Problem Set 2: Demand and Supply; Market Equilibrium

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Due at first section after Monday, February 6 lecture

Demand and Supply

1. Suppose that there are four people in the economy who demand yoga lessons: Kautilya (a government economist) with an income of $1000/week, Thasuka Witko (a herder and politician) with an income of $500/week, Buffy Summers (a student at U.C. Sunnydale) with an income of $300/week, and Sappho (a poet) with an income of $600/week. Kautilya spends 1/5 of his income on yoga lessons, Thasunka Witko spends 1/10 of his income on yoga lessons, Sappho spends 1/4 of her income on yoga lessons, and Buffy Summers spends half of her income on yoga lessons. Draw the demand curve for yoga lessons in this economy. What is demand for yoga lessons if the price of yoga lessons is $10/hour? $20/hour? $30/hour? $40/hour? $50/hour?

2. Consider the same situation as in question (1) but with one difference. Changes in Buffy Summers's life circumstances--the opening of the Mouth of Hell on the U.C. Sunnydale campus--lead her to have no demand for yoga lessons at all as she has to spend all of her income buying sharp wooden stakes. Learning about Buffy's predicament leads Kautilya to boost his yoga expenditures to 1/4 of his income, leads Thasuka Witko to drop yoga entirely and join Buffy in her family business, while Sappho continues to spend 1/4 of her income on yoga lessons. Draw the demand curve for yoga lessons in this economy. What is demand for yoga lessons if the price of yoga lessons is $10/hour? $20/hour? $30/hour? $40/hour? $50/hour?

3. This new situation sees the rapid growth of a wooden stake-making industry to deal with the influx of vampires onto the U.S. Sunnydale campus. Buffy can make 20 stakes a shift and has an alternative occupation she enjoys as much as stake-making that pays her $60 a shift. Kautilya can make 10 stakes a shift and has an alternative occupation he enjoys as much as stake-making that pays him $200 a shift. Sappho has an alternative occupation she enjoys as much as stake-making that pays her $120 a shift and can make 30 stakes a shift. Thasuka Witko has an alternative occupation he enjoys as much as stake-making that pays him $100 a shift and can make 8 stakes a shift. Draw the supply curve for stakes on the U.C. Sunnydale campus. How many stakes are supplied if the price of each stake is $1? $2? $4? $8? $15? $30? $50?

4. In this new situation, Buffy realizes that she can order wooden stakes over the internet in unlimited quantities for a price including next-day FedEx shipping of $10/stake. Draw the new supply curve for stakes.

Market Equilibrium

5. In the same situation as problem (4), suppose that there is a demand for 10 stakes a shift. Who makes stakes? What is the market price of stakes? How about if there is a demand for 50 stakes a shift? 100 stakes a shift? 200 stakes a shift?

6. Suppose that, on and near the U.C. Sunnydale campus, the weekly supply curve for lattes is given by the equation Q = max(1000 P - 2000, 0) : nobody makes any lattes unless the price is above $2/latte, and for each $1 the price is above $2 an extra 1000 lattes are made. Suppose that customers have $10,000/week to spend on lattes. Draw the supply curve and the demand curve. What is the equilibrium price of lattes? What is the equilibrium quantity of lattes?

7. Suppose, in the same situation as (6), that the arrival of new, charismatic yoga teachers reduces the amount of money customers have to spend on lattes to $6,000/week. Draw the supply curve. Draw the old and the new demand curves. What is the new equilibrium price of lattes? What is the new equilibrium quantity of lattes?

8. Suppose that, in the same situation as (6), scary newspaper stories about the health dangers of yoga lead customers to cut back on their purchases of yoga lessons and increases the amount of money they have to spend on lattes to $14,000 a week. Draw the supply curve. Draw the old and the new demand curves. What is the new equilibrium price of lattes? What is the new equilibrium quantity of lattes?

9. Suppose that, on and near the U.C. Sunnydale Campus, the supply curve for yoga lessons is Q = 100 P. Suppose that customers have $10,000/week to spend on yoga lessons. Draw the supply and demand curves. What is the equilibrium price of yoga lessons? What is the equilibrium quantity? Suppose that the amount of money customers have to spend on yoga lessons rises to $14,000/week? Suppose it falls to $6,000/week?

10. In the same situation as (9), suppose that the professors at Crony Capitalism Corrupt Rail Baron University 50 miles to the south become lazier, decide they want to teach less, and offer full course credit toward their degree to students who are willing to offer yoga lessons at U.C. Sunnydale. Suppose that enough students to teach 500 places in yoga classes a week drive up to U.C. Sunnydale to add to those offering yoga classes. Draw the new supply curve. Draw the demand curve if people have $10,000/week to spend on yoga lessons. What is the equilibrium price of yoga lessons? What is the equilibrium quantity? Suppose that the amount of money customers have to spend on yoga lessons rises to $14,000/week? Suppose it falls to $6,000/week?