{buyers-pay}\} > \Pi^A_{\textit{loyal}}$ even if $Q < 0$, as long as Q is not too low.