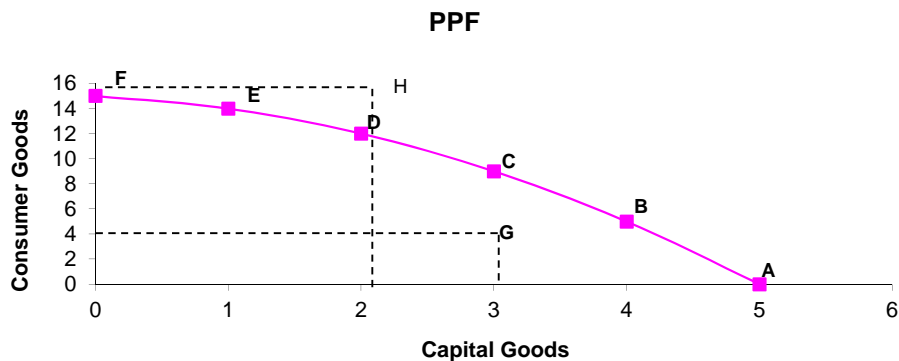


Solution Problem Set #1

- #1. Use the following table representing the production possibilities for a country to answer questions a) to c)

Capital Goods	Consumer Goods	Point
5	0	A
4	5	B
3	9	C
2	12	D
1	14	E
0	15	F

- a) Draw the PPF for the country. Remember to label all elements on your graph.



- b) In terms of growth, production at point C will tend to generate more/less/equal growth as compared to point D. Why?

More. Spending on more capital goods means more investment, which in the future will lead to a shift of the PPF up and to the right, which in terms of our analysis means bigger growth.

- c) Characterize an output combination of 3 units of capital goods and 4 units of consumer goods in terms of employment of resources and efficiency. Show the point representing this combination on your graph, and label it G.

This is point G on the graph. We can say for sure that production at point G is not efficient. However, we cannot be sure whether there is full employment or not in the economy. Remember unemployment implies inefficiency but inefficiency does not necessarily imply unemployment.

- d) Given the state of technology, is it possible for this economy to achieve production combination of 2 units of capital goods and 16 units of consumer goods? If not, what can be done in order achieve this production combination in the future? Show this point on your graphs and label it H.

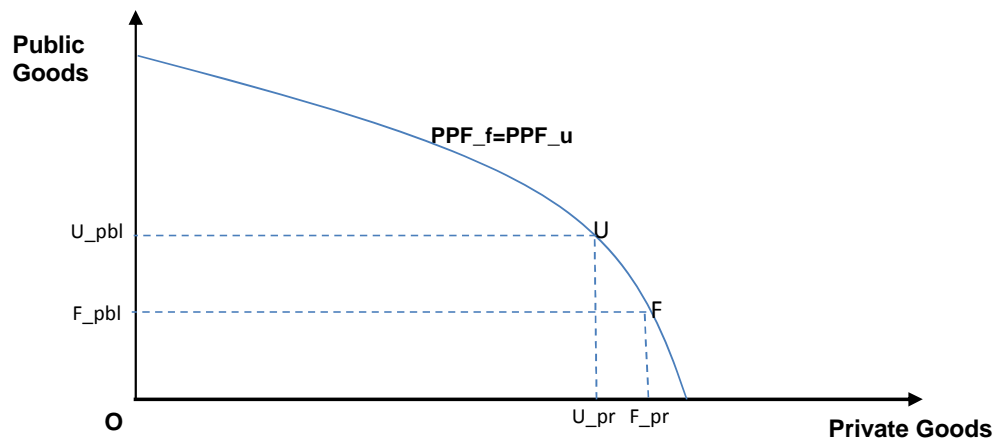
Given the state of technology and the fact that resources are limited, the country could not produce 2 units of capital goods and 16 units of consumer goods at the same time. Point H, representing such combination is unattainable. In order to be able to produce at H in the future, this economy has to give up current consumption now and invest for more future consumption.

- e) What is the opportunity cost of the tenth unit of consumer goods in terms of capital goods if the economy is producing at point C.

The opportunity cost of the tenth unit of consumer goods in terms of capital goods is less than one third. In order to produce the tenth unit of consumer goods, the economy has to give up production of less than one third units of capital.

#2. Using the PPF concept, compare a **frontier society**, which is one that lives from hand to mouth and produces relatively more **private goods** (A good is defined as 'private' consumers could be denied access to its benefits), with an **urban society**, which is more advanced and produces relatively more **public goods** (A good is called 'public' if its benefits are indivisibly spread among the entire society, regardless of whether a particular individual wants to consume it or not.).

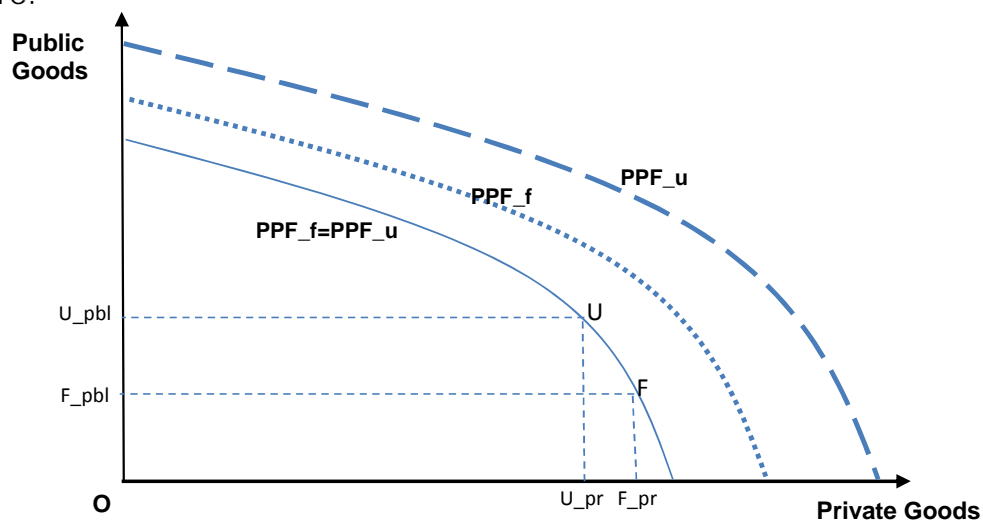
- a) Use the same graph to draw the PPFs of the two countries if you know that the nations are initially identical in terms of resources. Label the PPF for the Frontier Society PPF_f and for the Urban society PPF_u.



- b) On your picture from part a) show the production and consumption combinations for each country. Keep in mind that that both countries will produce and consume both types of goods, but the frontier society will produce relatively more private goods. Label the production and consumption combination for the frontier society F and the corresponding point for the urban society U.

Point U (the production and consumption point for the Urban society) clearly indicates larger production and consumption of public goods (U_pbl) as compared to point F (which is the corresponding point for the frontier society).

- c) Public goods lead to more growth. Draw a new graph representing the difference in the production possibilities between the two societies in the future.



As result of the larger production of public goods, which lead to more growth, the PPF for the urban society shifts further out. That is, the production possibilities of this country are now larger. Note that the PPF for the frontier society also shifts out, but by less. This is because this nation also produces some public goods, but less than the Urban society.

#3. Market failure and Government Intervention. The following three are examples of Market Failure:

- 3.1 Collusion among several big companies in an industry so that they can control market prices
- 3.2 Loud night club in a quiet neighborhood;
- 3.3 Homeless people in the streets.

For each of the cases answer the following questions:

a) What is the Market failure in terms of the five conditions defined in class (e.g. consumers fail to be rational, or the market fails in providing just and fair distribution, etc.)?

3.1 The condition for perfectly competitive markets will be violated.

3.2 This is an example of negative externality.

3.3 The market does not the job of just and fair distribution of resources.

b) What measures could the government take in order to correct for the Market failure?

3.1 The government may pass antitrust laws in order to prohibit mergers that will decrease competition and grant monopoly power in the hands of one big company.

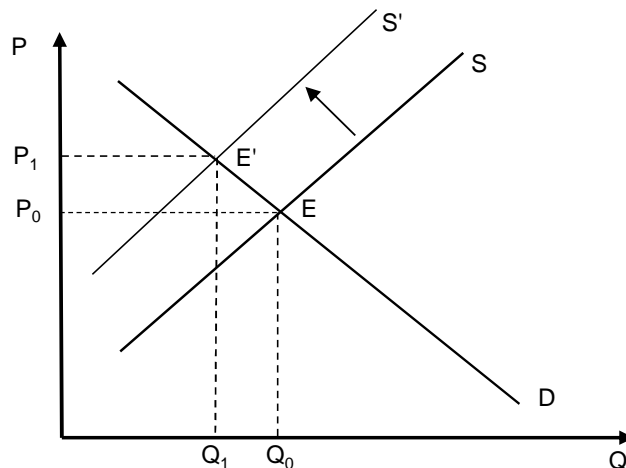
3.2 The local government may impose regulations on the location and the way of operation of such clubs.

3.3 Here, the government may use different forms of transfer payments such as food stamps, shelters, etc.

#4. Supply and Demand Shifts. Assume that corn is a key ingredient in the food for cows, and beef is a substitute for pork. Use supply and demand analysis to trace the effects of a drought in the Great Plains, where corn is produced, on: a) The corn market; b) The beef market; c) The pork market;

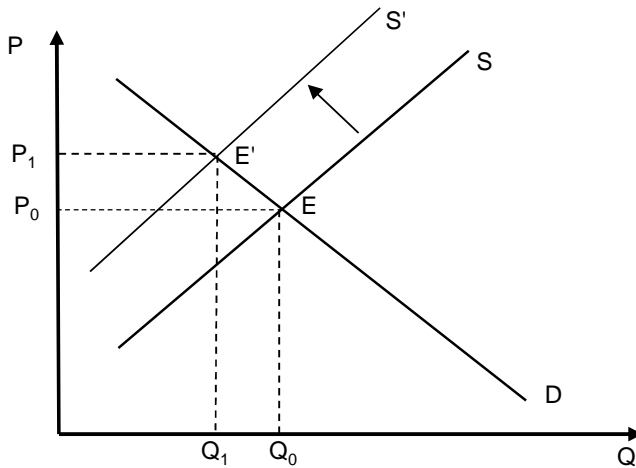
For each of the three cases: 1. Remember to label your figure (what market is that?), each axis, as well as the curves and all the relevant points such as the equilibrium quantity, Q_0 , the equilibrium price, P_0 , and the initial market equilibrium, E. 2. Show the shift in the appropriate curve(s) and indicate the new equilibrium quantity, Q_1 , the new equilibrium price, P_1 , and the new equilibrium, E'. 3. In each case, provide a brief explanation. 4. Clearly state the effect on the Market-clearing price and the Equilibrium quantity.

a) The corn market;



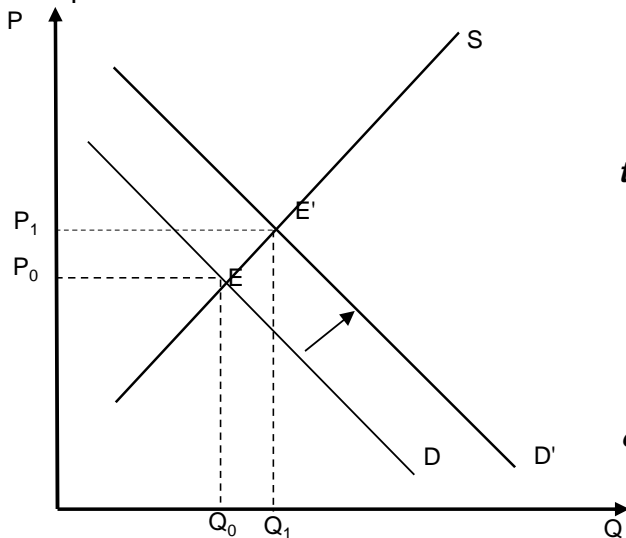
The drought will negatively affect production and therefore supply of corn. This effect can be represented graphically by an upward and to the left shift in the supply curve for corn. The new equilibrium market price for corn will be higher and the new equilibrium market quantity will be lower.

b) The beef market;



Similar effect will be observed on the beef market. Since corn is a key ingredient (input) in production of beef and the price of corn increases, this will lead to an increase in the cost of production of beef, which will result in decrease in supply (a shift in the supply curve up and to the left). The new market-clearing price for beef will be higher and the new equilibrium quantity will be lower. Be careful: demand does not shift in this case! Why?

c) The pork market.



Since pork and beef are substitutes, an increase in the price of beef will result in an increase in the demand for pork (a shift of the demand curve up and to the right). This will cause the market-clearing price for pork to increase and the equilibrium quantity for pork to increase too.

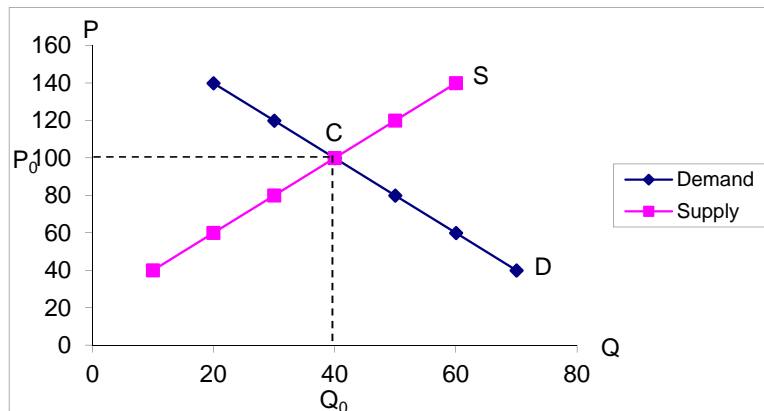
#5. The following table represents the schedules of demand and supply for bicycles in an economy:

	Price	Quantity Demanded	Quantity Supplied	State of the Market	New Demand
A.	140	20	60	Surplus of 40	6.666667
B.	120	30	50	Surplus of 20	10
C.	100	40	40	Equilibrium	13.333333
D.	80	50	30	Shortage of 20	16.666667
E.	60	60	20	Shortage of 40	20
F.	40	70	10	Shortage of 60	23.333333

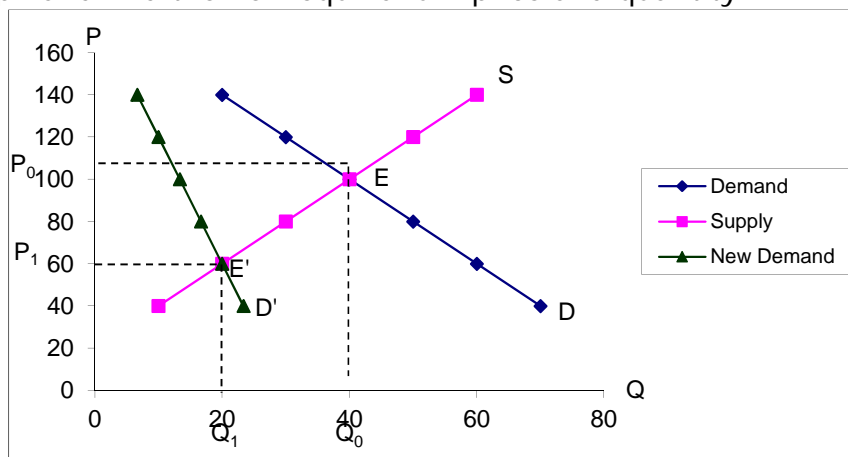
- a) Which point in this schedule represents the Market Equilibrium? What are the Equilibrium (market-clearing) Price and the Equilibrium Quantity?

Point C, Equilibrium price $P_0=100$, Equilibrium quantity $Q_0=40$

- b) Use the given data to plot the Supply and Demand curves on the same graph. Make sure that you label your graph and provide exact numbers for the equilibrium price and quantity.



- c) Fill in the last column of the table, which represents the State of the Market (Example is given for point A.)
- d) Suppose that due to the invention of a new econocycle, the demand for bicycles decreases three times. That is, at each price the demand for bicycles will be three times smaller. Plot the new demand on the same graph and find the new equilibrium price and quantity.



Point E', Equilibrium price $P_0=60$, Equilibrium quantity $Q_0=20$

- e) Suppose that instead of using table format, I had given you the supply schedule for bicycles as $P = 20 + 2Q$ and the demand schedule for bicycles as $P = 180 - 2Q$ (these two equations represent exactly the demand and supply schedules as given in the table. You can check by using the corresponding numbers from the table to substitute in each equation). Can you find the Equilibrium Price and Equilibrium Quantity? What are they?

Since in Equilibrium Supply should be equal to Demand, we could equate the two schedules and solve for the Equilibrium quantity: $20 + 2Q = 180 - 2Q$, and find $Q=40$, which we can plug back in either of the two equations to get the Equilibrium price, $P = 20 + 2 \cdot 40 = 180 - 2 \cdot 40 = 100$

- #6. The following table represents the schedule of demand for DVDs in your community:

Price(\$)	Quantity Demanded	E_d	Total Expenditure
6	350		2100
		1.38	
5	450		2250
		0.9	
4	550		2200
		0.59	
3	650		1950
		0.36	
2	750		1500

- a) Column 3 shows the Elasticity of Demand for DVDs. Fill the column by calculating the elasticity coefficient for each price change.
- b) Now, fill column 4 by calculating the Total Expenditure on DVDs in the community, which is the same as the total revenue of the firms offering DVDs.
- c) Look at column 3 and column 4. Are your numbers consistent with the rule that a price decrease will increase total expenditure (revenue) only when demand is Elastic?

Yes.

- d) Suppose that because of a fall in the price of DVD players the demand for DVDs is twice as big as before (at any price). Use the new demand schedule and find the Elasticity of demand for a price change from \$6 to \$5. Is it the same as before? Why?

Yes, it is the same as before because in the formula for the elasticity of demand we have just multiplied the change in Q and the average Q by the same number, 2.

- e) Suppose now that instead of doubling, the demand for DVDs has increased by 200 at any given price (add 200 to Q at each price). Use the new demand schedule and find the Elasticity of demand for a price change from \$6 to \$5. Is it the same as before? Why?

This time the elasticity coefficient is different (.92) because while the change in Q has not changed (we add and subtract 200), the average quantity has risen, therefore the elasticity will be different.

The last problems are optional. They will help you be better prepared for the test, but you will not be graded on them in this problem set.

7 The answers to this question are individual-specific.