Sources of consumer information

Frédéric KOESSLER

HEC and CNRS

Régis RENAULT

CY Cergy Paris U.

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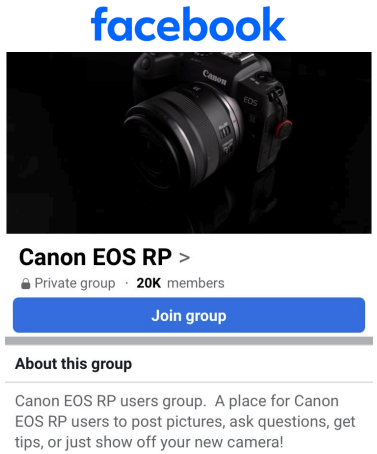
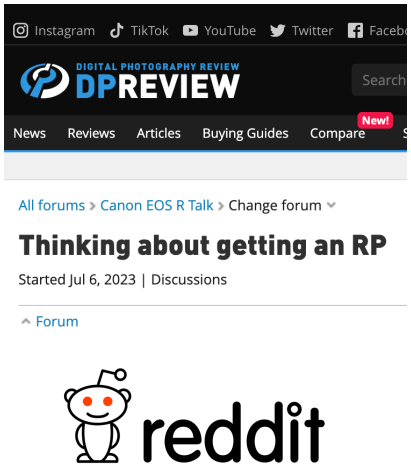
Product information

When buying a product, consumers have access to many sources of information beyond what the seller discloses:

- search engines
- specialized forums
- social media communities
- YouTube channels and reviews
- book and magazine guides
- blog articles
- hands-on demos in stores
- advice from industry experts or product testers.





However, the cost of obtaining and processing that information might induce the buyer to decide on purchasing or not on the sole basis of the information provided by the seller:

- targeted ads that highlight specific features
- product recommendations on e-commerce platforms
- steering mechanisms on vertical platforms such as Booking or Uber Eats

Research questions

How is the seller's disclosure strategy affected by the availability of independent sources of information?

Does the buyer necessarily benefit from a lower cost of information acquisition?

Does the buyer benefit from the seller's improved ability to use sophisticated communication?

Setting

- Simple buyer-seller setting (variant of Wang, 2017).
- The buyer's valuation is initially unknown to either party.
- The seller posts a price and discloses product information.
- Before deciding whether to buy, the buyer can decide to learn his valuation by incurring a fixed search cost.

Results

With optimal information disclosure:

- buyer is partially informed and does not search.
- increase in search cost monotonically raises profit and decreases consumer welfare (contrary to Wang, 2017).

Comparison of optimal disclosure with no seller communication:

- if valuation likely to exceed marginal cost (*mass market*), without seller information, profit and consumer welfare are non monotonic in search cost;
  - then both buyer and seller can be better off with larger search costs and no sophisticated seller communication.
- if valuation likely to be below marginal cost (*niche market*), then buyer and seller can both benefit from a combination of lower search costs and sophisticated seller communication.

Implications for platform design

Platform is most attractive to sellers by keeping search costs high and enabling sellers to optimize their communication.

However, the outcome is very unattractive to buyers.

Best strategy to restore attractiveness for buyers depends on the nature of products sold:

- it is best to keep search costs relatively high an limite seller communication for mass markets;
- it is best to reduce search costs while keeping elaborate communication by sellers for niche markets.

Model

Buyer's valuation $v \in [\underline{v}, \bar{v}]$, where $\underline{v} \leq 0 < \bar{v}$.

Distribution function G, density g, hazard rate $\frac{g(v)}{1-G(v)}$ is strictly increasing.

Utility is $v - p$ if buyer buys at price p and zero if he does not buy.

Seller has zero marginal cost.

Match initially unknown

- Buyer can learn match perfectly at search cost s.
- Seller can provide product information to buyer using a disclosure policy $X : [\underline{v}, \bar{v}] \to \Delta(M)$.

Timing

1. Seller selects a disclosure policy, X, and a price, p.
2. Nature draws v.
3. Disclosure policy delivers message m.
4. Buyer observes X, p and m and chooses whether to buy, search or drop.
   - if he searches, he pays s, observes v, and chooses to buy (if $v \geq p$) or drop (if $v < p$).

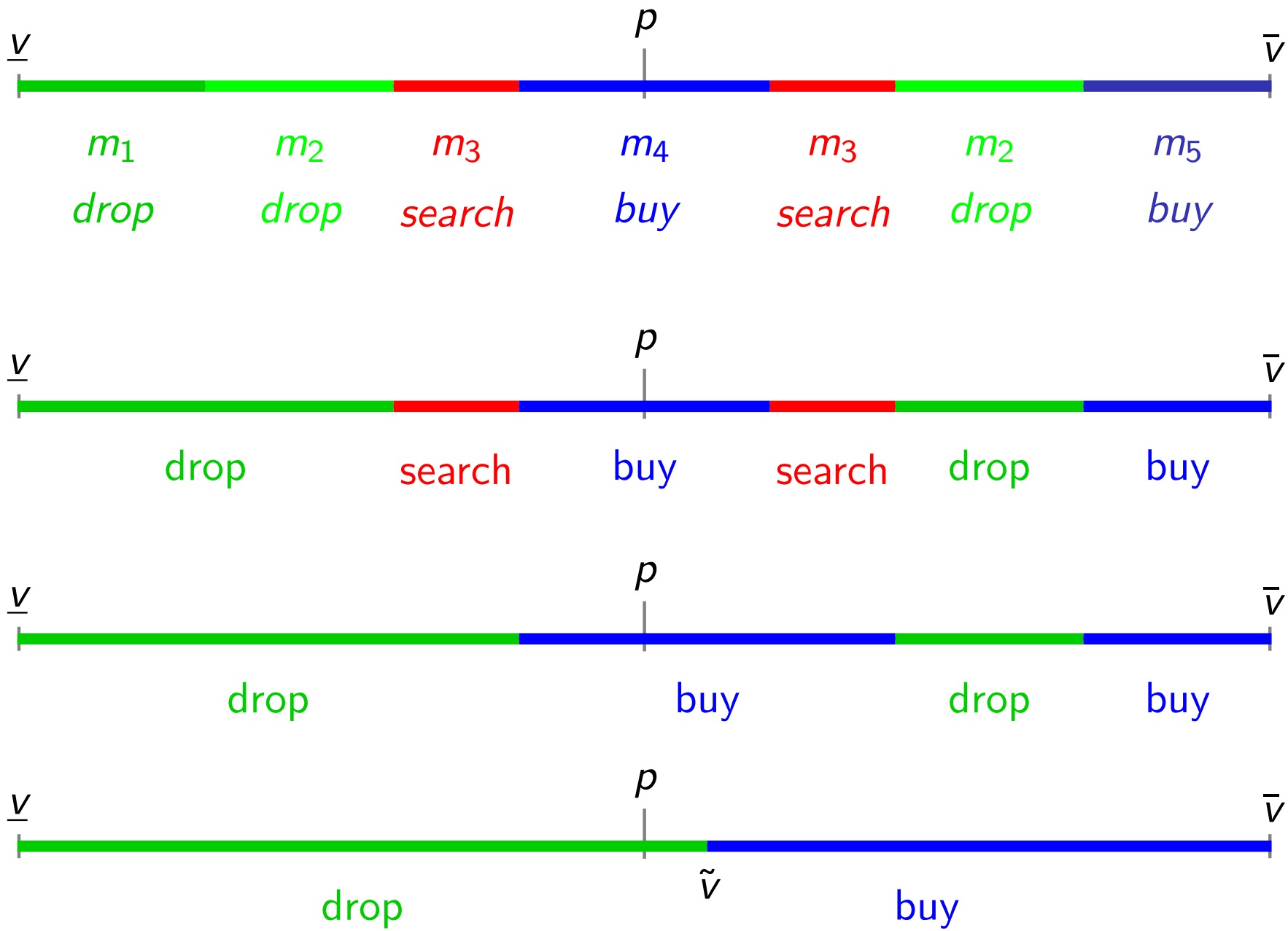
Optimal information disclosure

Three steps

Step 1 *Revelation principle* 3 messages is enough, $M = \{buy, search, drop\}$ (Meyerson, 1982).

Stop 2 *Search deterrence* No search. $M = \{buy, drop\}$. (related result in Matyskova and Montes, 2023).

Step 3 *Threshold disclosure* Buy iff $v \geq \tilde{v}$. (analogous results in Anderson and Renault, 2006, and Saak, 2006)


$\underline{v}$
p
$\bar{v}$
m_1 m_2 m_3 m_4 m_3 m_2 m_5
drop drop search buy search drop buy
$\underline{v}$
p
$\bar{v}$
drop search buy search drop buy
$\underline{v}$
p
$\bar{v}$
drop buy drop buy
$\underline{v}$
p
$\bar{v}$
$\tilde{v}$
drop buy

Profit maximization

Profit maximization

From the previous results, the seller's problem consists in choosing price p and threshold $\tilde{v}$ solution to

$$\max p\,(1 - G(\tilde{v}))$$

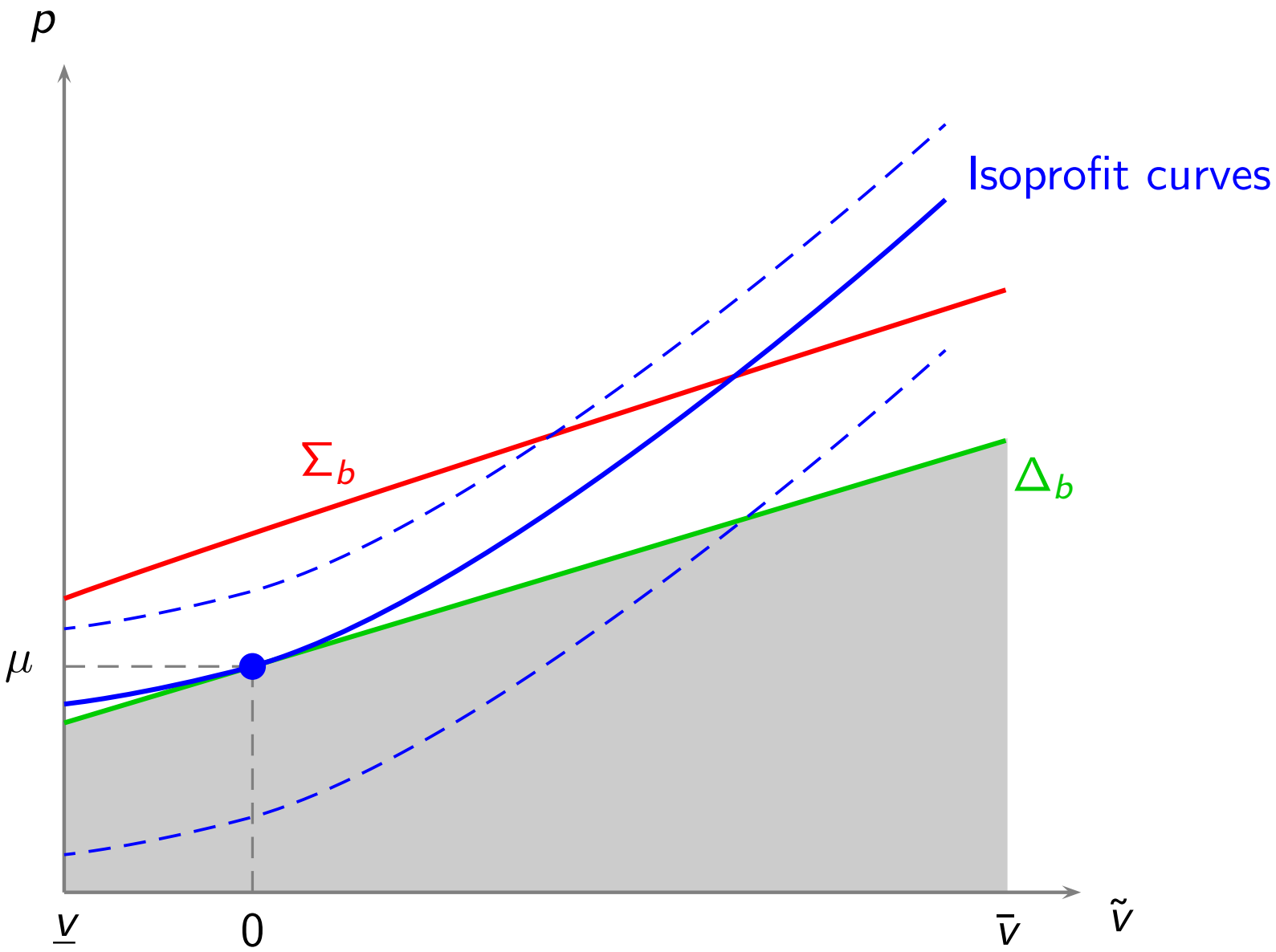
subject to a **no drop** constraint (Δ)

$$E(v \mid v \geq \tilde{v}) - p \geq 0$$

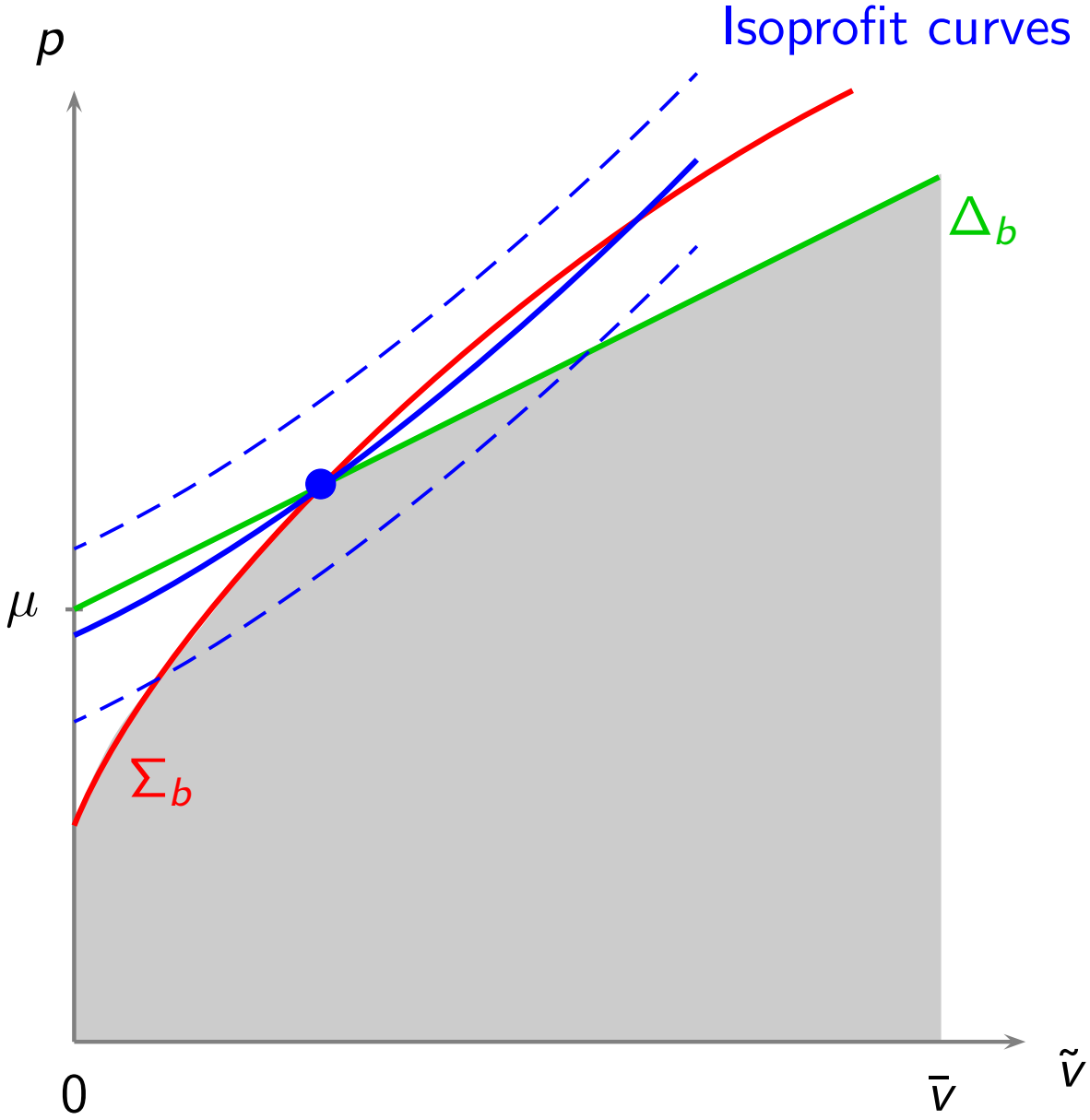
and a **no search** constraint (Σ)

$$E(v \mid v \geq \tilde{v}) - p \geq \Pr(v \geq p \mid v \geq \tilde{v}) E(v - p \mid v \geq p) - s.$$

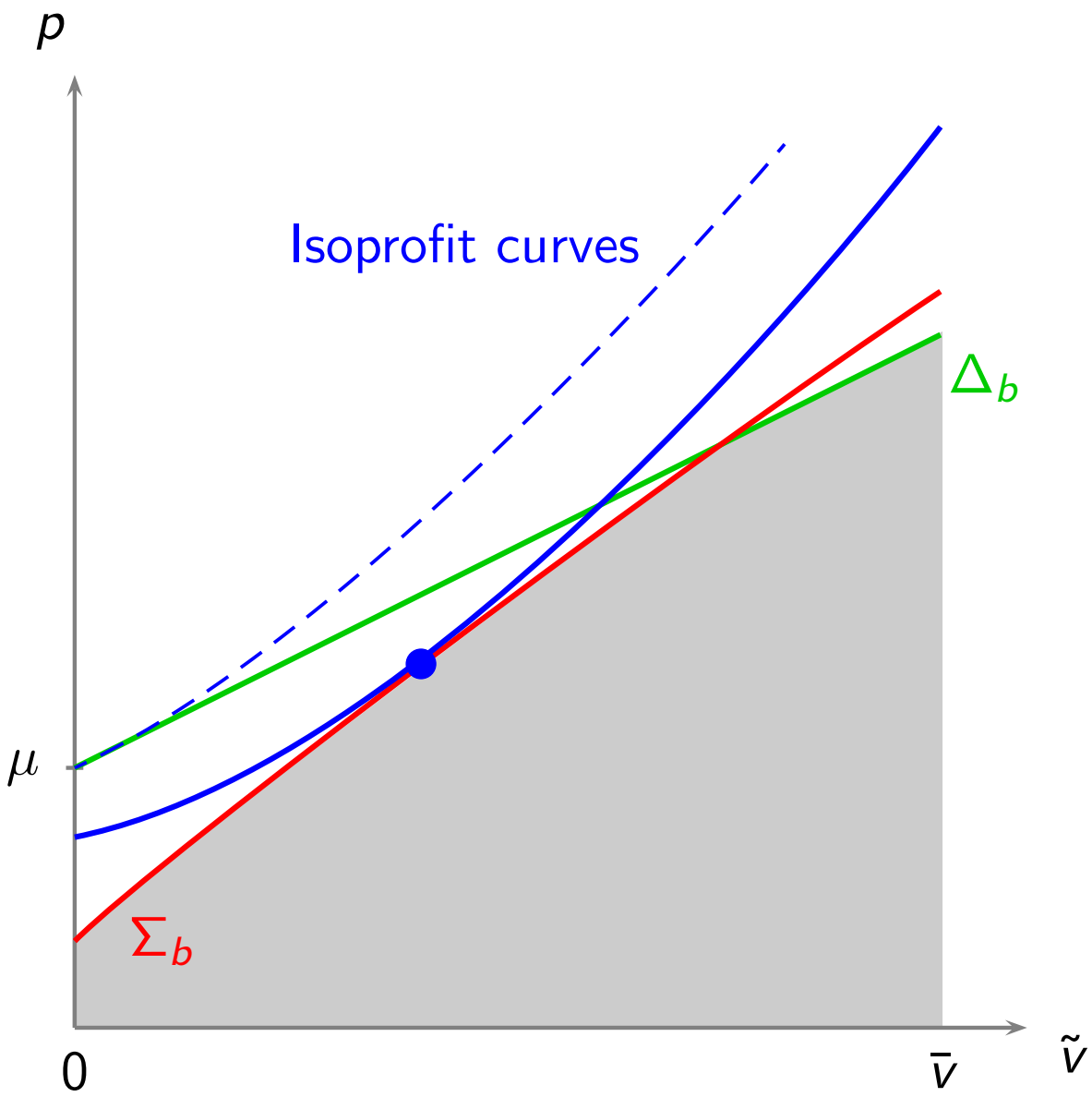
Prohibitive search cost ($s > \bar{s}$): only (Δ) binds



Intermediate search cost: both constraints bind



Low search cost: only (Σ) binds



Impact of elaborate seller communication on buyer

No seller information

Assume the seller is unable to provide any product information and can only post a price.

Optimal buyer choice as a function of p and s

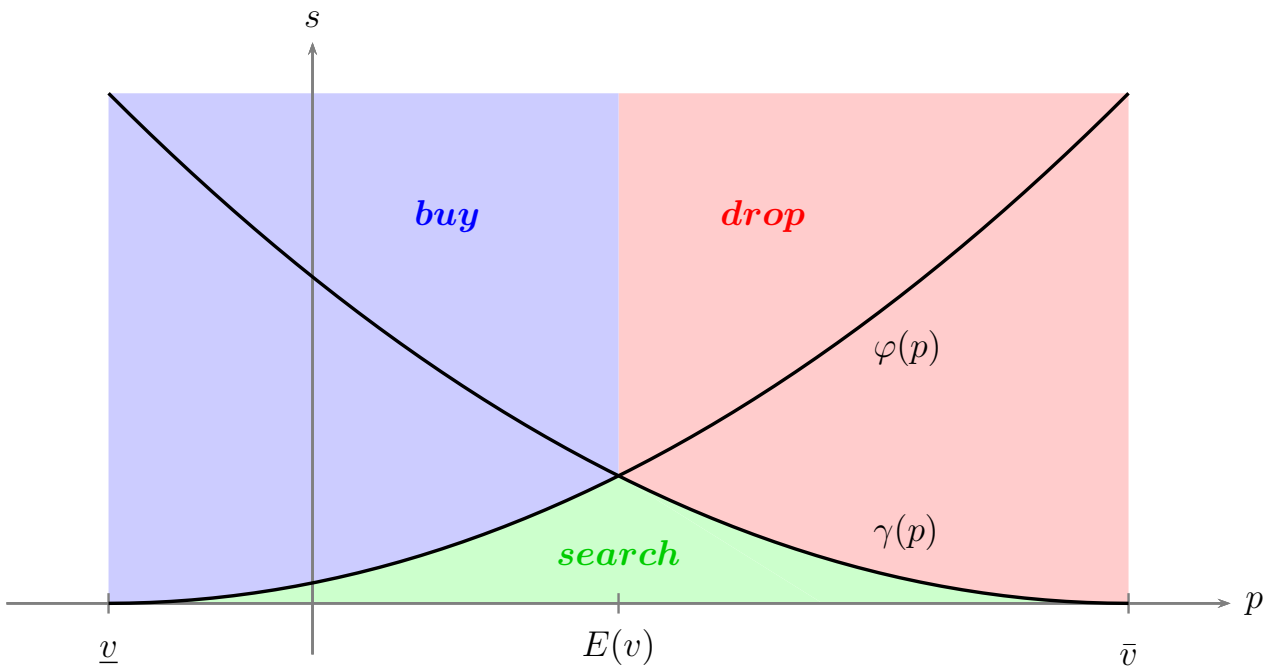
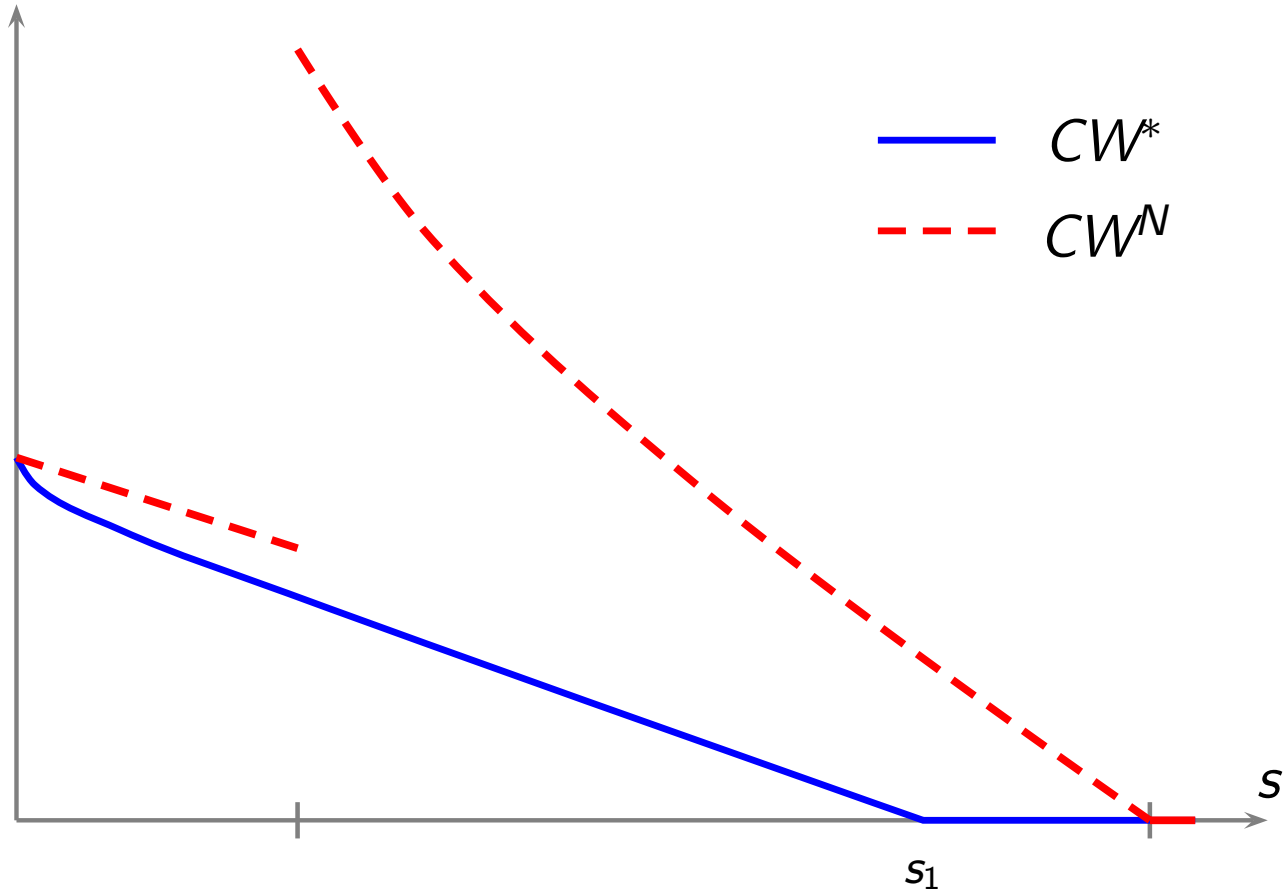


Figure 1: Functions $\varphi(p)$ and $\gamma(p)$, and optimal action of the buyer as a function of p and s under no disclosure.

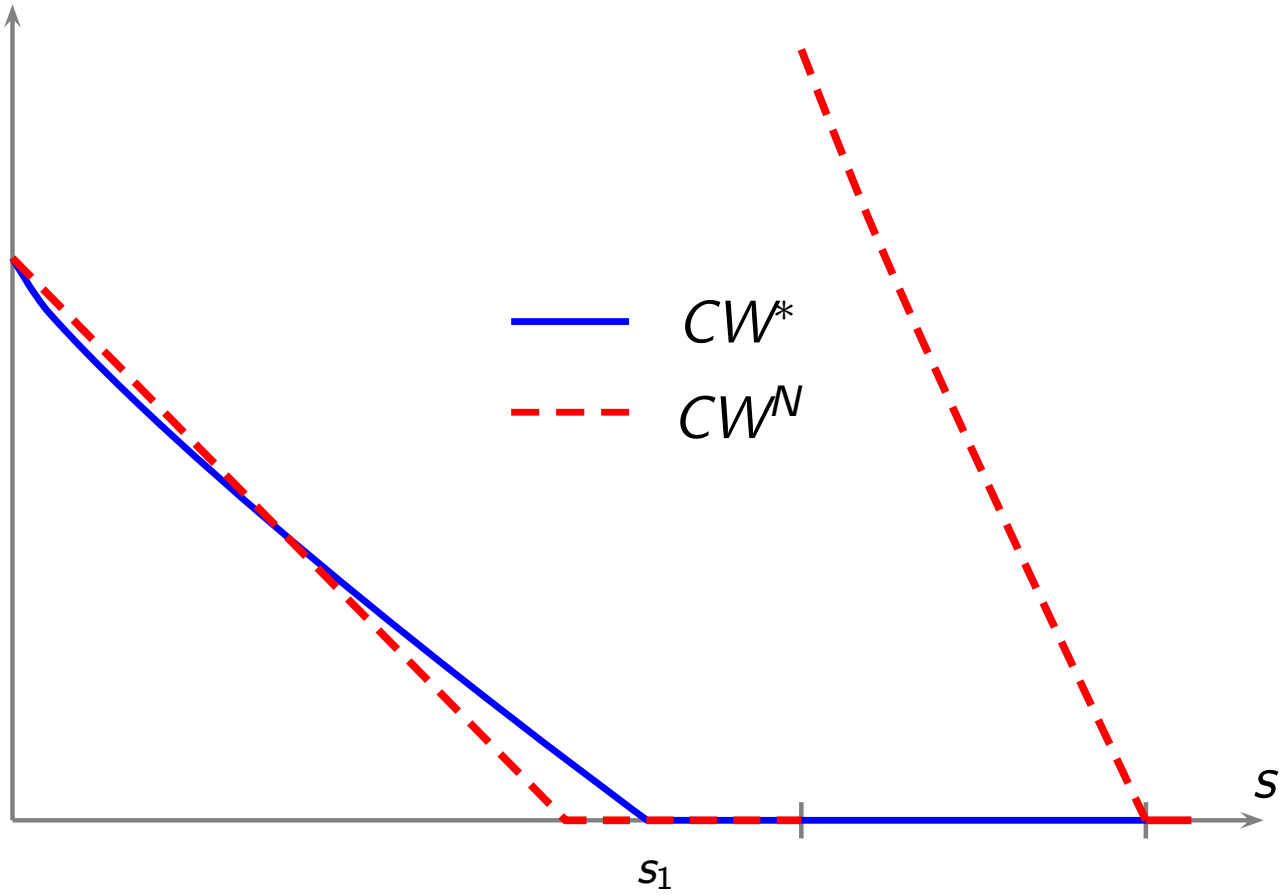
Seller chooses between

- a "relatively high" price (such that $\gamma(p) \geq s$ to induce search: typically optimal if s low.
- and a "relatively low" price (such that $\varphi(p) \leq s$ to induce immediate purchase and sell with probability 1 (typically for large enough search costs).

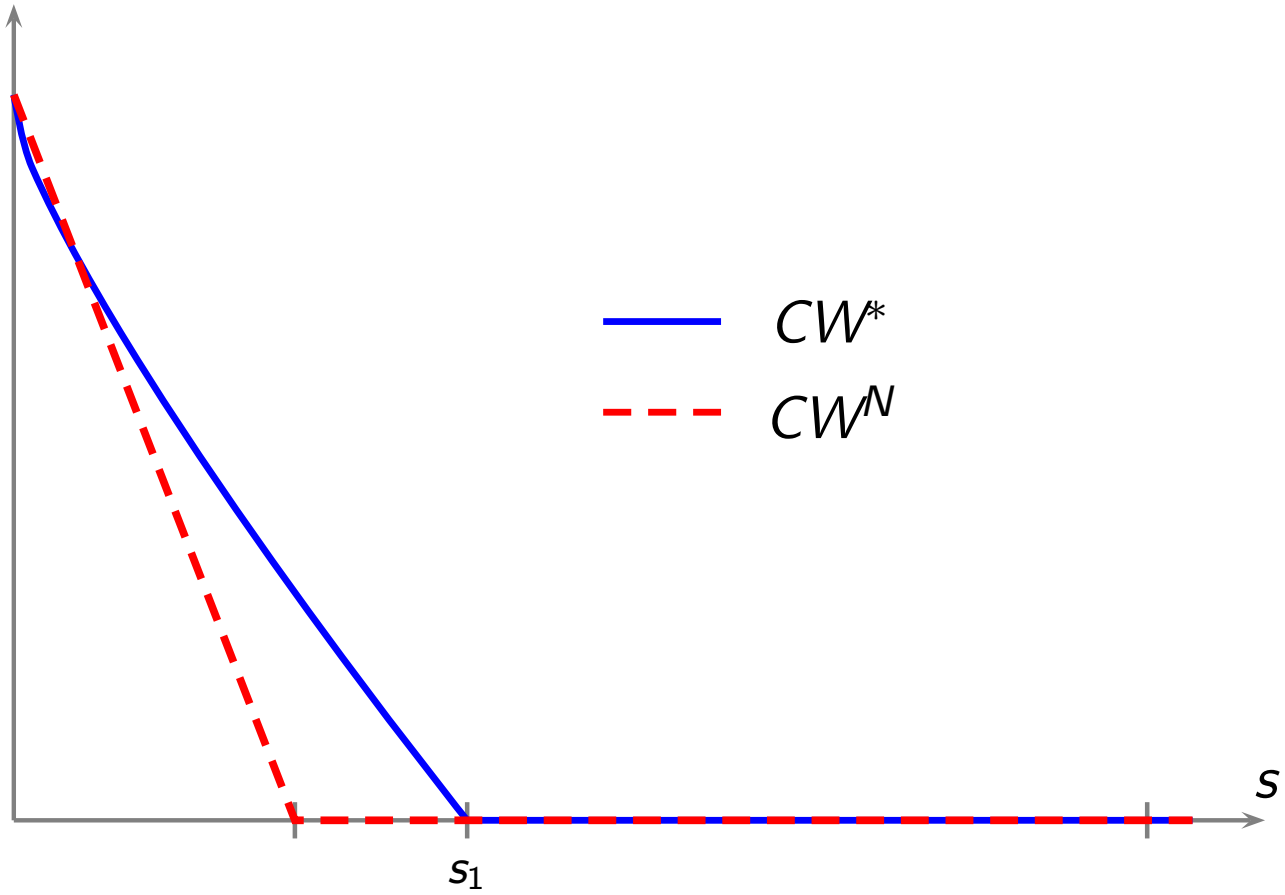
Consumer welfare under no disclosure (CW^N) and optimal disclosure (CW^*), v uniform on $[0, 1]$



Consumer welfare under no disclosure (CW^N) and optimal disclosure (CW^*), v uniform on $[-0.3, 0.7]$



Consumer welfare under no disclosure (CW^N) and optimal disclosure (CW^*), v uniform on $[-0.5, 0.5]$



Extensions

Reasons for search not being deterred completely

- Different consumers have different prior information or different search costs.
- Different consumers learn different things when searching.

Endogenous alternative sources of information (e.g. information provided by the platform).