Econ 101 Notes

Agenda 10/30/12

- Bertrand: Heterogeneous Goods
- Sweezy/KDC
- Contestable Markets
- Score Card
- Preview of Coming attractions

Practice Problems from Baye

CH 9: 7, 8, 12, 14, 20
CH10: 2, 5, 12, 14

Bertrand (1880) Model

Structure: 2 or n firms, no entry or exit Perfect Substitutes. Same cost structure

Conduct: each sets own price \( P_1 \) [lowest price gets all demand]

Performance: Perfect competition: \( P = MC \)

Q1: What if the firms have different MC?

A: Lowest MC firms gets whole market, sets \( P_1 = MC_2 \) ← second lowest MC

Q2: What if the goods are not perfect subs heterogeneous or differentiated goods
   This case is very useful in the real world however it is tricky to explain, discussion below

Bertrand- Diff-goods

Demand for #1's output is \( Q_1 (P_1, P_2) = 16 + 2P_2 - 4P_1 = 16 - 2P_1 - 2(P_1 - P_2) \)

\[
\prod_1 (P_1, P_2) = P_1Q_1 - C(Q_1) = (P_1 - 2)Q_1
\]

\[
= (P_1 - 2)(16 + 2P_2 - 4P_1)
\]

\[
\begin{array}{l}
FC_1 = FC_2 = 0 \\
MC_1 = MC_2 = 2
\end{array}
\]
FOC:

\[ 0 = \frac{\partial \pi_1}{\partial P_1} = Q_1 + (P_1 - 2)(-4) \]

\[ = 16 + 2P_2 - 4P_1 - 4P_1 + 8 \]

\[ = 24 + 2P_2 - 8P_1 \]

Nice Reaction (Solve for \( P_1 \))

\[ P^* = r1(P2) = 3 + \frac{P2}{4} \]

Similarly, firm #2 solves

Max \( \Pi_2 (P_2, P_1) \) Via FOC

\[ P^* = r2(P1) = 3 + \frac{P1}{4} \]

Performance/equilibrium: both firms react optimally to each other

\[ \Pi_2 = P_2 Q - C(Q_2) \]

\[ = P_2 (16 + 2P_1 - 4P_2) \]

\[ P_1 = 4, \quad P_2 = 4 \]
Sweezy / KDC

Set up the same as in Bertrand - Diff - Goods

Except:
- Each firm anticipates that the other will watch any price decreases from \( \bar{P} \) but not a price increase.
- Example: industries - Airlines, gasoline.

\[\begin{align*}
Q_1(p_1, p_2) \text{ for price increases} \\
Q_1(p_1, \bar{P}) \text{ for price decreases} \\
P_2 &= P_1 \text{ the match}
\end{align*}\]

\( \bar{P} \) is "sticky" even if MC moves around, optimal price does not. We stay at \( P_1 = P_2 = \bar{P} \) until a really large shift in MC takes it outside the MR gap.

Contestable Markets (Baumol ~ 1980)

- Perfect substitutes
- Price setting firms
- Free entry + exit \( \rightarrow \) no sunk cost
- Rivals can react as quickly as consumers to prices (ex. Lunch truck)

Then:

Bertrand Competition drives price to second-lowest MC of any possible entrant
\( \rightarrow \) A monopoly! But very competitive!
Really? Will they price this low?? ... Game theory
(Whatever it takes to discourage rivals)