

Microeconomic Analysis - Problem Set #2

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Conceptual & Critical Thinking Questions

Please answer the following questions clearly and concisely (1-3 sentences). Use examples and/or give further explanation as necessary.

1. Under what conditions are markets allocatively efficient and Pareto efficient? What do allocatively efficient and Pareto efficient mean?

2. What are the social functions of prices?

3. Explain the law of one price. *Why* would we expect it to occur (i.e. what market processes push us towards the predicted outcome)? What might *prevent* it from occurring?

4. What do consumer surplus and producer surplus mean? If Ann is willing to pay up to \$6,000 for a used car, but buys it at a market price of \$2,000, what is her consumer surplus? What is the producer's surplus for Frank, who sells Ann the car for \$2,000, but would be willing to go as low as \$1,000?

5. Decades ago, Washington, D.C., a fairly small city, wanted to raise more revenue by increasing the gas tax. Washington, D.C., shares borders with Maryland and Virginia, and its very easy to cross the borders between these states without even really noticing: The suburbs just blend together.
- (a) How elastic is the demand for gasoline sold at stations within Washington, D.C.? In other words, if the price of gas in D.C., rises, but the price in Maryland and Virginia stays the same, will gasoline sales at D.C., stations fall a little, or will they fall a lot?
 - (b) Take your answer in part a. into account when answering this question. So, when Washington, D.C., increased its gasoline tax, how much revenue did it raise: Did it raise a little bit of revenue, or did it raise a lot of revenue?
 - (c) How would your answer to part b change if D.C., Maryland, and Virginia all agreed to raise their gas tax simultaneously? These states have heavily populated borders with each other, but they don't have any heavily populated borders with other states.

6. Draw a graph of the effects of a *price ceiling* on market efficiency and welfare. Label all shaded regions, and describe what is happening to each. Further explain how these goods might be allocated under the price ceiling.

Problems

Please answer the following questions. Show all of your work and be sure to fully label all axes, points, and curves on any graphs (if applicable).

7. The Ministry of Tourism in the Republic of Palau estimates that the monthly supply and demand for its scuba diving tours are:

$$q_S = 30p - 2000$$

$$q_D = 6000 - 20p$$

where quantity represents the number of individual dives each month and p is the price of a two-tank dive.

- (a) Calculate the equilibrium quantity and price (q^*, p^*).
- (b) Find the consumer surplus received by divers visiting Palau.
- (c) Find the producer surplus received by the dive ships.
- (d) Calculate the elasticity of demand at equilibrium. Is it relatively elastic or inelastic?
- (e) Calculate the elasticity of supply at equilibrium. Is it relatively elastic or inelastic?
- (f) Who earns more surplus, consumers or producers, and why?
- (g) Suppose that the demand for scuba diving services increases, and that the new demand curve is given by $q'_D = 7,000 - 20P$. Calculate the impact of this change in demand on the values of consumer and producer surplus.
- (h) Are consumers better off after the increase in demand?
- (i) Are producers better off after the increase in demand?

8. The market for hotel rooms in a small town is characterized by the following equations:

$$q_D = 200 - 0.4p$$

$$q_S = 0.8p - 40$$

- (a) Find the pre-tax equilibrium price and quantity, and draw a graph.
- (b) Calculate the consumer and producer surplus.
- (c) Calculate the elasticity of demand at equilibrium. Is it relatively elastic or inelastic?
- (d) Calculate the elasticity of supply at equilibrium. Is it relatively elastic or inelastic?
- (e) Who earns more surplus, hotel suppliers or demanders? Why?
- (f) Now suppose this small town is desperate for revenue, and levies a \$150 tax on hotels (suppliers). Calculate the new post-tax gross price, net price, and quantity of rooms. Draw these on your graph.
- (g) How much revenue does this tax collect? Show this on the graph.
- (h) How much deadweight loss does this tax generate? Show this on the graph.
- (i) What are the new consumer and producer surpluses? Show this on the graph.
- (j) Calculate the share of the tax borne by consumers and the share borne by producers. Who bears more of this tax, and why?

