Lectures Notes for Oligopoly

Oligopoly- a market structure in which there are only a few firms, each of which is relatively large relative to the total industry.

An oligopoly composed of only two firms is called a duopoly.

Example:

2-firms: Firm 1 and Firm 2
Firms produce a homogeneous product
Market demand curve is depicted below where Q is total output.
Q=Q₁+Q₂ (where Q₁ is Firm 1’s output and Q₂ is Firm 2’s output)
Each firm has constant marginal cost of 20 and zero fixed costs.
A. Cournot Model (Simultaneous Quantity Setting)
How does Firm 1 maximize profits if Firm 2 produces an output of 0?
How does Firm 1 maximize profits if Firm 2 produces an output of 80?
How does Firm 1 maximize profits if Firm 2 produces an output of 40?

How does Firm 1 maximize profits if Firm 2 produces an output of 20?

Reaction Function for Firm 1 (also called Best Response Function):
Reaction Function for Firm 2:
Reaction Functions (also called Best Response Functions):

\[ Q_2 \]

Reaction Curve for Firm 1 = \( r^1 \)

Reaction Curve for Firm 2 = \( r^2 \)

Outcome and Profits:
Attempting to Collude:

![Diagram showing Reaction Curves for Firms 1 and 2]

**Reaction Curve for Firm 1 = r^1**

**Reaction Curve for Firm 2 = r^2**

**REPEATED INTERACTION - DISCUSSION**

B. **Bertrand Model (Simultaneous Price Setting)**

**INTUITION AND OUTCOME:**
ATLANTA -- A brief but bitter pricing war within the soft-drink industry might be drawing to a close -- all because no one wants to be blamed for having fired the first shot.

Coca-Cola Enterprises Inc., Coca-Cola Co.'s biggest bottler, said in a recent memorandum to executives that it will "attempt to increase prices" after July 4 amid concern that heavy price discounting in most of the industry is squeezing profit margins.

The memo is a response to statements made to analysts last week by top PepsiCo Inc. executives. Pepsi, of Purchase, N.Y., said "irrational" pricing in much of the soft-drink industry might temporarily squeeze domestic profits, and it laid the blame for the price cuts at Coke's door.

That clearly incensed executives at Coca-Cola and Coca-Cola Enterprises, which had no desire to be criticized for threatening profit margins for the entire industry. Indeed, industry analysts in the wake of Pepsi's statements expressed concern that profit margins for Pepsi and Coke bottlers may erode as a result of cut-throat pricing.

The finger-pointing aside, cutting prices clearly hurts PepsiCo more than it hurts Coca-Cola. PepsiCo owns a majority of its U.S. bottling operations, and it is bottlers' margins that bear the brunt of product discounts. Coca-Cola, meanwhile, doesn't own its bottling operations and sticks to selling concentrate to bottlers, which add carbonation and sell the drinks to wholesalers and retailers. However, Coca-Cola, of Atlanta, owns 44% of Coca-Cola Enterprises, also of Atlanta.

In the June 5 memo, Summerfield K. Johnston Jr. and Henry A. Schimberg, the chief executive and the president of Coca-Cola Enterprises, respectively, said the bottler's plan is to "succeed based on superior marketing programs and execution rather than the short-term approach of buying share through price discounting."

The company noted that managers in cities where Coke dominates the market "have seen the worst of the price discounting first hand, and we all know the source is not the Coca-Cola system. In these areas . . . we have absolutely no motivation to decrease prices except in response to a competitive initiative."

News of the memo was first reported by Beverage Digest, an industry publication, which stated that supermarket soft-drink pricing fell 3%-4% from a year ago for the 12-week period ended May 4. Prices for Pepsi's brands fell at a slightly greater rate than those owned by Coca-Cola.

"This is a first step to disengagement," said Andrew Conway, an analyst in New York for Morgan Stanley & Co. "Coke and Pepsi are out to improve profitability for the category, not destroy it, so this would bode for a stabilization."

Soft-drink prices first started to drop last fall, but analysts weren't worried because the declines were mostly driven by lower packaging costs. This year, prices have continued to slip -- in particular, the Memorial Day weekend, one of the biggest holidays for soft-drink sales and profits, was hurt by bad weather and aggressive pricing, according to industry executives. Adding to the concern are indications that packaging costs may rise this year.

For all the signals of a truce, though, Coca-Cola Enterprises' memo could just as easily be seen as throwing down the gauntlet. Messrs. Johnston and Schimberg said in the memo that should "the competition" view the attempt to raise prices "as an opportunity to gain share through predatory pricing, we will, as we have in the past, respond immediately."

For its part, PepsiCo maintained its assertion that Coca-Cola is leading the price discounting. "We intend to stay competitive in every aspect of the business, whether it's pricing, product quality, distribution or packaging," a company spokesman said.

Coca-Cola and Coca-Cola Enterprises declined to comment beyond the memo.