The Scholarly Journals Market:
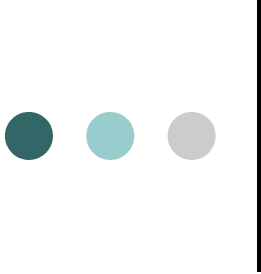# Is There Room for Multiple Business Models?

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Why is this Question Interesting?

- 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?
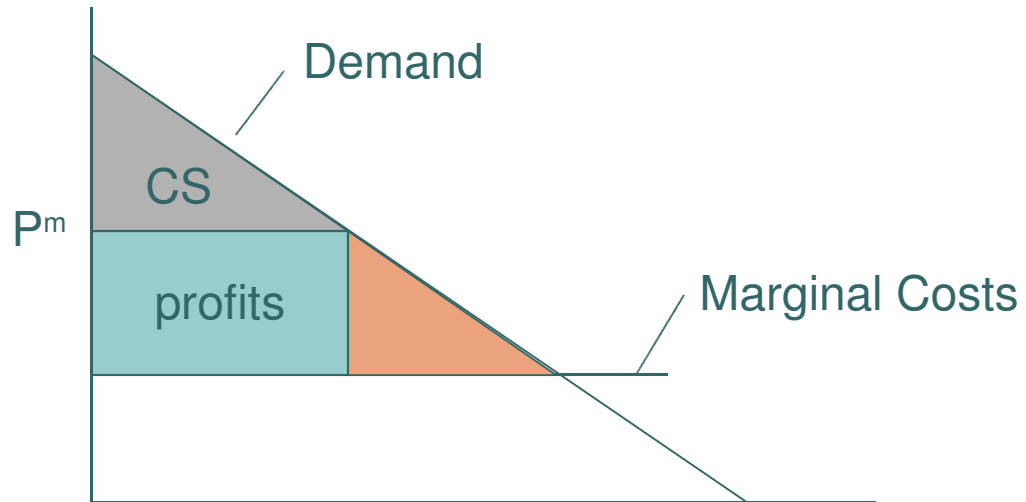
- Which outcome is best?

An Economic Framework for Answering these Questions Starts with an Examination of the Objectives for…
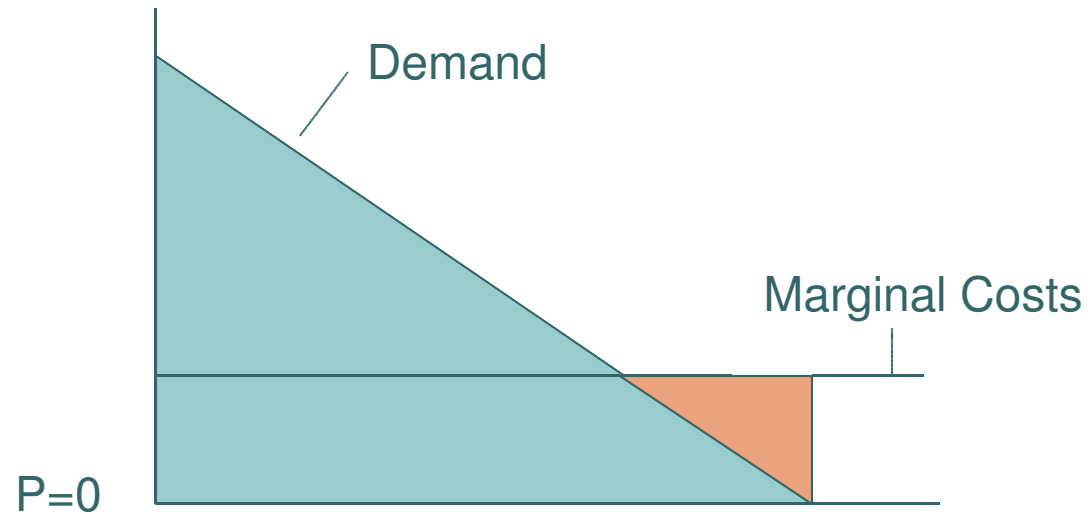
- Publishers

- Authors

- Subscribers

- Society

A Firm's Objective (Publishers)
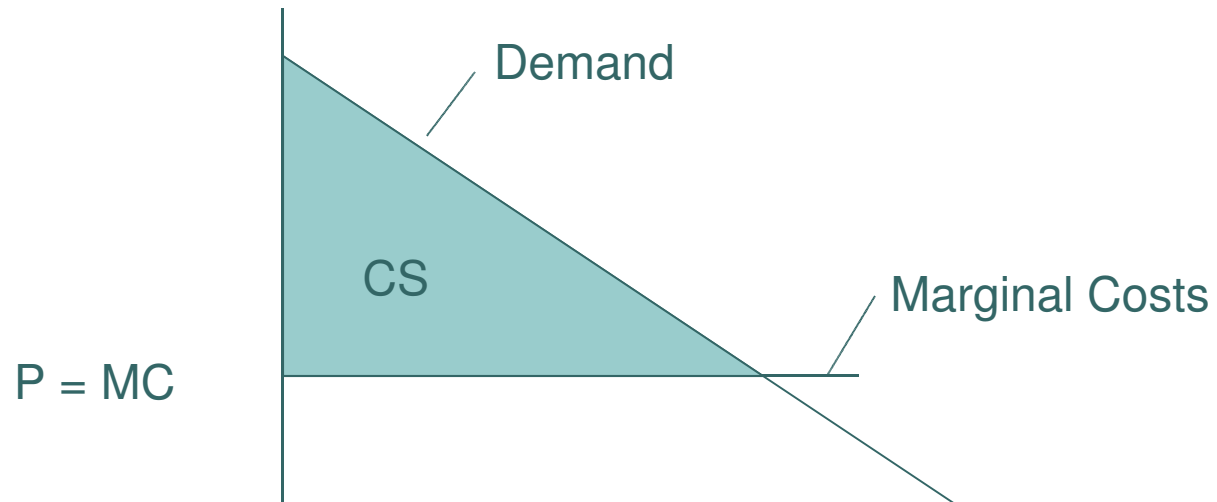
- Maximizing Profits (producer surplus)

Consumers' Objective (Authors and Subscribers)

- Maximizing Consumer Surplus

Society's Objective

- Maximizing Total Surplus (PS + CS)
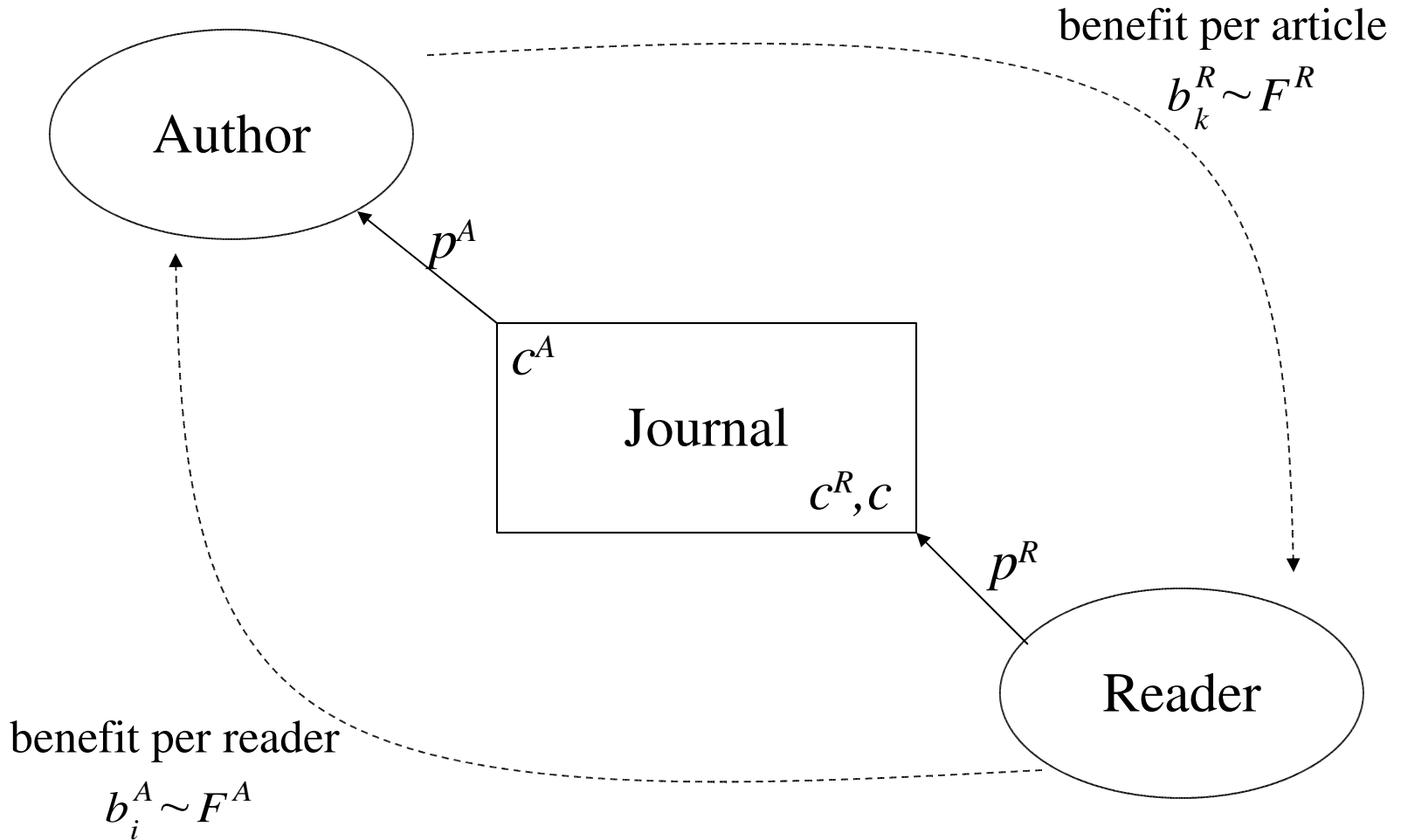
What Influences these Objectives?

- 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.

- (Often referred to as a "two-sided" market; other examples include credit cards and telephony)

- Any optimal solution (optimal for whom?) will involve balancing the prices charged to authors and readers.

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 vary in their willingness to pay for this benefit.

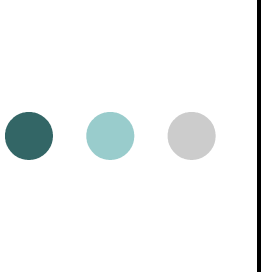- And readers care about the number of articles, and vary in their willingness to pay for them.

A Two-Sided (Static) Model

Author

benefit per article
$b_k^R \sim F^R$

p^A

c^A

Journal

c^R, c

p^R

Reader

benefit per reader
$b_i^A \sim F^A$

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")

- **Competition:** a pair of identical titles competing for authors and readers (so that profits equal zero).

Suppose $c^A = 0.1$, $c^R = 0$, and $c = 0.1$ (print case)

- Monopoly:

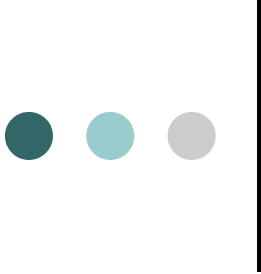 $P^A = 0.317$, $P^R = 0.170$

  $N^A = 0.536$, $N^R = 0.682$

  Total Surplus: 0.418

- Social Optimum:

  $P^A = 0.172$, $P^R = 0.022$

  $N^A = 0.824$, $N^R = 0.974$

  Total Surplus: 0.721

Suppose $c^A = 0.1$, $c^R = 0$, and $c = 0$ (digital case)

- Monopoly:

  $P^A = 0.304$, $P^R = 0.164$

  $N^A = 0.573$, $N^R = 0.713$
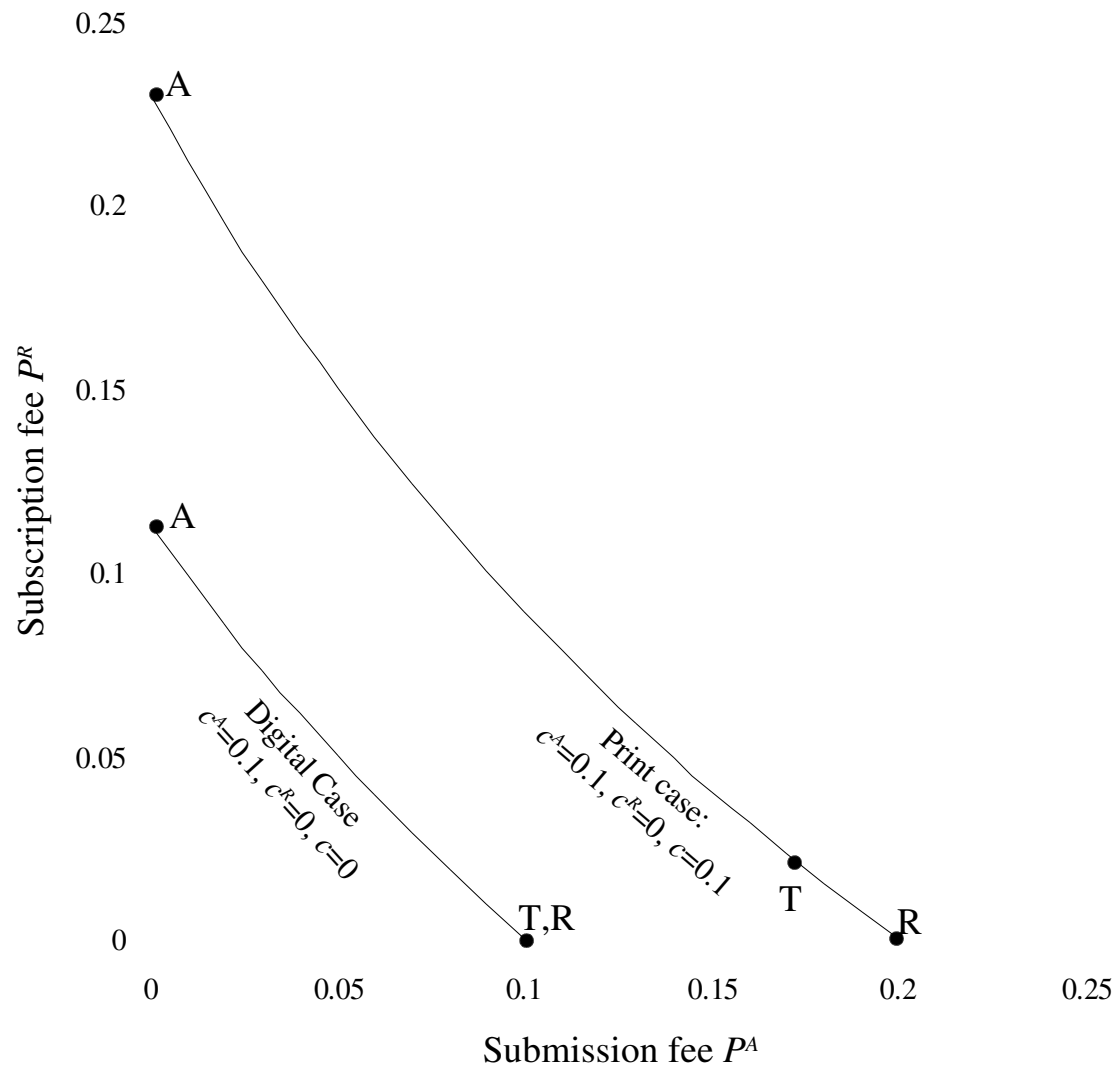
  Total Surplus: 0.497

- Social Optimum:

  $P^A = 0.1$, $P^R = 0$

  $N^A = 0.9$, $N^R = 1$

  Total Surplus: 0.855

Continuum of competitive equilibria in three numerical examples with uniformly-distributed benefits.
In each example, A is the equilibrium maximizing authors' demand, R is the equilibrium maximizing readers'
demand, and T is the equilibrium maximizing consumer (i.e., author plus reader) surplus.
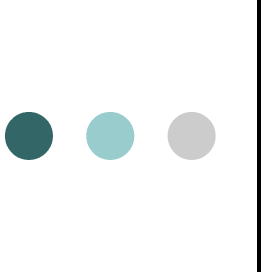
In A More Sophisticated Model…

- 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.

- **Monopoly**: a single profit-maximizing firm publishes both the high and low quality journal.

The Duopoly Case ($c^A = 0.1$, $c^R = 0$, and $c = 0$)

- ## High Reputation Journal:

  $P^A = 0.317$, $P^R = 1.2375$
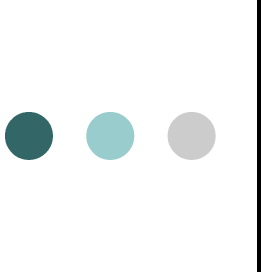
  $N^A = 1$, $N^R = 0.586$

  Profits: 0.944

- ## Low Reputation Journal:

  $P^A = 0.036$, $P^R = 1.331$

  $N^A = 1$, $N^R = 0.358$

  Profits: 0.412

  Total Surplus: 1.727

The Monopoly Case ($c^A = 0.1$, $c^R = 0$, and c = 0)

- ## High Reputation Journal:

  $P^A = 0.446$, $P^R = 0.553$

  $N^A = 1$, $N^R = 0.815$

  Profits: 0.798

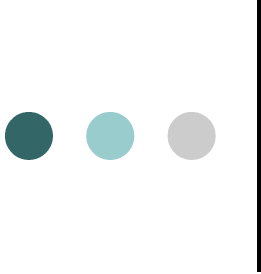- ## Low Reputation Journal:

  $P^A = 0.043$, $P^R = 1.723$

  $N^A = 1$, $N^R = 0.431$

  Profits: 0.685

  Total Surplus: 2.119

A Second Duopoly Case, where $P^R = 0$ is imposed for the High Reputation title.

- High Reputation Journal:

  $P^A = 0.549$, $P^R = 0$

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

  Profits: 0.449

- Low Reputation Journal:

  $P^A = 0.051$, $P^R = 1.95$

  $N^A = 1$, $N^R = 0.513$

  Profits: 0.951

  Total Surplus: 2.332

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.