

Problem Set 1

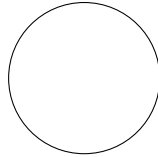
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For this problem set, I will have you read chapter 6 of Sutton on the evolution of advertising intensive industries, and build a model of advertising and market structure.

First, start with the Salop Circle model that we discussed in class.
Salop Model with Entry

- circle of unit circumference with consumers with uniform density $M \geq 0$



- consumers buy one unit of one product (assume that the market is covered)

$$u(\theta) = v - p_i - t|\theta_i - x_i|$$

- firms locate symmetrically around the circle and have marginal cost c
- compete in prices
- two stages: (1) free entry with costs K , (2) price competition.

Advertising Game

Now suppose that firms can advertise (denoted a_i) to increase their market share. The new utility function for consumers is:

$$u(\theta) = (v + a_i) - p_i - t|\theta_i - x_i|$$

As well, the cost of advertising is $C(a_i) = a_i^2$. Notice that it is a convex function.

Questions

1. Suppose that there is no advertising. What are the prices in the Nash symmetric equilibrium?
2. What is the equilibrium number of firms? (again with no advertising)
3. Now add in advertising. What are the first-order conditions for prices and for advertising?
4. What are the prices and advertising levels in the Nash symmetric equilibrium?
5. What is the equilibrium number of firms with advertising? (this might not be a closed form, but you can still plot it given assumptions on the parameters)
6. Discuss the predictions of the advertising model as they relate to the chapter from Sutton on the frozen food industry.