Abstract

I present a brief classroom demonstration illustrating Bertrand price undercutting. The classroom demonstration is appropriate for micro principles as well as intermediate and upper classes in micro, Industrial Organization, and Game Theory.

Short Statement noting professional title and institutional affiliation

I’m currently research scientist (visiting) at the Center for Adaptive Behavior and Cognition of the Max-Planck-Institut fuer Bildungsforschung [education research] in Berlin, Germany, and assistant professor at the Center for Economic Research and Graduate Education Charles University in Prague, Czech Republic.
Introduction

Bertrand price undercutting is a simple and nice idea. It can be explained theoretically or by way of a classroom experiment. The following classroom experiment translates the lesson about price undercutting into a demonstration that takes less than 10 minutes and is likely to stick with students because of the significant amounts of money that each of them could have won. So far, they never have.

The classroom demonstration: Design and Experiences

After a standard lecture on Cournot and Bertrand duopolists or oligopolists (e.g. drawing on Stiglitz 1997, Schotter 2000, or Binmore 1992), and after having demonstrated the Bertrand reaction curves, I introduce the experiment with the following instructions that are read aloud (and projected on a screen).

A classroom experiment on Bertrand price undercutting:
If you all charge a price of 100 Cech Korunas, customers will distribute evenly and you all will earn 100 CK. Of course, since each of you happens to be a Bertrand competitor, you are allowed to offer a lower price (integers only). Marginal costs are zero for everyone.

Consumers are assumed to be very price-conscious and will go for the slightest of differences. The Bertrand competitor with the lowest price captures all of the market and will get [the number of students in class today] x [difference between her or his price and the marginal cost]. Bertrand competitors with identical bids share the spoils (customers).

Questions?

If there are no further questions submit your price now. Please initial your record sheet, fold it, and submit it.

Various variations suggest themselves. For example, the stakes can be varied arbitrarily. Or, the instructor may allow students to appeal to the common interest either before the first round or
prior to a repeat round in case students argue that the experiment would end differently had they been allowed to communicate.

This classroom experiment is related to two literatures. First, there is the literature on classroom experiments on social dilemmas (Deleméester & Brauer 2000). In particular, the prisoner’s dilemma is often used as a paradigm for situations of price competition (e.g. Holt & Capra 2000, p. 232). While it is useful to show students that a simple game like the prisoner’s dilemma captures the essence of various strategic situations, idiosyncratic aspects of price undercutting such as the iterative nature of the unraveling process are not caught. The current classroom experiment drives this point home easily and in a natural manner. Second, this classroom experiment is related, and would be a natural introduction, to the exploding literature on guessing games and depths of reasoning (e.g., Nagel 1995).

Most recently, I conducted this experiment in a preparatory class of about 60 prospective graduate students at the Center for Economic Research and Graduate Education of Charles University in Prague.¹ 100 Czech Korunas corresponds to about 3 US dollars but is significantly more in terms of real purchasing power (especially for our students most of whom come from Central or East European transition countries.) In any case, with 60 students it was clearly a high-stake gamble. Indeed, one student incredulously asked me whether I was serious about this classroom experiment. Not to worry: The lowest bid was two “1”s and one “2”, driving home the

¹ Students may object that such a large number of participants rarely exist in the real world; it may therefore be useful to refer them to Selten (1973) whose theoretical work has since found
issue of Bertrand price undercutting powerfully.

**Conclusion**

I have presented a brief classroom exercise that I found effective in my own discussion of Bertrand price-undercutting games and levels of depths of reasoning. The classroom demonstration is appropriate for micro principles as well as intermediate and upper level classes – including graduate classes – in micro-economics, industrial organization, and game theory. A related classroom demonstration that is framed as an auction can be found in Ortmann & Colander (1995, experiment # 5).
REFERENCES


