Economics 301
Problem Set due October 29, 2021 Upload your answers to canvas

1) An inventor creates a new product, manufactured with a linear technology, anticipating that for one period he will be the only one knowing how to produce it. Each consumer of the product during that period is able to also reverse engineer it and produce $n \geq 1$ units in the second period with no obligation toward the inventor. After the second period, the product is neither produced nor consumed. The market demand for the product's services is stable over time, with inverse denoted $v(c_t)$ where c_t is aggregate consumption in period t.

a) What will the equilibrium purchase price of the product in each period?

b) Is the inventor harmed by a larger value for n? Would your answer be different if the product were also produced in a third period, fourth period, etc., with the same copying technology (n)?

c) Are consumers harmed by a larger value for n?

d) Suppose instead that consumers cannot reverse engineer the product, but that employees engaged in production can obtain that knowledge. In the second period, any former employee can start his own production operation with capacity n, with no obligation toward their former employer. What would be the equilibrium purchase price of the product in each period?

e) Would the inventor want to hire employees under "non-compete" clauses that prohibit them from producing or selling the product after they leave the inventor's employment?

f) What factors would determine whether the inventor hires employees with noncompete or with agreements to license production in the future?

g) How would a legal prohibition of non-compete clauses affect wages paid by the inventor? The number of employees he hires?

2) A pharmaceutical manufacturer has the exclusive rights to produce the pain reliever Supdem in the United States and Mexico. It has factories operating in both countries, and both factories produce with the same constant marginal cost. We assume no cross-border shipments.

a) Would the manufacturer maximize its worldwide (i.e., the sum of U.S. and Mexico) profits by charging the same price in the two countries? If not, what factors determine the discount or premium that Mexican customers pay over American customers?

b) Suppose for the moment that a "Most Favored Nation (MFN)" law requires that Supdem can be sold in the U.S. only if consumers are offered a price that is at least as low as the price charged in Mexico. What are the effects of the law on worldwide sales? On manufacturer profits?

c) Would your answer to (b) be different if the seller of Supdem was also a seller of other products? Would it matter whether those other products were also subject to the MFN law?

d) Are there any conditions under which the manufacturer would voluntarily make MFN a condition of its U.S. sales?

e) Could consumers benefit from a prohibition of MFN clauses in the manufacturer's sales contracts?