

Economics 500: Microeconomic Theory

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Problem Set #11 – Answers

1. Suppose that in general competitive equilibrium, markets have successfully allocated resources to their highest value use. Explain the meaning of the term "highest valued use" and offer a criticism of this as a criterion for allocating resources.

"Highest valued use" means the resources are allocated to people who need most.

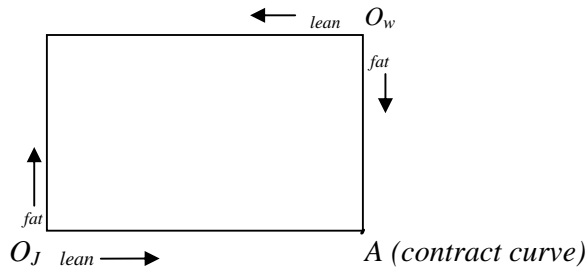
Criticism: some goods are most needed by poor people, but the prices are too high, thus the poor can not afford them. By contrast, the rich people can afford the goods easily but they are not the persons who need most.

So "highest valued use" can not be the criterion for allocating resources.

Is this criticism an indictment of the market mechanism? Explain.

No. This is not an indictment of the market mechanism. Because although the market can run normally, the resources can not be allocated to the most necessary, so the market can not assure fairness.

2. "Jack Sprat would eat no fat. His wife could eat no lean." Draw the contract curve.



O_J: origin of Jack Sprat

O_w: origin of his wife.

For Jack, his IC is the points on O_JA. For his wife, her IC is the points on O_wA.

Their IC maps would have only one tangent point A, which is the contract curve.

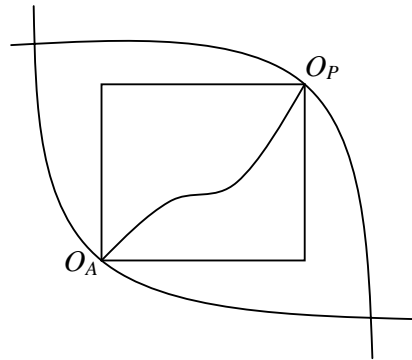
At A, Jack eats all the lean; his wife eats all the fat.

3. Given an initial endowment of toilet paper and bon bons for Al and Peggy, when the two engage in voluntary exchange, they may end up anywhere on the contract curve. True or False? Explain.

False.

Where the end point is depends on the initial endowment. In most cases, they may only end at anywhere of a part of the contract curve, which is called "core".

P.S., There is only one specific case, they can end up anywhere on the contract curve (hint on how to answer exam questions).



4. The pareto principle merely suggests that all mutually advantages exchanges should be made. No one could possibly disagree with this principle: it is completely uncontroversial. True or False? Explain.

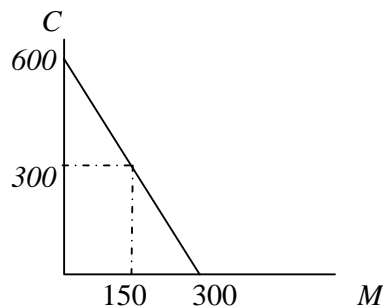
Fales.

There are norms and laws in the society. For example, drug transaction can benefiit both drug dealer and buyer, but it is illegal. So although this kind of transaction complies with the pareto principle, but it is forbidden by the law, this exchange can not be made.

5. Suppose the production possibility frontier for cheeseburgers (C) and milkshakes (M) is given by

$$C + 2M = 600$$

- a. Graph this function.



- b. Assuming that people prefer to eat two cheeseburgers with every milkshake, how much of each product will be produced? Indicate this point on your graph.

Utility function: $U = \min(aC, \beta M)$

Since the person always consumes 2 cheeseburgers and one milkshake, so

$2a = \beta \rightarrow a = 1, \beta = 2 \rightarrow U = \min(C, 2M)$

To max utility with fixed expenditure, $C = 2M$,

plugging in PPF function, $4M = 600 \rightarrow M = 150, C = 300$

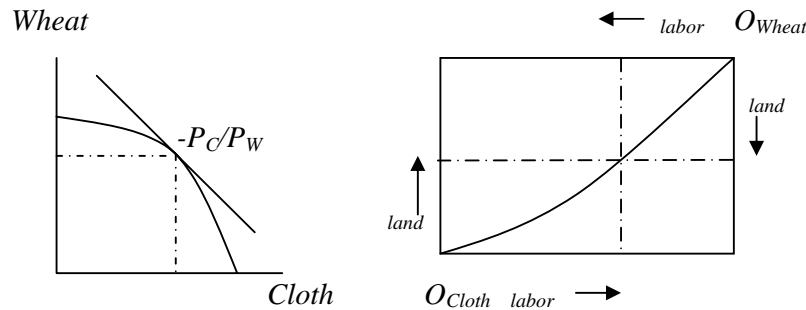
- c. Given that this fast-food economy is operating efficiently, what price ration (P_C/P_M) must prevail?

$$P_C/P_M = MRPT = -dM/dC|_{PPF} = 1/2$$

Because the consumer consume the C and M at a fixed ration, the operate efficiently, producers must produce at a fixed ratio to clear the market.

6. The country of Podunk produces only wheat and cloth, using as inputs land and labor. Both are produced by constant returns-to-scale production functions. Wheat is relatively land-intensive commodity.

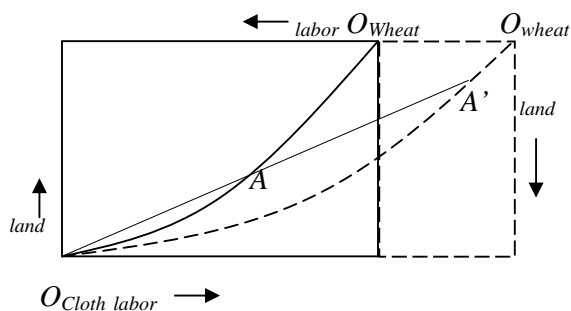
- a. Explain, in words and with diagrams, how the price of wheat to cloth (p) determines the land-labor ratio in each of the two industries.



Here we know the price of the wheat to cloth (P), so we can find a point on PPF where the slope of the tangent line is equal to P , so we can get the production amount of both.

So in the edgeworth box, we can get a point where the production of wheat and cloth is equal to what we get on PPF. Therefore, we could know the land-labor ration in each of the two industries.

- b. Suppose that p is given by external forces (this would be the case if Podunk were a “small” country trading freely with a “large” world). Show, using an Edgeworth box, that if the supply of labor increases in Podunk, the output of cloth will rise and the output of wheat will fall.



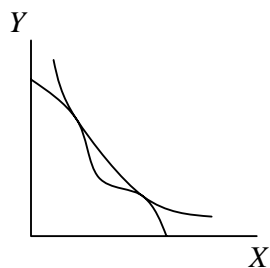
Here wheat is relatively land-intensive commodity, while cloth is relative labor-intensive one. So every point on the contract curve should have such characteristic that allocating more land on wheat and more labor on cloth, which implies the contract curve is convex.

When the supply of labor increases, the edgeworth box changes, but the relative price of wheat to cloth (P) does not change. So the production combination of wheat and cloth has no change, which means the ration of land and labor allocated on wheat and cloth does not change.

Therefore, from the edgeworthbox, we get a new point A' , where the ratio is equal to A , Podunk produces more cloth and less wheat.

7. Use a simple two-good model of general equilibrium pricing to illustrate a situation in which there will be two equilibrium price ratios by relaxing the assumption that the production possibility frontier is concave. Explain your results intuitively.

Suppose PPF looks as follows:



If the PPF is no longer a concave one, and the IC curve is still convex, then we could get two tangent point, where $MRS=MRPT$, therefore we will have two equilibrium prices.