Discussion of: Platform competition and incumbency advantage under heterogeneous lock-in effects

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Motivation & research question

Motivation: Existence of powerful (digital) platforms in two-sided markets, combining network effects with large amounts of (user) data

- Network effects benefiting incumbent platforms well understood
- Brand loyalty, user data & analytics may further entrench incumbent platforms by locking-in users
- Recent policy debates re. reducing lock-in effects (e.g., portability)

Research question: Explore implications of heterogeneous lock-in effects for incumbency advantage and competition in two-sided platform markets, in interaction with (cross-side) network effects

Model: Set-up

Platforms: Linear two-sided single-homing model

- Incumbent (I) and an entrant (E) with market shares m_j^i
- Zero marginal cost, unconstrained capacity

Agents: Users on two sides $j = A, B$

- Positive cross-group network effects α_j, linearly increasing in m_{-j}
- Heterogeneous w.r.t. lock-in costs, i.e. cost from joining E: $s_j \sim U(0, \bar{s}_j)$
- Common utility v from services, high enough to join

Choices: Prices and platform

- Platforms simultaneously choose prices p_j^i, one per platform per side: $max\ \pi^i = \sum_j p_j^i m_j^i$
- Users choose to stay with I or join E, based on p_j^i, α_j, and s_j

Model: Results under symmetric cross-group benefits α

Prices

- Prices rise with same-side lock-in costs (but opposite-side prices are unaffected)
- Price differential I–E increases linearly in same-side lock-in costs: asymmetric lock-in generates advantage for incumbent

Market shares

- I's market share is larger on the side where lock-in costs are lower
- Increase in lock-in effects reduces I's market share on both sides of the market
- Increase in cross-group benefits leads to larger market shares for I on both sides

Asymmetric lock-in effects provide incumbent with a competitive advantage; but lowering lock-in effects may increase I's market shares

Model: Results under asymmetric cross-group benefits $\alpha_j \neq \alpha_{-j}$

Prices

- Again, prices rise with same-side lock-in costs (outside of corner solutions)
- Additionally, price charged by I (E) on side *j* is increasing (decreasing) in lock-in effects on the opposite side $-j$ *iff* $\alpha_{-j} \geq \alpha_j$

Market shares

- Again, I's market share is larger on the side where lock-in costs are lower
- Again, increases in lock-in effects reduce I's market shares on both sides of the market

Findings

Model implications

- New entrant targets users (on both sides) with low lock-in costs; incumbent can maintain higher prices for high-cost users
- Welfare: inverted U-shaped relation between aggregate user surplus and same-side lock-in costs
  - Entrant's price also increases in lock-in costs, but the entrant can also expand market share
  - Former effect dominates total welfare for *higher*, latter for *lower* lock-in costs
  - Lowering lock-in costs enhances consumer surplus if costs are *very high*, but could lower surplus if costs *intermediate*
  - Users with high lock-in costs always benefit from reduction (distributional impact)

Policy implication: Reducing lock-in costs could increase barriers to entry

- Regulation lowering lock-in costs may worsen market entry as incumbent implements strategically more aggressive pricing, squeezing out the entrant
- Consumer welfare reacts non-linearly to lock-in costs

Comments (1/2)

Strengths

- Accessible presentation of the model development and implications
- Simple and effective model yields counter-intuitive, but plausible prediction
- Thoughtful discussion of welfare effects, including distributive effects
- Highly relevant implications for platform regulation and competition policy

Considerations

- Strava as motivating example–"comparing achievements against your friends": More of a *same-side* network effect? Distinguishing & separately modelling lock-in and same-side network effect may be worthwhile
- Policy implication hinges on level of lock-in costs and these can be many things–readers and practitioners would benefit from more intuition on or quantification of what constitutes *very high/intermediate/low* levels
- Uniform distribution of lock-in costs–likely more normally distributed, which could alter welfare effects?

Comments (2/2)

Potential for further research

- Model extensions
  - Strava or Amazon product reviews: explicit modelling of same-side network effects
  - Allowing platform-specific utility v, à la Belleflamme et al. (2022)
  - Non-uniform distribution of lock-in costs
  - Multihoming, endogenising lock-in costs, two- or multi-period set-up[1]
- Calibration/empirical validation: prevalent levels of lock-in costs & where are we on the inverted U-shaped consumer surplus curve?

[1] As the authors already mention in section 5.1.

Excerpt from paper: Table A1 (Appendix 1)

Synopsis of the effect on platform prices due to brand loyalty changes on the opposite platform's side

$\overline{s_{-j}} \uparrow$	$\alpha_{-j} > \alpha_j$	$\alpha_j > \alpha_{-j}$
δp_j^{I*}	↑ the incumbent can still retain side $-j$ customers notwithstanding worse network benefits due to lower m_j^{I*}	↓ the incumbent needs to recompense side j customers for their reduced cross-group benefits given to smaller market share on the other side m_{-j}^{I*}
δp_j^{E*}	↓ entrant must increase m_j^{E*} to poach side $-j$ customers by increasing their cross-group benefits	↑ entrant can capitalise on higher cross-group benefits for side j customers thanks to higher m_{-j}^{E*}

$\overline{s_{-j}} \downarrow$	$\alpha_{-j} > \alpha_j$	$\alpha_j > \alpha_{-j}$
δp_j^{I*}	↓ incumbent must increase m_j^{I*} to retain side $-j$ customers by improving their cross-group benefits	↑ incumbent can capitalise on higher cross-group benefits for users on side j thanks to higher m_{-j}^{I*}
δp_j^{E*}	↑ entrant is able to recruit customers on the side $-j$ despite receiving lower cross-group benefits due to a smaller m_{-j}^{E*}	↓ entrant needs to recompense customers on side j for their reduced cross-group benefits due to smaller market share m_{-j}^{E*}