

Assignment #3
Economics 101 – Section 5
Due Date: Thursday Feb 12, 2004

Instructions: Complete all questions and sub questions on separate sheets of paper. Make sure to include your name (first and last) and your student number on the first page of your assignment. Staple all sheets together and turn in to my office by the due date.

#1) The market for rice has the following supply and demand schedules:

P (per ton)	Q Demanded (tons)	Q Supplied (tons)
\$ 10	100	0
\$ 20	80	30
\$ 30	60	40
\$ 40	50	50
\$ 50	40	60

To support rice producers, the government imposes a price floor of \$50 per ton.

a) What quantity will be traded in the market? Why?

There will be a total of 60 units supplied. However only 40 units will be traded since that is all that suppliers are willing and able to sell at the price floor of \$50 per ton. There will thus be an excess supply of 20 tons

b) What steps might the government have to take to enforce the price floor?

The government will need to purchase the excess of 20 tons

#2) The market for one-bedroom apartments in a city has the following supply and demand schedules:

Monthly Rent	Q demanded (‘000’s)	Q Supplied (‘000’s)
\$ 1,000	800	300
\$ 1,200	600	350
\$ 1,400	400	400
\$ 1,600	200	450
\$ 1,800	100	500

The government imposes a price ceiling (rent control) of \$1,200

a) With the price ceiling, is there an excess demand, excess supply, or neither? If there is an excess supply or demand, state which one and how much.

There is excess demand equal to 250 units (600 – 350)

b) What quantity of one-bedroom apartments will actually be rented under this rent control policy?

Only 350 apartments will be rented

c) Suppose instead the price ceiling is \$1,600, what will be the quantity rented now? Is there an excess supply, excess demand, or neither?

Since the price ceiling is non-binding, the market will move to equilibrium, where 400 apartments will be rented. There will be neither excess supply nor excess demand.

#3) The demand for bottled water in Ames per week is:

Price per bottle	Quantity Demanded
\$ 1.00	500
\$ 1.50	400
\$ 2.00	300
\$ 2.50	200
\$ 3.00	100

a) Is this a straight line demand curve? How do you know?

This is a straight line demand curve since for every \$0.50 increase in price, the quantity of bottles demanded falls by a fixed amount (100).

b) Calculate the price elasticity of demand for bottled water for a price rise from \$1.00 to \$1.50. Is demand elastic or inelastic over this price range?

Demand is inelastic for this price change.

$$\begin{aligned}
 E &= \frac{500 - 400}{\left(\frac{500 + 400}{2}\right)} \div \frac{1 - 1.50}{\left(\frac{1 + 1.50}{2}\right)} \\
 &= \frac{100}{450} \div \frac{-0.50}{1.25} \\
 &= -0.55
 \end{aligned}$$

c) Calculate the price elasticity of demand for a price rise from \$2.50 to \$3.00. Is demand elastic or inelastic over this price range?

Demand is elastic for this price change.

$$\begin{aligned}
 E &= \frac{200 - 100}{\left(\frac{200 + 100}{2}\right)} \div \frac{2.50 - 3}{\left(\frac{2.50 + 3}{2}\right)} \\
 &= \frac{100}{150} \div \frac{-0.50}{2.75} \\
 &= -3.66
 \end{aligned}$$

d) Demand should become less and less elastic as we move down and to the right along the demand curve. Use the answers from b) and c) to justify this.

As we slide down the demand curve, the price elasticity of demand changes from -0.366 to -0.55, that is, it becomes less elastic.

e) Create another column for total expenditure on bottled water at each price.

Price per bottle	Quantity Demanded	Total expenditure
\$ 1.00	500	\$ 500.00
\$ 1.50	400	\$ 600.00
\$ 2.00	300	\$ 600.00
\$ 2.50	200	\$ 500.00
\$ 3.00	100	\$ 300.00

f) A rise in the price should increase total expenditures when demand is inelastic and decrease total expenditure when demand is elastic. Using the new column from e) and previous answers verify that this relationship is correct.

From the table in part e, we can confirm that an increase in price in the inelastic range (from \$1 to \$1.50) led to an increase in total expenditure, while an increase in price in the elastic range (from \$2.50 to \$3.00) led to a decrease in total expenditure.