Econ306 – Intermediate Microeconomics
Solutions to Problem Set 5

Question 1 (*2.5 points*)

The four assumptions underlying the competitive market model are:

1. sellers are price-takers: true, since there are many suppliers and their products are close substitutes, they do not believe they can influence either the price or the actions of other producers;

2. sellers do not act strategically: true, because sellers are not trying to create cartels or agreements;

3. free entry: true, as the government allows snail growing and anybody can start growing snails (there are people willing to initiate new producers);

4. buyers are price-takers: true as well, since there are many buyers, none of which accounts for a large part of the market, and thus none of them thinks they can influence the price or the decisions of other buyers.

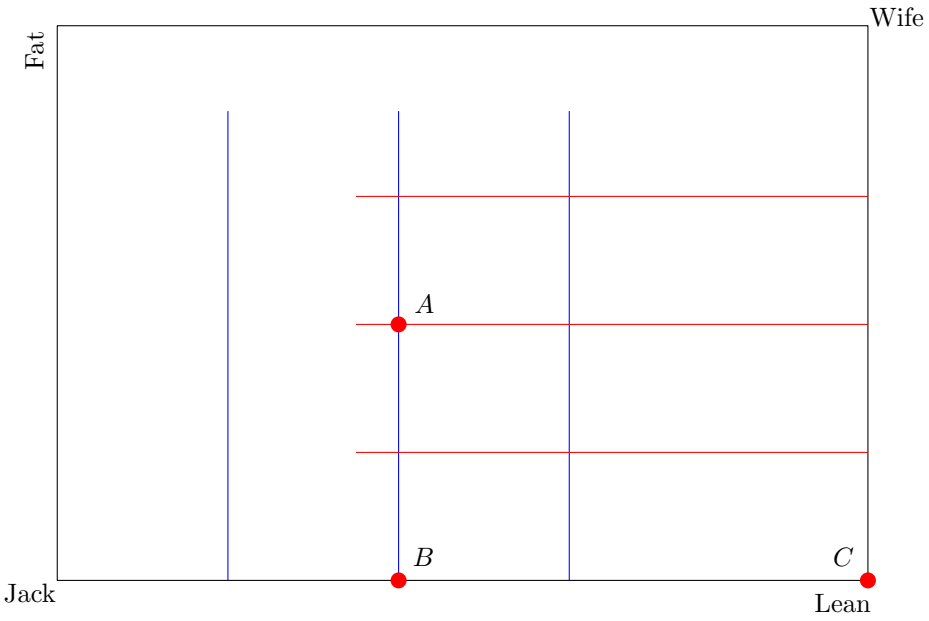
Therefore, the perfectly competitive model is appropriate for this market.

Question 2 (*1 point*)

In a market where there is free entry, new firms will be created as long as there are profits to be made. Mr. Oogav should have foreseen that the number of T-shirt shops would increase substantially once the news of his profit would be spread. As a result of the increased competition, the price falls and profits are reduced, again an outcome that Mr. Oogav should have predicted.

Question 3 (*2 points*)

Jack does not eat fat, so his indifference curves over fat and lean will be straight lines: the only variable that matters is the quantity of lean he has, not the quantity of fat. Similarly, his wife's indifference curves will be straight lines, perpendicular to Jack's, since she only cares about the other good. We can represent both of them in an Edgeworth box as in the graph below.

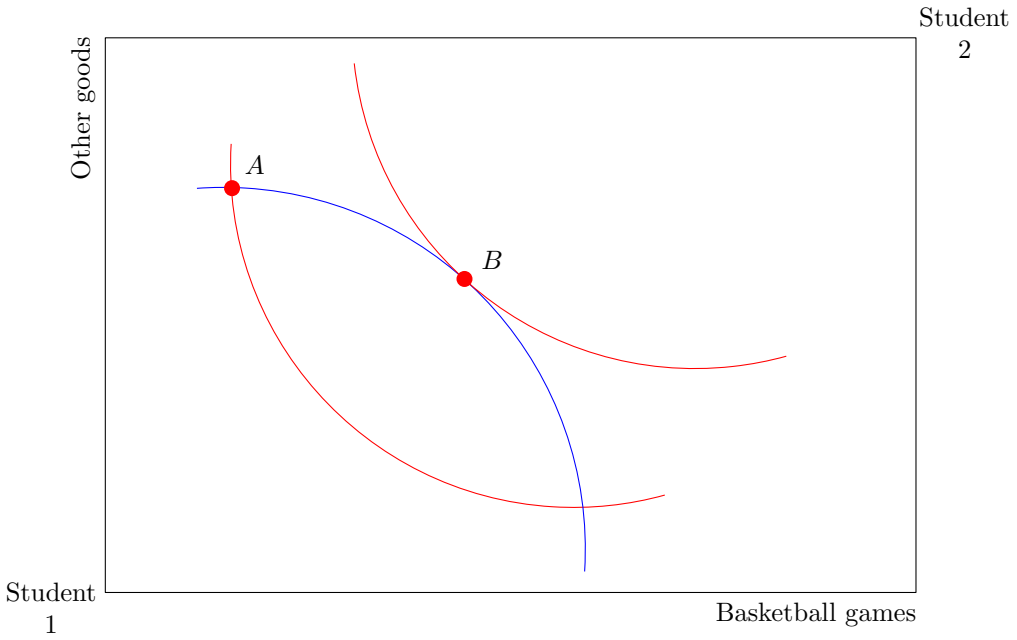


The contract curve is the set of points such that we would not be able to make one of the consumers (Jack and his wife) better off without making the other worse off. Let us look at a point inside the box, say A. This point cannot be on the contract curve: by taking all the fat from Jack and giving it to his wife (a move to point B), she is made better off, while Jack is not worse off. The same would hold for any point inside the box, since A was just a random point.

At the same time, point B cannot be on the contract curve either: if we take all the lean from Jack's wife and give it to Jack (a move to point C), he will be made better off and she will not be worse off. At point C, however, we cannot make either of the two consumers better off, because the quantities of lean and fat are limited. Therefore, only point C can be on the contract curve.

Question 4 (*3 points*)

You could think of this situation either as two students who have different preferences for basketball games and consumption of all other goods or as a student and an "outsider". In either case, you would have an Edgeworth box that would look like in the graph below.



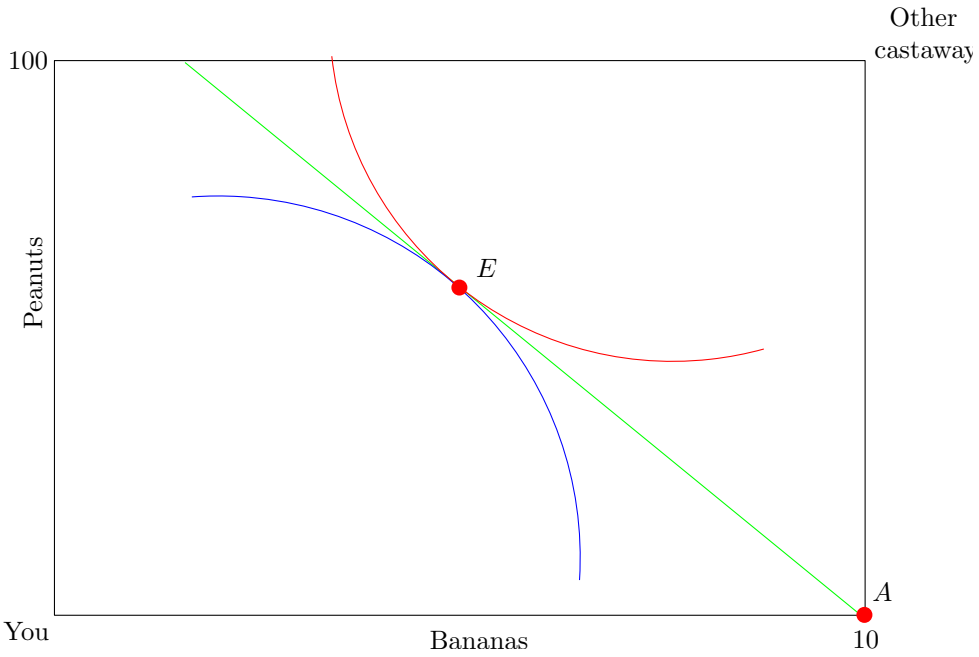
(i) (*1.5 points*) When ticket sales are allowed, students are not constrained to be at the endowment point any more. The resulting allocation will then be consumption efficient, since it will be the "'market outcome," like point B in the graph above. Note that students will choose to sell their tickets only if it makes them better off, so it has to be that the outcome in this situation is better than in the previous case.

(ii) (*1.5 points*) When ticket sales are not allowed, students are stuck at their endowment point A. While there is a remote chance that this point is consumption efficient, the real situation will most probably look like in the graph above: The indifference curves of the two consumers (students) will not be tangent at point A, meaning that at least one of them could be made better off. For instance, at point B, student 1 is strictly better off while student 2 is not worse off.

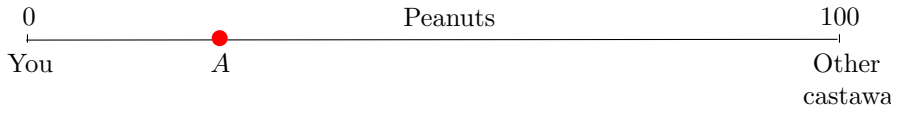
Note that it is not required for consumption efficiency that the "better" allocation is feasible under the current setup. What matters is that such a "better" allocation exists.

Question 5 (*1.5 + 1.5 extra points*)

(i) (*1.5 points*) The Edgeworth box representing this economy is drawn below. The endowment point is point A, and the equilibrium is point E. The budget line will be tangent to both indifference curves at point E.



(ii) (*extra 1.5 points*) When the only good in the economy is peanuts, we can represent the allocations between the two castaways along a line, as in the graph below. At point A, for instance, you have an amount of peanut bags equal to the length of the segment to the left of A, and the other castaway gets the rest.



It becomes obvious now that at every point, in order to make one of the two better off (give them more peanuts), we need to make the other worse off (take some peanuts away from them). Thus, all points are consumption efficient—but not necessarily equitable.

Question 6 (*extra 1.5 points*)

The profit-maximizing output level has to satisfy the following equation:

$$pQ^* = wL + rK.$$

When the price, wage and rent all double, the equation above still holds:

$$2pQ^* = 2wL + 2rK.$$

Hence, the output level is still optimal, and the firm will choose not to change anything: level of production (Q), number of workers (L) or amount of capital used (K).