Microeconomics Paper 150529

1a Consider arbitrary set of social outcomes $X = \{x_1, \ldots, x_n\}$. Consider arbitrary set of preference relations $\{\succeq_1, \ldots, \succeq_m\}$ for m agents. Social outcome x_i Pareto-dominates social outcome x_j iff for all $\succeq \in \{\succeq_1, \ldots, \succeq_m\}$, $x_i \succeq x_j$ and for some $\succeq \in \{\succeq_1, \ldots, \succeq_m\}$, $x_j \not\succeq x_i$, i.e. iff all agents weakly prefer x_i to x_j and some agent strictly prefers x_i to x_j.

One advantage of the Pareto criterion is that if x_i Pareto dominates x_j, each agent prefers x_i to x_j, and some agent strictly so, and any outcome that is not Pareto dominated is such that no agent can be made better off without making another worse off.

Two disadvantages of the Pareto criterion: (1) It is not necessarily the case that any two outcomes are Pareto-comparable, it could be the case that some agent strictly prefers one to the other and another agent has opposite preferences. (2) Pareto dominant outcomes could be distributively inequitable.

b B, E, G are Pareto-efficient because at these points, indifference curves are at a tangent to each other, so marginal rates of substitution are equal, there is no mutually profitable exchange between a and b, there is no allocation that lies above the indifference curves of both a and b such that both are better off.

B, E, D are Pareto superior to A. Each of these lies weakly above both indifference curves through A and strictly above at least one indifference curve through A, so both consumers are weakly better off and at least one is strictly so.

C is Pareto inferior to A. It lies strictly below both indifference curves through A.

c True. From the above, G is Pareto efficient. A is not because it is (from the above) Pareto dominated by D (for example). A and G are not Pareto comparable because a strictly prefers A to G (A lies on a higher indifference curve for a) but b strictly prefers G to A (G lies on a higher indifference curve).

A social planner could choose between A and G using a utilitarian criterion, which selects the allocation that maximises total utility.

d The allocation H and price ratio p^0 constitute a competitive equilibrium because at this allocation and price ratio, a's excess supply of good x, given by the horizontal distance between H and M is equal to b's excess demand for good x, given by the same horizontal distance. Similarly for good y, b's excess supply equals a's excess demand so both markets clear.

Price ratio p^1 is not a competitive equilibrium price ratio because given endowment M, markets do not clear at this price ratio. a's excess supply of x given by the horizontal distance between M and C (which gives a's demands at price ratio p^1 with endowment M) is less than b's excess demand for x, given by the horizontal distance between M and J. Similarly, b's excess supply of y exceeds a's excess demand for y.

e Transfer some amount of x from a to b such that the resulting allocation lies on the price line that (1) passes through K and (2) is tangent to both indifference curves at K.

The equilibrium price ratio will be greater than p^1. This is such that a's excess supply of x increases and b's excess demand for x decreases, and the market for x clears. By Walras's Law, the market for y then also clears.