

25 | MORE MONOPOLY

Purpose: To illustrate price determination in monopoly.

Computer file: **monop298.xls**

Instructions and background information:

This problem set continues with the analysis of the behavior of the RipOff Cable TV Company, a monopolist in the provision of cable services. The company has provided you with all of the demand and cost data that they possess. These data are summarized in the graphs and tables that are contained in the accompanying spreadsheet.

Starting from profit maximizing levels of output and price, which you must determine, you work out the implications of some hypothetical government policies. The first one is a per unit tax on cable TV services. You'll need to find the effects of the tax on price and output.

The second policy is a proposal to regulate the cable company by forcing them to produce the output where total profits are zero. This is an often-used policy in the real world when regulators allow firms to earn so-called "normal profits". This is just a scheme in which *economic* profits are forced to be zero. The firm is allowed to earn what it could earn in its next best alternative business. An important point of this exercise is to show that the zero-profit output is actually too large from society's point of view. Recall that the socially best output is where marginal cost equals price, not where profits are zero!

Here are some things to watch for and learn as you do the problems:

- 1) A per unit tax will cause a monopolist to reduce output and raise price, just as would happen in a competitive industry.
- 2) A policy that will force the monopolist to produce at a price equal to average cost (zero profit) will result in too much output from society's point of view in this problem.

Here are some hints to help you get the answers quicker:

- 1) Finding the output where price equals average cost ($AR-AC = 0$) can be tricky and requires some care. This is because the average cost curve is U-shaped, and therefore may cross the demand curve at two different outputs. You want to find the *largest* output where price equals average cost. If you use Goal Seek to do this you have to be careful, as the program will usually find the solution that is

closest to the starting value, not necessarily the one you want. To help Goal Seek get the right answer, look at the graph and set output close to the value you're looking for at the start. If the output Goal Seek gives you is negative, you know you've got the wrong answer.

- 2) Use Goal Seek to find the socially best output. The objective is to make AR-MC equal to zero by changing output.

MATH MAVEN'S CORNER: For the worksheet on monopoly, the average revenue curve is given by $AR = aI - b(Q)$, where I is income in dollars, and a and b are randomly chosen parameters. You might want to show that the marginal revenue curve is therefore $MR = aI - 2b(Q)$. The average cost curve is given by $AC = c + d(Q) + eQ^2 + t$, where t is the tax per unit of output, and c , d , and e are randomly chosen parameters. The marginal cost curve is given by $MC = c + 2d(Q) + 3eQ^2 + t$.

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Questions

Set all variables to their baseline values. Record the profit maximizing values of the following variables for the cable TV company:

- 1) Output.
- 2) Price.
- 3) Total profit.

The local government, in its effort to balance its budget, decides to levy a tax of \$5 per hookup on the cable company.

- 4) What's the new profit maximizing output for the company?
- 5) What's the new price the company will charge it's customers?

- 6) How much does the government take in in tax revenues?

- 7A) Government regulators, unable to control the cable TV monopoly any other way, decide to order the company to charge price equal to average cost. They order the company to sell all that is demanded at the regulated price. Go on to 7B.

Set all variables to their baseline values.

- 7B) What output will be sold under regulation? [Hint: Find the output where profit is zero.]
- 8) What price will be charged under regulation?
- 9) What will be the cable company's total profit?

- 10) Does the average cost pricing scheme result in MORE or LESS output than is socially desirable? [Enter MORE or LESS.]

Summarize your results by listing the following prices:

- 11) Price where profit is maximized.
- 12) Price where social welfare is maximized.
- 13) Price at which profit is zero.