7.4 BERTRAND VERSUS COURNOT

The two models of duopoly competition presented in the previous sections, though similar in assumptions, are in stark contrast when it comes to predicted behavior. The Cournot model predicts that price under duopoly is lower than monopoly price but greater than that under perfect competition. The Bertrand model, by contrast, predicts that duopoly competition is sufficient to drive prices down to marginal cost level, that is, two firms are enough to achieve the perfect competition price level.

This contrast suggests two questions: Which model is more realistic? Why should we consider more than one model instead of just choosing the "best" one? The answer to both questions is that industries differ. Some industries are more realistically described by the Cournot model, some by the Bertrand model.

Specifically, suppose that firms must make capacity (or output) decisions in addition to pricing decisions. In this context the relative timing of each decision (output/capacity and pricing) is the crucial aspect that selects Cournot or Bertrand as the right model. As we saw in chapter 4, games with two strategic decisions are best modeled as two-stage games, with the long-run decisions taken in the first stage and the short-run decisions in the second one. The idea is that the short-run decisions (second stage) are taken *given* the values of the long-run decisions (first stage).

Suppose that capacity or output is a long-run decision with respect to prices. In other words, suppose that it is more difficult to adjust capacity/output than it is to adjust prices. Then, the "right" model is one wherein firms first set capacity/output and then prices. From the analysis of the previous sections, we know this corresponds to the Cournot model.

Suppose, by contrast, that output is a short-run decision with respect to prices, that is, it is easier to adjust output levels than it is to adjust prices. Then, the "right" model is one whereby firms set prices first and then output levels. Although we have not presented the Bertrand model as such, this is essentially what it corresponds to. In the Bertrand model, firms simultaneously set prices and receive demand based on those prices. Implicitly assumed in the model is that firms produce an output exactly equal to the quantity demanded, that is, output is perfectly adjusted to the quantity demanded at the prices (initially) set by firms.

To summarize:

> If capacity and output can be easily adjusted, then the Bertrand model is a better approximation of duopoly competition. If, by contrast, output and capacity are difficult to adjust, then the Cournot model is a good approximation of duopoly competition.