



The Scholarly Journals Market, Version 2.0: Searching for Equilibrium in a Digital World

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Some (economic) Questions....

- The transition from print to digital has significantly reduced distribution costs.
- Under these conditions, is the OA model now feasible, competitively viable, more efficient?
- If the Subscriber and Author Pay models coexist, which type of firms adopt what?
- Which outcome is best?



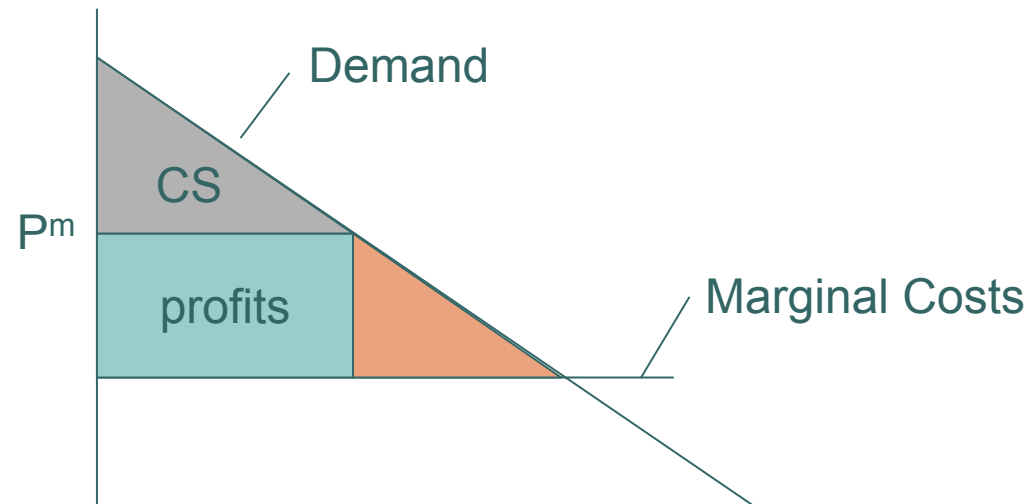
An Economic Framework for Answering these Questions Starts with an Examination of the Objectives for...

- Publishers
- Authors
- Subscribers
- Society



A Firm's Objective (Publishers)

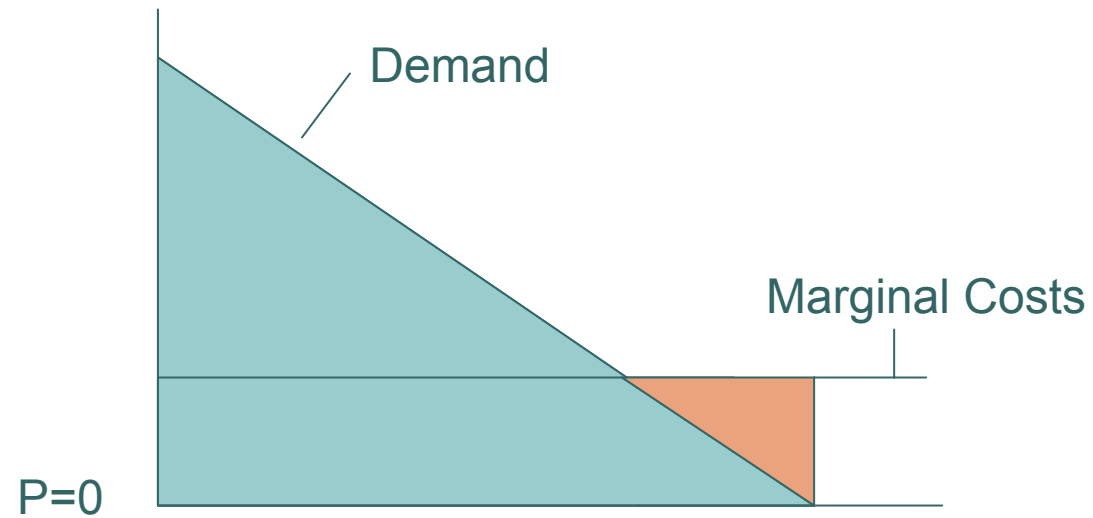
- Maximizing Profits (producer surplus)





Authors' and Readers' Objectives ("consumer surplus")

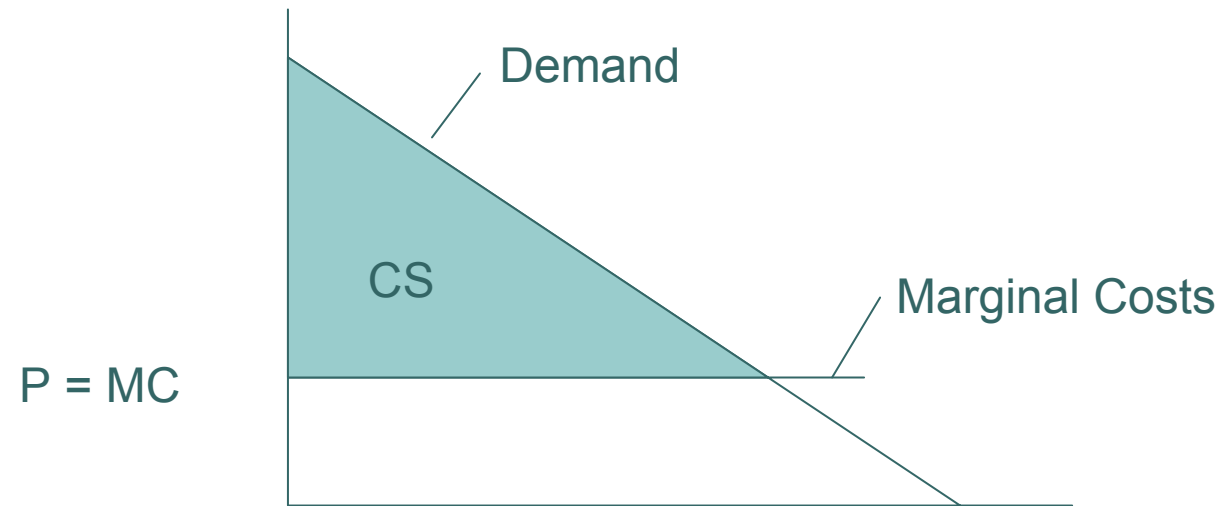
- Maximizing Consumer Surplus





Society's Objective

- Maximizing Total Surplus (PS + CS)





Some Two-Sided Complications

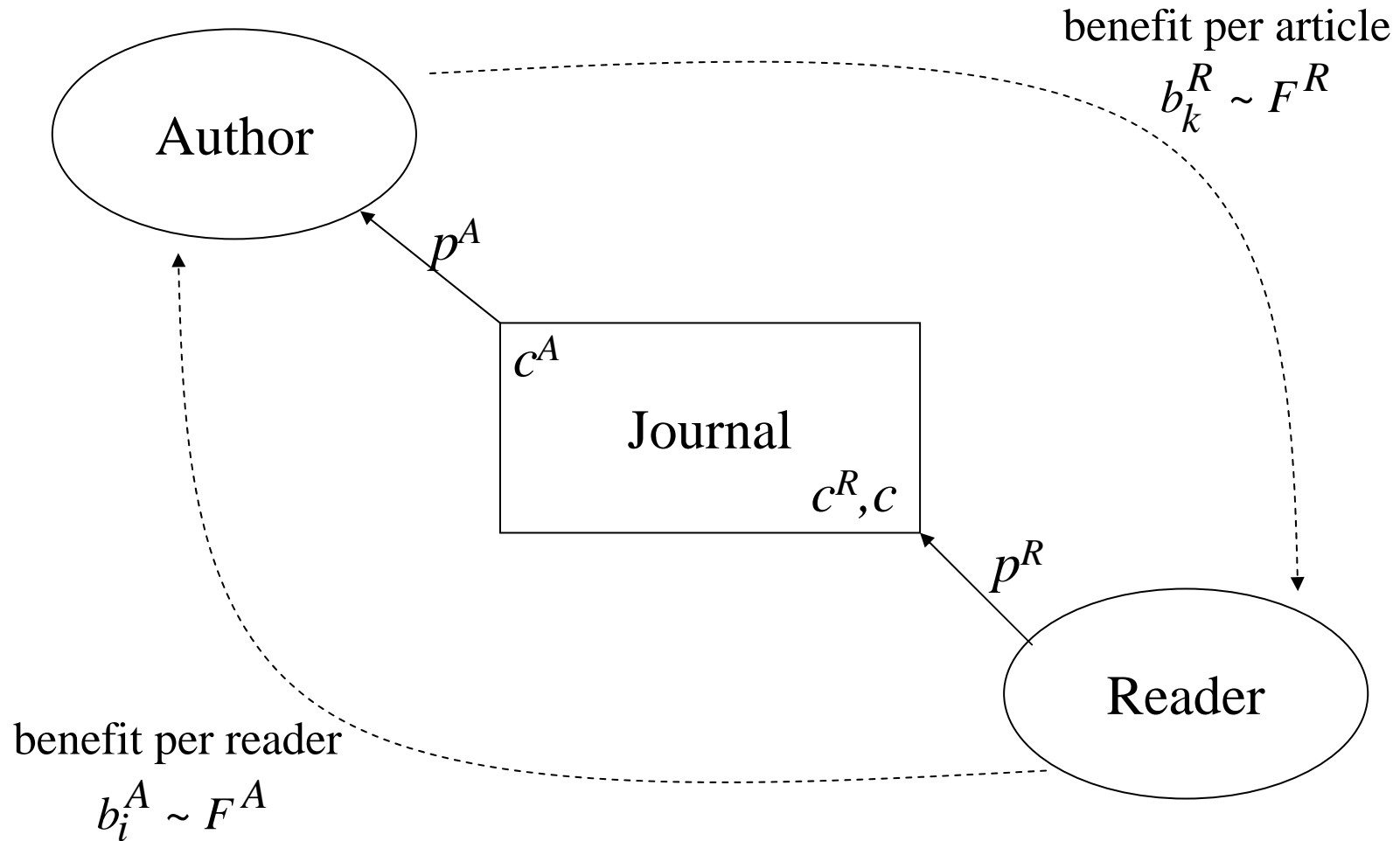
- Unlike the typical market, bilateral externalities exist.
- A reader's willingness to pay for a journal increases with the number (and/or quality) of articles available, the reputation of the journal, etc. Similarly, authors benefit from publishing in a journal with a larger number of readers, a good reputation, etc.
- Any optimal solution (optimal for whom?) will involve determining the correct "structure" of prices to charge authors and readers.
- Other two-sided market examples include credit cards, media broadcasting, and telephony



In the Most Basic Journal Model...

- All articles have similar quality.
- All Journals have the same reputation.
- But Authors care about the number of readers, and exhibit a common willingness to pay for this benefit.
- And readers care about the number of articles, and vary in their willingness to pay for them.

A Two-Sided (Static) Model





Three Cases

- **Monopoly**: a single profit-maximizing journal serving a specific scientific community (therefore many possible monopolies)
- **Social Optimum**: a single journal maximizing total surplus subject to a no-losses constraint (the “second-best”)
- **Duopoly Competition**: a pair of identical titles competing for authors and readers (so that profits equal zero).



Suppose $b^A = 0.2$, $c^A = 0.1$, $c^R = 0$, $c = 0$, etc...

- Monopoly:

$$P^A = 0.12, P^R = 0.3$$

$$N^A = 2, N^R = 0.7$$

Total Surplus: 1.06

- Social Optimum:

$$P^A \leq 0.2, P^R = 0$$

$$N^A = 2, N^R = 1$$

Total Surplus: 1.2



Same Assumptions – What about Duopoly Competition?

- $P^A = 0.1$, $P^R = 0$ for each title
 $N^A = 1$ (per title), $N^R = 1$ (per title)
Total Surplus: 1.2
- This is a unique equilibrium



In A More Sophisticated Model...

- The quality of some articles is high, and is low for others.
- There is a high reputation journal (that publishes the high quality articles in equilibrium), and a lower reputation competitor (that publishes the lower quality articles).
- Authors care about the number of readers, the reputation of a journal, and vary in their willingness to pay for these characteristics (in a binary sense).
- And readers care about the number of articles, the reputation of a journal, and vary in their willingness to pay for these characteristics.



Two Cases

- **Duopoly**: Different profit-maximizing firms publish the two journals.
- **Duopoly with OA**: one or both firms set reader fees to zero.



The Duopoly Case ($c^A = 0$, $c^R = 0$, and $c = 0$)

- High Reputation Journal:

$$P^A = 0.013, P^R = 0.08$$

$$N^A = 1, \quad N^R = 0.6$$

Profits: 0.061

- Low Reputation Journal:

$$P^A = 0.0055, P^R = 0.045$$

$$N^A = 1, \quad N^R = 0.55$$

Profits: 0.0303

Total Surplus: 0.1327



A Second Duopoly Case, where $P^R = 0$ is “adopted” by the Low Reputation title.

- High Reputation Journal:

$$P^A = 0.004, P^R = 0.08$$

$$N^A = 1, \quad N^R = 0.6$$

Profits: 0.052

- Low Reputation Journal:

$$P^A = 0.01, P^R = 0$$

$$N^A = 1, \quad N^R = 1$$

Profits: 0.01

Total Surplus: 0.153



A Third Duopoly Case, where $P^R = 0$ is “adopted” by both titles (socially efficient).

- High Reputation Journal:

$$P^A = 0.02, P^R = 0$$

$$N^A = 1, \quad N^R = 1$$

Profits: 0.029

- Low Reputation Journal:

$$P^A = 0.01, P^R = 0$$

$$N^A = 1, \quad N^R = 1$$

Profits: 0.01

Total Surplus: 0.2



Is There Room for Multiple Business Models?

- In a profit-maximizing world, with product differentiation, only the Subscriber Pay Model is observed.
- The OA model is inconsistent with profit-maximizing, except in a perfectly competitive environment.
- However, OA is a viable non-profit alternative.
- OA improves overall social efficiency.



Some Extensions and further Questions

- What if Readers exhibit “portfolio demand?”
 - the average price level \uparrow
 - market power can be “good” in some cases
 - OA is still efficiency enhancing
- Does Readership really expand as $P^R \downarrow$?
- OA, Competition for Authors, and Cost Reduction
- Bundling?