

Motivation

- online platforms focus on design of rating systems which allow information transmission *between* consumers; strong effect on demand
 - * 82% of consumers read reviews before shopping online (EPRS, 2017)
 - * one-star rating increase on Yelp → revenues 5-9% ↑ (Luca, 2016)
- sellers incentivized to “manage” rating
 - * multiple channels (product quality/service quality/...)
 - * we focus on **strategic pricing**
- How does the design of the rating system affect pricing incentives and consumer learning?
 - * rating systems allow passing of information across periods
 - * consumers observe aggregate statistics, but not all information relevant
 - * characteristics of past consumers unobserved but affect review

CONTRIBUTION

Tractable framework of dynamic pricing in presence of rating systems

- long-lived firm sells good of fixed quality to short-lived consumers
- consumer inference based on heuristic (“quasi-stationarity”)
- interaction of pricing incentives and information transmission

Capture empirically documented relationships b/w prices & reviews

- price \uparrow \implies review \downarrow due to *direct price effect*
- price \uparrow \implies review \uparrow due to *selection effect*
- strength of direct price effect product-specific
 - * dominates for standardized products (USB sticks, Cabral and Li (2015))
 - * selection effect dominates otherwise (e-books, Zegners (2019))
 - * in line with own analysis of video games, casual vs. non-casual

MODEL INGREDIENTS

- long-lived firm sells good of fixed quality to short-lived consumers
 - * $t \in \{1, 2, \dots, T\}, T \leq \infty$
- purchasing consumers leave review which depends on
 - * quality (+)
 - * idiosyncratic taste (+)
 - * prices weighted by parameter (-)
- quality inference
 - * based on current aggregate rating & current price
 - * heuristic: assume past consumers faced same price and rating (quasi-stationary)
- updated rating is weighted average of previous rating & average review
 - * weight parameter measures sensitivity to incoming reviews

RESULTS

Long-run properties of learning

- consumers hold correct beliefs about quality in long-run (despite heuristic)
- not affected by details of rating systems (*sensitivity* to new reviews)

Long-run properties of prices & consumer surplus

- sensitivity affects long run prices & consumer surplus
 - * strong price effect: sensitivity $\uparrow \implies$ price \downarrow , CS \uparrow
 - * weak price effect: sensitivity $\uparrow \implies$ price \uparrow , CS \downarrow
 - higher sensitivity increases dynamic pricing incentives
 - strength of price effect determines direction of dynamic pricing incentives
- policy changes by many platforms may have reduced consumer surplus
 - * firms always benefit as it makes reaching “target rating” less costly