

Problem Set #2

(due next week)

1. Discuss allocative inefficiency, productive inefficiency and dynamic inefficiency associated with market power.
2. Suppose the market demand for a product is given by $P = a - bQ$, where a and b are positive constants. A monopolist can provide the product at constant marginal cost $c > 0$. Assume $c < a$. Compute the monopoly price and deadweight loss (DWL). Do the same exercise, if the cost function is given by $C(Q) = cQ + (k/2)Q^2$, where $c > 0$ and $k \geq 0$.
3. Suppose the market demand for a product is given by $P = Q^{-1/\epsilon}$, where $\epsilon > 1$ is the price elasticity of demand and is constant. A monopolist can provide the product at constant marginal cost $c = 1$.
 - (a) Compute the monopoly price and deadweight loss (DWL).
 - (b) Show that DWL decreases with ϵ and that DWL approaches 0 as ϵ goes to infinity. Explain your result intuitively.
 - (c) Plot the curve of DWL as a function of ϵ OR present a table showing numerically how DWL relates to ϵ .
4. Given a general market demand function $P(Q)$ and constant marginal cost, show that DWL generated by a uniform-pricing monopolist can be approximated by half of the monopoly profits.
5. Suppose the market demand for a homogeneous product is given by $P = a - bQ$, where a and b are positive constants. There are n identical firms, each of which is capable of producing the product at constant marginal cost $c > 0$. Assume $c < a$. Suppose the firms compete in quantity in Cournot fashion. Compute the equilibrium price, quantities, consumer surplus (CS), total profits (TP), total surplus (TS) and deadweight loss (DWL). What is the size of DWL in relation to TP? Provide comparative static exercises of these measures with respect to n and discuss the implications of the comparative static exercises.
6. Suppose the market demand for a homogeneous product is given by $P = a - bQ$, where a and b are positive constants. There are n firms, with constant marginal

costs, $0 \leq c_1 \leq c_2 \leq \dots \leq c_n < a$. Suppose the firms compete in quantity in Cournot fashion. Compute the equilibrium price, quantities and HHI. In equilibrium, how many firms will be active (in the sense that they produce positive quantities)? Try a numerical example (of the parameters) to illustrate how the equilibrium number of active firms can be determined.

7. Select products or services in an industry, identify major suppliers of those products or services, collect their market shares in the industry, and compute Herfindahl-Hirschman index and 4-firm concentration ratio.