Homework 1

Use the following information for problems 1-3

Green et al. (2005) estimate the supply and demand curves for California processed tomatoes. The supply function is $\ln(Q) = .2 + .55\ln(p)$, where Q is the quantity of processing tomatoes in millions of tons per year and p is the price in dollars per ton. The demand function is $\ln(Q) = 2.6 - .2\ln(p) + .15\ln(p_t)$, where p_t is the price of tomato paste (which is what processing tomatoes are used to produce) in dollars per ton. Suppose that in 2002, $p_t = 110$.

Problem 1 (Supply and demand)

a. What is the demand function for processing tomatoes, where the quantity is solely a function of the price of processing tomatoes?

b. Solve for the equilibrium price and quantity of processing tomatoes (explain your calculations, and round to two digits after the decimal point).

c. Sketch the supply and demand curves, and label the equilibrium and axes appropriately.

Problem 2 (Supply and demand II) Determine how the equilibrium price and quantity of processing tomatoes change if the price of tomato paste falls by 10%.

Problem 3 (Price controls) Suppose the government imposes a price floor on processing tomatoes at $65 per ton. The government will buy as much as farmers want to sell at that price. Therefore, processing firms pay $65. Determine how many tons firms buy and how many tons the government buys. What is the cost of this price support program to the government?

Problem 4 (Import restrictions) In 1996, a group of American doctors called for a limit on the number of foreign-trained physicians permitted to practice in the United States. What effect would such a limit have on the quilibrium quantity and price of doctors' services in the US? How are US consumers and American-trained doctors affected?

Problem 5 (Price gouging) After a major earthquake struck Los Angeles in January 1994, several stores raised the price of milk to over $6 a gallon. The local authorities announced that they would investigate and that they would enforce a law prohibiting price increases of more than 10% during an emergency period. What is the likely effect of such a law?