Durable-Goods Monopolists

Jeremy I. Bulow
Stanford University
Journal of Political Economy
1982
Ideas

• Durable-goods: yielding a flow of services to the owner over a period of time; plus, across periods, e.g. first-run movie tickets;

• Renting is impossible in some markets:
  > Durable intermediate products: steel for railroad track;
  > Infeasible repurchase agreement: clothing, changed diamond, month-to-month basis automobile renting;

• Distinguish the characteristics between monopolistic renters and sellers on overproduction by the cost internalization.
  > renter: suffer capital loss on old units;
  > sellers: old purchasers suffer the losses;

• Pre-commitment by sellers due to the incompleteness;
• Coase(1972) : it is possible that the monopolist can lose complete control of markets and forfeit all his monopoly power if he can’t sign contracts limiting future productions.
• Consumers’ behavior has influence on production strategy of sellers.
  - competitive firms and monopolistic renters pose no expectation problems.
  - seller provides severe expectational difficulties.
• Expected results: Possible inefficiency technology adopted;
  Less durable produced by sellers( contradict with Swan(1972));
  Possible greater DWL;
Model- Assumptions

• No product depreciation.
• No technology obsolescence.
• Competitive purchases.
• Existence of perfect secondhand market.
• 3 markets:
  Competitive firms;
  Monopolist renters;
  Monopolist sellers;
• Constant marginal costs $c$;
• Two-Period Model and discrete production;
• Constant demand: $p = \alpha - \beta q$
Model Solutions

- Standard Competitive firms:
  \[ q_{1c} = \alpha / \beta; \quad q_{2c} = 0 \quad p_{1c} = p_{2c} = 0 \quad \pi_{1c} = \pi_{2c} = 0 \]

- Monopolistic renters:
  \[
  \begin{align*}
  \max_{q_{1R}, q_{2R}} & \quad q_{1R}(\alpha - \beta q_{1R}) + \frac{(q_{1R} + q_{2R})[\alpha - \beta(q_{1R} + q_{2R})]}{1 + \rho} \\
  \pi_{1c} &= \pi_{2c} = \alpha^2 / 4\beta \\
p_{1c} &= p_{2c} = \alpha / 2 \\
q_{1R} &= \alpha / 2\beta; \quad q_{2R} = 0
  \end{align*}
  \]

- Monopolistic sellers:
  \[
  \begin{align*}
  \max_{q_{1S}, q_{2S}} & \quad q_{1S}P_1(q_{1S}) + \frac{q_{2S}[\alpha - \beta q_{1S} - \beta q_{2S}]}{1 + \rho} \\
  \max_{q_{1S}, q_{2S}} & \quad q_{2S} = \frac{\alpha}{\beta} - q_{1S} \quad / 2 \\
p_1 &= (\alpha - \beta q_{1S}) + [(\alpha - \beta q_{1S}) / 2(1 + \rho)]
  \end{align*}
  \]

Profits are unambiguously lower than those in monopolistic renters.
Inefficiency Solutions

• Higher MC → signal of lower future output → secure higher future prices and revenues → Averch Johnson condition

• Model:

\[
\max_{q_{1s},q_{2s}} q_{1s} P_1(q_{1s}, c) + \frac{q_{ss} \left[ \alpha - \beta q_{1s} - \beta q_{ss} - c \right]}{1 + \rho} - F(c)
\]

\[\rho = 0\]

1. \(0 \leq c \leq \frac{3\alpha}{5}\)  
   \(q_{1s} = \frac{2\alpha}{5\beta}\); \(q_{2s} = \frac{3\alpha}{10\beta} - \frac{c}{2\beta}\)

2. \(\frac{3\alpha}{5} \leq c \leq \frac{2\alpha}{3}\)  
   \(q_{1s} = \frac{\alpha}{\beta} - \frac{c}{\beta}\); \(q_{2s} = 0\)

3. \(\frac{2\alpha}{3} \leq c \leq 2\alpha\)  
   \(q_{1s} = \frac{1}{2} \left( \frac{\alpha}{\beta} - \frac{c}{2\beta} \right)\); \(q_{2s} = 0\)

4. \(c \geq 2\alpha\)  
   \(q_{1s} = 0\); \(q_{2s} = 0\)
Gain Monopoly Power

- Lengthen periods, influence expectations of future productions and restrict production

- **Precommitment**
  > Explicit actions: build high MC plant, produce less durable goods
  > Implicit actions: follow consistent strategy different from NE by creating beliefs about future production, e.g. establish a reputation

- **Capacity constraints**
  -- gradually pushing the price down
  -- do better than unconstrained sellers