HOMEWORK 1: INTRO TO GENERAL EQUILIBRIUM ANALYSIS

10 POINTS

Date: Monday, January 26th, 2015

LEARNING OBJECTIVES

- Prices are integral to GE theory work, e.g. Walras' Law
- Introduction to mathematically solving for equilibrium prices.

INSTRUCTIONS

Carefully read the questions before answering. Make sure your pages are in order and stapled together. Your work should be clear and easy to follow. When prompted, make sure you've explained your answers completely.

QUESTIONS

In class, we showed how demand side links can lead to general equilibrium effects. Supply-side links can create general equilibrium effects as well. Suppose now that the demand for wheat is $Q_w^d = 20 - P_w$ and the demand curve for corn is $Q_c^d = 20 - P_c$. The supply curves are now $Q_w^s = 2P_w - P_c$ for wheat and $Q_c^s = 2P_c - P_w$ for corn.

a. Are there still demand side links in this problem? If so, explain how the two goods are linked. If not, explain why. Make sure to reference the demand equations above.

Notice that the demand-side links between the markets are now gone. Only a good's own price affects its quantity demanded.

b. Are there supply side links in this problem? If so, explain how the two goods are linked. If not, explain why. Make sure to reference the supply equations above.

You can see the connections between the two markets in these new supply curve equations. The quantity supplied of each good increases as its own price increases and decreases as the other good's price increases. This relationship captures the notion that when one good's price increases, production shifts toward that good, allocating scare resources away from production of the other good (such as replanting wheat fields as corn fields).

c. Solve for the general equilibrium prices and quantities using the same steps we followed in class on Monday.

$P_w = \$10$ per bushel

$P_c = \$10$ per bushel

$Q_w^d = Q_w^s = 10$

$Q_c^d = Q_c^s = 10$

d. Now again suppose there is a 12 million bushel increase in the quantity demanded of corn at all prices because of the renewable fuels mandate, so that $Q_c^d = 32 - P_c$. Solve for the new general equilibrium prices and quantities.

$P_w = \$11.50$ per bushel

$P_c = \$14.50$ per bushel

$Q_w^d = Q_w^s = 8.5$

$Q_c^d = Q_c^s = 17.5$

e. Graph your answers to part c. and d, making sure to show all curve shifts.

From equilibrium in part c, demand of corn will shift out, causing an increase in price for corn. As a result, supply of wheat decreases and demand for wheat increases. This will reverberate through the system until we reach the new equilibrium level. Note, the decrease in supply in the wheat market is greater than the increase in demand in the wheat market (price increases and quantity decreases relative to part c). In the corn market, the demand curve shift increases by more than the decrease in supply, which results in an increase in demand of corn.