Exploding Offers and Buy-Now Discounts

Mark Armstrong and Jidong Zhou
Oxford University and New York University

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Exploding Offers and Buy-Now Discounts I

- Relatively little work in economics about sales techniques
- One technique involves forcing a customer to decide to buy *quickly*, before she knows what other offers are available
- Attempts to ban this practice under EU's *Unfair Commercial Practices Directive*

- Exploding offer: customer cannot return to buy later
  - photography studio tells customers they must decide what pictures to buy that day (since negatives are destroyed)
  - salesman may say he is in the area for that day only, or it's his last day in that job
  - life insurance firm may give quote valid for 10 days, but it takes more than 10 days to generate another quote
  - (law) journal offers to publish author's paper, but requires immediate agreement

Exploding Offers and Buy-Now Discounts II

- Buy-now discount: seller promises to raise price if customer does not buy immediately
  - car dealer offers extra $500 off so (as he claims) he can make his monthly quota
  - landlord offers $100 reduction in monthly rental if tenant agrees straightaway
  - kitchen firm offers long-term quote, together with discount if customer signs immediately
- "Surprise" price hike: seller implements unannounced price rise when customer returns to buy
  - when browsing for air tickets, customer may find price has risen on returning to previously-visited website
  - consulting firm may raise fee if prospective client comes back after finding other consultants are unsuitable

Overview I

- We consider two scenarios:

1. Monopoly model, in which consumers have uncertain—and initially unknown—outside option
2. Oligopoly search model, where consumers search sequentially for good product and/or low price

- We assume firm(s) can distinguish first-time from returning visitors
  - e.g., job offers, home improvements, doorstep sellers, life insurance, time-share companies, car dealers, "cookies" on computer
- Firm(s) then often have incentive to discriminate against returning visitors
  - either by making exploding offer, by offering a buy-now discount, or with a surprise price hike

Overview II

- Strategic benefits
  - by making it difficult for a new visitor to return, seller makes continued search less attractive
  - but may also harm seller by reducing the demand from those customers who would wish to buy later
  - applies when seller can commit to its selling policy
- Information benefits
  - when seller knows customer has returned after investigating rivals (or outside option), this suggests she likes its offer best
  - when seller cannot commit to selling policy, seller often has incentive to surprise returning buyer with a price hike

Monopoly Analysis

- Single firm supplies product at zero cost
  - its strategy is an initial price and—where relevant—a "buy-later" policy
- Consumers:
  - surplus from buying firm's product at price p is $u - p$
  - u is idiosyncratic match value: fraction of consumers with $u \geq p$ is $Q(p)$
  - we call $Q(\cdot)$ the "demand curve"
  - the firm does not observe u
- If consumer does not buy seller's product, her uncertain outside option is $v \geq 0$
  - she does not know v when she first visits the monopolist
  - u and v are independent
  - possibly has to pay search cost s to discover v (otherwise just gets zero)
  - no intrinsic cost of returning to monopolist (until later)
  - consumers are risk neutral

Monopoly Analysis: Exploding Offers I

- For simplicity set $s = 0$ (doesn't affect result)
- Free recall:
  - consumers always investigate outside option
  - with price p, consumer buys if $u - p \geq v$
  - expected demand is $\mathbb{E}_v[Q(p + v)]$
- Exploding offer:
  - with price p, consumer buys if $u - p \geq \mathbb{E}_v[v]$
  - expected demand is $Q(p + \mathbb{E}_v[v])$
- Proposition: From Jensen's Inequality
  - firm makes exploding offers if demand curve is concave
  - firm allows free recall if demand curve is convex
- This result also holds without commitment if some consumers are "credulous"

Monopoly Analysis: Exploding Offers II

- For given price p, use of exploding offers harms consumers
- Impact of sales tactic on price depends on elasticity (not levels) comparison between $\mathbb{E}_v[Q(p+v)]$ and $Q(p+\mathbb{E}_v[v])$
  - ambiguous, but "typical case" (eg., if Q' concave) is that exploding offer involves higher price
  - in this case, exploding offers cause two kinds of harm: poor matching and higher price

Monopoly Analysis: Buy-now Discounts

- Instead of extreme policy of refusing to sell to returning buyer, suppose firm offers a discount for immediate purchase
- Proposition: If the demand curve is strictly log-concave, the firm has incentive to offer a buy-now discount
- Thus, car salesman (say) has incentive to offer discount to a potential customer visiting for the first time (but if returning later she pays the regular price)
- Introducing buy-later premium
  - boosts immediate demand
  - reduces returning demand
  - boosts revenue from returning demand [extra effect relative to exploding offer case]
- Sometimes *neither* price falls when firm engages in this form of price discrimination

Monopoly Analysis: "Surprise" Price Hikes I

- Suppose consumers anticipate firm's price will be same on return visit
  - does firm have incentive to raise its price to those consumers who buy later?
- With no search frictions, answer is clearly "no"
- With $s > 0$ but no intrinsic cost of returning to seller after seeing outside option, answer is ambiguous (so far, we have no clear sufficient condition either way)
- With $s > 0$ and some small intrinsic cost of return $r > 0$, answer is clearly "yes"...

Monopoly Analysis: "Surprise" Price Hikes II

- Suppose p is firm's initial price (which is also the price anticipated by consumer if she returns to buy later)
  - if consumer decides to return to buy then her preferences are such that $u - p - r > v$
  - seller can raise price to $p + r$ and not drive any such consumers back to outside option
- Same argument shows there is no equilibrium buy-later price which induces any consumers to return
  - equilibrium outcome without commitment is as if firm makes an exploding offer
  - result is akin to Diamond's (1971) Paradox

Oligopoly Search Model I

- Monopoly analysis useful to obtain economic understanding of individual firm's incentives
- But has some strange features
  - all consumers have same distribution of outside option
  - no consumer has alternative offers already "in the bag"
- Model with sequential search overcomes these problems
- Use Wolinsky's (1986) market model
  - consumers search sequentially for a single item
  - $n < \infty$ symmetric firms supply differentiated products
  - surplus from buying firm i's product at price p_i is $u_i - p_i$
  - i.i.d. match values (across consumers and products): probability $u_i \geq p$ is $Q(p)$
  - consumer discovers any seller's match utility, price and buy-later policy by incurring search cost $s \geq 0$
  - outside option has zero surplus

Oligopoly Search Model II

- Then just as in monopoly model:
- Proposition
  - firms use exploding offers if demand curve is concave
  - firms allow free recall if demand curve is convex
- Proposition
  - suppose the demand curve is strictly log-concave
  - then starting from Wolinsky's free-recall equilibrium a firm has incentive to offer a buy-now discount

Duopoly Example with Uniform Distribution

- Suppose the demand curve is $Q(p) = 1 - p$
- Suppose there are no intrinsic search frictions ($s = 0$; p is buy-now price; $\hat{p}$ is buy-later price):

	p	$\hat{p}$	immediate	returning	excluded
free recall	0.41	0.41	41%	41%	17%
buy-now discount	0.45	0.51	66%	11%	23%
exploding offer	0.45	n/a	73%	0%	27%