

Assignment #1
Economics 101 – Section 5
Due Date: Thursday Jan 29, 2004

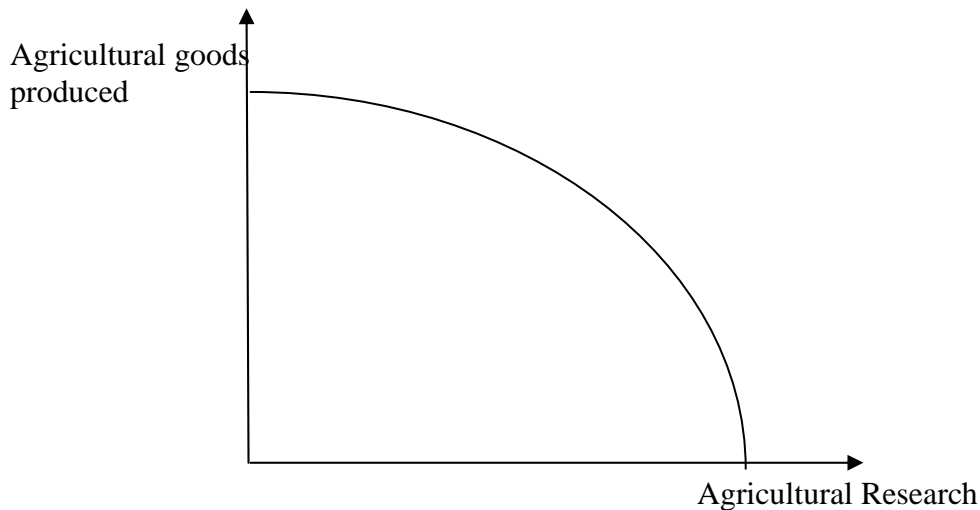
Instructions: Complete all questions and sub questions on separate sheets of paper. Make sure to include your name (first and last) and your student number on the first page of your assignment. Staple all sheets together and turn in to my office by the due date.

#1) Estimate the opportunity cost of taking this class. Include direct expenditures such as tuition, books, and supplies, as well as indirect expenditures such as the value of the time spent in class. What else should you include? Put a dollar value on all these opportunity costs and sum them.

Included here should be the direct tuition and book costs. Also there should be a reasonable value put on other time for lost wages, leisure time, sleep, etc. Also include the time spent studying for exams and doing assignments.

#2) You are the president of a small island country. You are interested in producing only two goods 1) agricultural plant breeding and technology; and 2) agricultural products (i.e. food for your residents to eat). You want to draw the production possibilities curve for the production of these two items in your little island paradise. You are neither a farmer or a research scientist but you know that it is easy to make the first scientific discovery and the first bushel of food is relatively easy to produce. However you are familiar with the principle of increasing opportunity cost and you are well aware that each subsequent discovery takes more and more effort as do increases in food production.

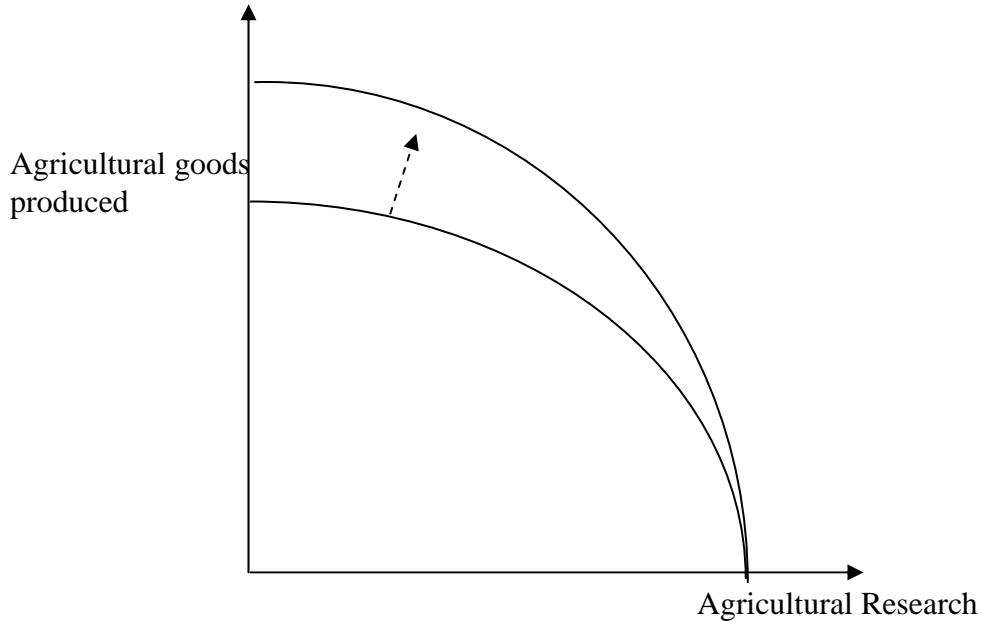
a) Draw the PPF for this island country.



b) What happens if all resources are spent only on scientific discoveries (note that your island does not import any food)? What will happen to the island residents?

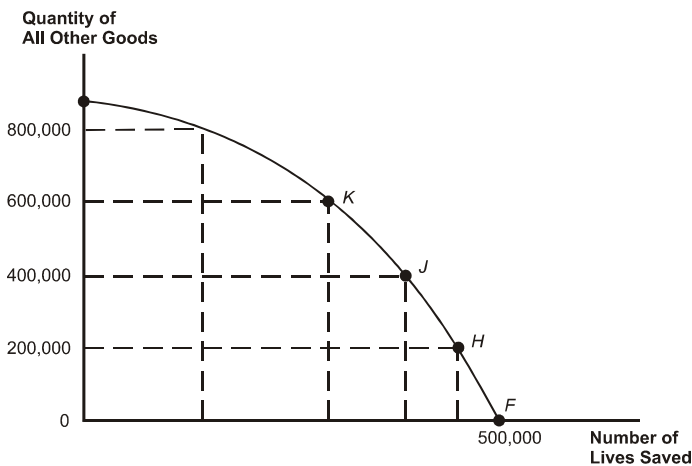
- All resources will be going into agricultural research so there is no food. Everyone on the Island will starve to death.

- c) Suppose that you are also looking to the future and you know that an increase in research in the first period will increase food productivity but not research productivity. Using a graph show what happens over time to the PPF if some research is conducted in the first period. Can you say anything about how much of either discoveries or food will be produced in the second period?

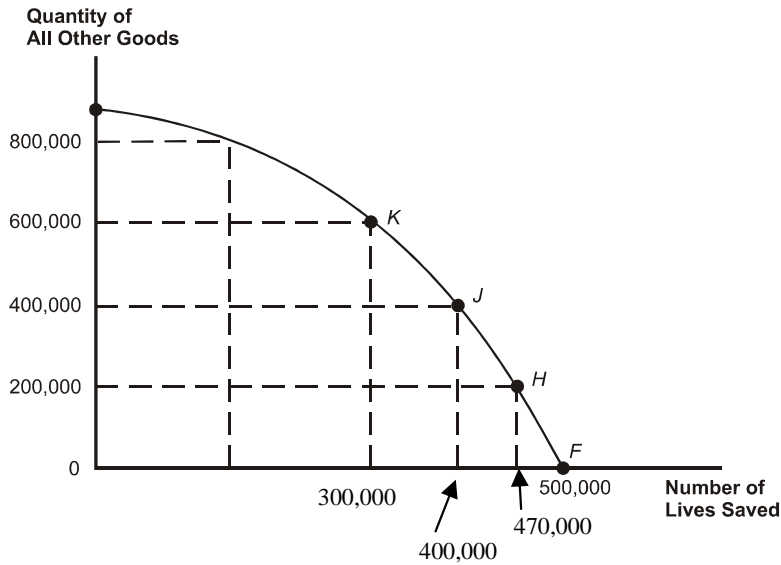


- The increase in food productivity shifts the frontier up for agricultural goods produced but does not affect the amount of research that can be produced. Using existing resources the increase in productivity for ag goods means that more can be produced with the given resources.

#3) Consider the following PPF for the production of all other goods and lives saved (similar to that used during the lecture)

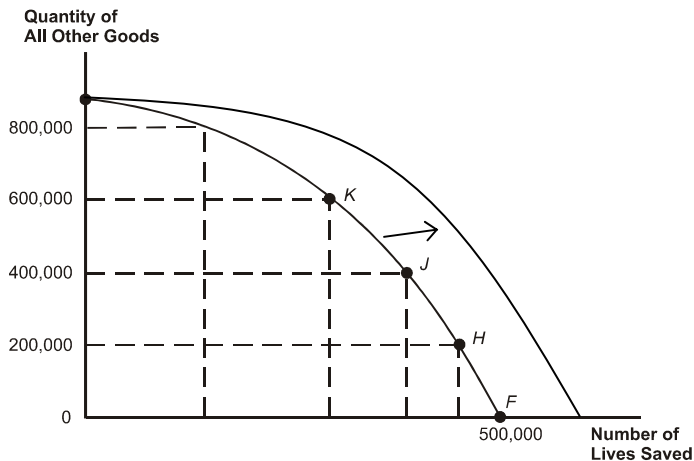


- a) Recall how we established that the law of increasing opportunity cost applied to saving lives. Does the law of increasing opportunity cost also apply to the quantity of all other goods produced? Explain by assigning appropriate values to the dashed lines on the horizontal axis.



- Using the numbers I approximated above: In the above we see that to go from 0 to 200,000 units of other goods will have an opportunity cost of 30,000 lives. However going from 200,000 to 400,000 cost 70,000 lives and 400,000 to 600,000 costs 100,000 lives. We can see from this that each additional unit of other goods as we move away from saving lives to production of other goods costs more for each additional good produced than before – that is increasing opportunity cost does apply here.

b) How would a technical change which improves lifesaving techniques, i.e. development of a drug to cure multiple sclerosis, affect the frontier in the above figure (note that the technical advance affects only the ability to save lives)?



- This will shift the PPF out on the horizontal axis increasing the total number of lives that could be saved but will not change the total amount of other goods that can be produced (vertical intercept of the PPF remains unchanged).

#5) Return to our class example with Gilligan's Island. Gilligan discovers a new plant that when taken as a tea makes him very hyper and enthusiastic about picking berries and catching fish (this new plant is packed full of amphetamines). The new plant also makes him more annoying than usual. As a direct result of this new stimulant he is able to pick a quart of berries in 0.5 hrs and catch a fish every 0.25 hrs.

a) Fill in the missing blanks below:

	1 Quart of Berries	1 Fish
Maryanne	1 hour	1 hour
Gilligan	½ hour	¼ hour

b) What are Gilligan's new opportunity costs of fishing and picking berries? Fill in the following table.

	1 Quart of Berries	1 Fish
Maryanne	1 fish	1 quart of berries
Gilligan	2 fish	½ quart of berries

c) Who has the comparative advantage in what?

Maryanne has a comparative advantage in picking berries. She must give up 1 fish to pick a quart of berries, while Gilligan must give up 2 fish to pick a quart of berries. Gilligan has a comparative advantage in catching fish. He must give up ½ a quart of berries to catch 1 fish, while Maryanne must give up 1 quart of berries to catch 1 fish. When they discover each other, Maryanne should specialize in picking berries and Gilligan should specialize in catching fish.

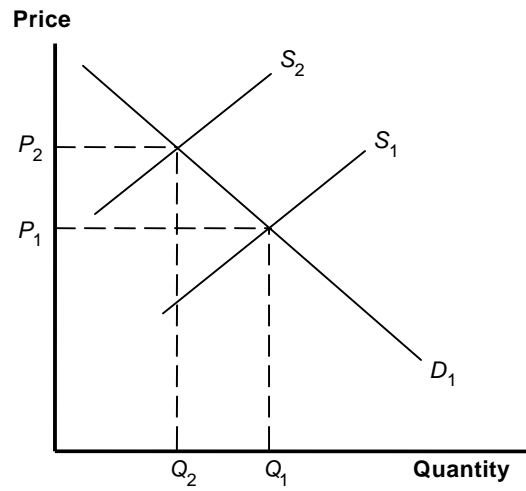
d) If each increases production in the good for which they have a comparative advantage by one unit, what is the net gain from specialization?

- Maryanne – 1 more quart of berries, one less fish
 - Gilligan – 1 more fish, ½ quart of berries less
- The net gain here is ½ quart of berries*

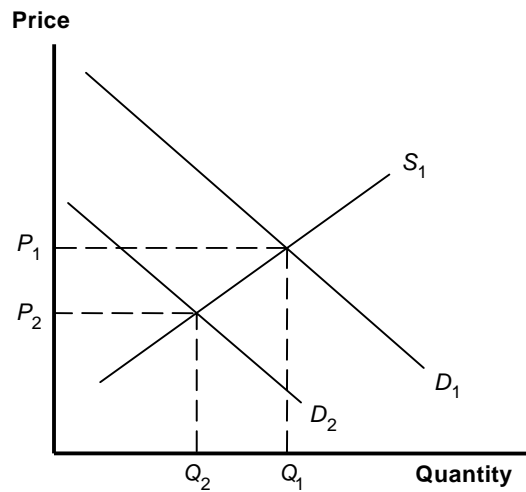
#6) For each of the events below, use a graph to explain the effects on both prices and quantities for the coffee market:

- a) A blight on coffee plants kills off much of the Brazilian crop;
- b) The price of tea (a substitute for coffee) declines;
- c) Coffee workers organize into a union and gain higher wages;
- d) Coffee is found to cause cancer in laboratory mice;
- e) coffee prices are expected to rise sharply in the near future, what are the effects in the current period (keep in mind this will cause changes to both suppliers and consumers behavior).

- a. Coffee supply declines from S_1 to S_2 . Equilibrium price increases from P_1 to P_2 ; equilibrium quantity declines from Q_1 to Q_2 .

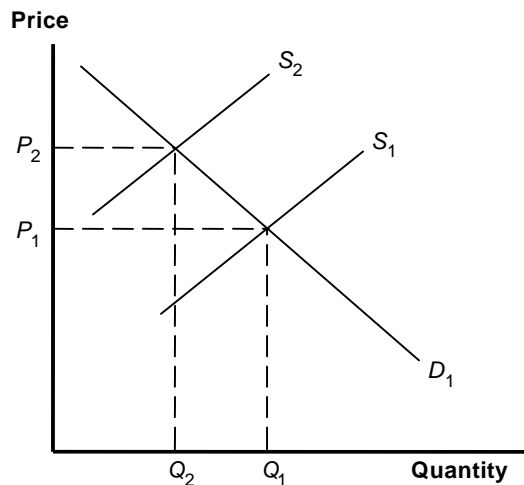


- b. Since the price of a substitute has fallen, demand for coffee should fall.



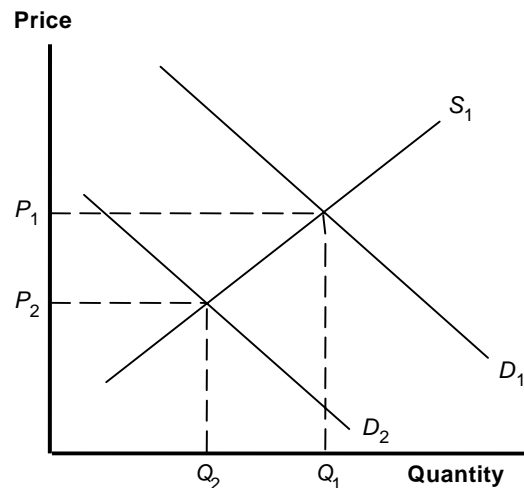
Demand declines from D_1 to D_2 . Equilibrium price and quantity decline from P_1, Q_1 to P_2, Q_2 .

- c. An increase in wages for coffee workers should result in a decrease in supply.



Supply decreases from S_1 to S_2 ; equilibrium price increases from P_1 to P_2 and quantity declines from Q_1 to Q_2 .

- d. This announcement would undoubtedly cause a decline in demand, resulting in a lower equilibrium price and quantity.



- e. If *consumers* expect higher coffee prices in the future, they would try to stock up on coffee now, causing an increase in current demand. If *producers*, too, expect the price to rise, they may withhold coffee, waiting to sell it at higher prices later. This will cause a decrease in supply. The combined effect of the shifts in supply and demand is a rise in equilibrium price. The equilibrium quantity, however, could rise or fall, depending on which shift is greater.

