

What do “Off the Shelf” Theory Models Say about Drip Pricing?

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(Work-in-Progress with Rick Harbaugh)

Adapt the Following Models to Account for Drip Pricing

- Search models
 - Diamond (*JET*, 1971); Reinganum (*JPE*, 1979); MacMinn (*JPE*, 1980); Stahl (*AER*, 1989)
- Clearinghouse models
 - Varian (*AER*, 1980); Rosenthal (*Ecmt*, 1980); Baye & Morgan (*AER*, 2001)
- Cheap talk/persuasion models
 - Chakraborty & Harbaugh (*AER*, 2010); Che, Dessein, & Kartik (*AER*, forthcoming)

A Caveat

- Tempting to assume that drip pricing raises search costs, and therefore increases price dispersion and/or prices
- But...
 - Changes in search costs impact the incentives of consumers, retailers, and platforms
 - Equilibrium effects of increases in search costs are model-specific
 - Equilibrium effects often differ from partial-partial equilibrium effects
- Examples:
 - Reinganum: Higher search costs, greater price dispersion
 - MacMinn: Higher search costs, less price dispersion
 - Stahl: Higher search costs, ambiguous effect on price dispersion

Search Models and Drip Pricing

- Sequential search models in the spirit of Reinganum are capable of handling the drip-pricing of essential add-ons
 - Shipping costs, taxes, airline baggage fees, etc.
- One might expect the Diamond Paradox outcome
 - Consumers “held up” once lured in
- Does not occur in equilibrium because doing so reduces demand and profits
 - Firms equate their (identical) marginal revenues with (differing) marginal costs
 - “Hold-up” would result in sales below the profit-maximizing level, and thus is not profitable
- Thus, ability to engage in drip pricing has no effect on the welfare of consumers

Clearinghouse Models and Drip Pricing

- Clearinghouse models (e.g., Varian, Baye & Morgan) can handle the drip-pricing of essential add-ons:
 - “Dripped” shipping costs, taxes, airline baggage fees, etc.
- Without drip pricing, consumers observe the complete list of prices and purchase from the e-retailer charging the lowest price
- Drip pricing transforms a visit to the “clearinghouse” into a costly sequential search environment
- With drip pricing, consumer must click a given listed price (at some cost, $\varepsilon > 0$) to determine the full price
- Suggests “monopoly” pricing may result (due to Diamond Paradox)

Accounting for Disclosure Incentives in Clearinghouse Models

- If all other firms charge monopoly price, an e-retailer gains by unilaterally disclosing its add-on costs (*a la* Southwest Airlines)
- Platform (gatekeeper) also has incentive to promote disclosure
- Monopoly pricing is not an equilibrium when take into account disclosure incentives
- This is consistent with historical evolution of disclosure patterns at price comparison sites

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Cheap Talk Models and Drip Pricing

- Cheap talk model in the spirit of Chakraborty & Harbaugh and Che, Dessein & Kartik
- Consumers “lured” to an e-retailer’s website because of its low price (P_1)
- Once “inside,” e-retailer can recommend a higher margin product selling for $P_2 > P_1$
 - Think of product 1 as a “no-frills” version and product 2 as having “add-on” features
- E-retailer has private information about which product is really better for consumer
- Consumer can then buy product 1, 2, or nothing

Impact on Consumer Welfare

- Consumers recognize that seller is potentially biased
 - *Incentive bias* to push more expensive product because earn higher margin if recommendation accepted
 - *Pandering bias* to push cheaper product because less likely to walk away from the transaction
- Consumers discount recommendations based on these biases, which reduces seller's incentive to push wrong product
- In equilibrium, seller sometimes pushes appropriate products, sometimes doesn't
- For *given prices*, consumers are better off compared to environment with no recommendations whatsoever

Impact of Price Competition for Product 1

- Recall that consumers “observe” the effects of competition on product 1, but not product 2
- Suppose heightened competition in the P_1 dimension results in a larger gap between P_1 and P_2
- Increases e-retailer’s relative payoff from successfully pushing high margin product
- Increases consumer’s utility from purchasing cheaper product
- Thus, incentive and pandering biases work in opposite directions; ambiguous effect on communication
- Consumer welfare may increase or decrease as a result of heightened competition for product 1

Ambiguous Welfare Effects of “Drips” Not an Artifact of Rationality

- Above models assume fully rational consumers and firms
- Behavioral models also give rise to ambiguous welfare effects
- It is known that, with myopic consumers, “shrouding” or “obfuscation” may
 - Reduce consumer welfare (Gabaix and Laibson *QJE*, 2006)
 - Increase consumer welfare (de Meza & Reyniers, *EL*, 2012)

Summary

- As a matter of economic theory, drip pricing may be benign, beneficial, or harmful, depending on the environment
- In environments where drip pricing is harmful, “voluntary” disclosure may solve the problems
 - Incentives of individual firms
 - Incentives of individual platforms
 - Competition among platforms
- To the extent that drip pricing is accompanied with disclosure of *non-price* information, the elimination of drip-pricing may reduce consumer welfare through reduced communication
- Mandating more complex (or complete) up-front disclosure of options may confuse consumers rather than foster competition
 - HUD disclosures (see the 2007 FTC mortgage disclosure study)
 - Health insurance options (behavioral arguments of Rice, Wood, Hanoch, among others)