Econ 301 - Microeconomic Theory 2 **Winter 2018**

Lecture 12: February 14, 2018

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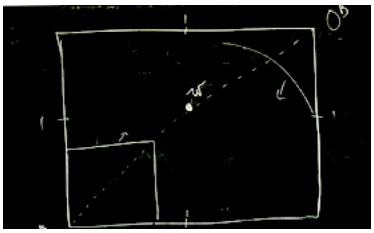
12.1 Competitive Equilibrium Continued

Example 12.1 *Competitive equilibria need not exist. Let* $\omega^A = (1,1) = \omega^B$, $u^A(x_1^A, x_2^A) = \max\{x_1^A, x_2^A\}$ *and* $u^B(x_1^B, x_2^B) = x_1^{B\frac{1}{2}} x_2^{B\frac{1}{2}}$



- *Demand Function for A*

$$(x_1^A(p_1\omega^A), x_2^A(p_1\omega^A)) = \begin{cases} \left(\frac{p_1+p_2}{p_1}, 0\right) & \text{if } \frac{p_1}{p_2} < 1 \\ \left(\frac{p_1+p_2}{p_1}\right) \text{ or } \left(0, \frac{p_1+p_2}{p_2}\right) & \text{if } \frac{p_1}{p_2} = 1 \\ \left(0, \frac{p_1+p_2}{p_2}\right) & \text{if } \frac{p_1}{p_2} > 1 \end{cases}$$

- *Demand Function for B*

$$(x_1^B(p_1\omega^B), x_2^B(p_1\omega^B)) = \left(\frac{p_1+p_2}{2p_1}, \frac{p_1+p_2}{2p_2}\right)$$

- *Case 1 : Can a competitive equilibrium have* $p_1^* = 0$ *? No,* $x_1^B(p_1^*\omega^B)$ *is undefined if* $p_1^* = 0$
- *Case 2 : Can we have a competitive equilibrium with* $\frac{p_1^*}{p_2^*} < 1$ *? No, (MC2) fails*

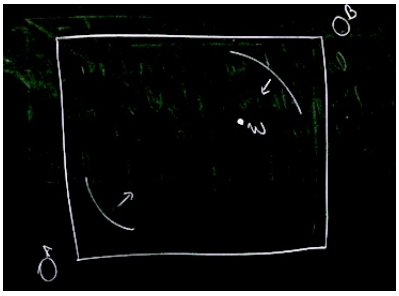
$$\begin{aligned} x^B(p_1^*\omega^B) = \frac{p_1^*+p_2^*}{2p_2} &= \frac{1}{2}\frac{p_1^*}{p_2^*} + \frac{1}{2} < 1 \\ &= \omega_2^A + \omega_2^B \end{aligned}$$

- *Case 3 : A similar argument shows that no competitive equilibrium with* $\frac{p_1^*}{p_2^*} > 1$ *exists*
- *Case 4 : Can we have a competitive equilibrium with* $\frac{p_1^*}{p_2^*} = 1$*? No, A demands 2 units if <u>some</u> good B demands 1 unit of each good*
- ***Therefore, some consumers don't meet equilibrium***

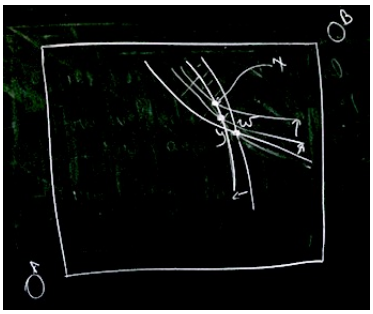
12.2 Welfare

In-Class Numbering : 3.0

- So far, we have studied positive, or descriptive properties of competitive equilibriums (i.e do they exists, how do prices vary with endowments,preferences, etc)
- Given this, our goal is to study normative properties of competitive equilibrium (i.e which depend on value judgement)
  - How well do markets perform in allocating goods across consumers?
  - How do they compare against alternative exchange mechanisms?
  - We need to develop normative criteria to evaluate the performance of markets and/or other mechanisms.
- What would bargaining between consumers look like?
  - Consider a two consumer economy



  - Bargaining protocols can be varied and complex, as a result we focus on describing allocations that are consistent with some bargaining process.



  - Any bargained agreement must deliver allocation x^J to consumer $J = AB$ such that

$$u^J(x_1^J, x_2^J) \geq u^J(\omega_1^J, \omega_2^J)$$

  - Any bargained agreement must be feasible

$$x_i^A + x_i^B \leq \omega_1^A + \omega_2^B \text{ for } i = 1, 2 \text{ (with equality if preferences are monotone)}$$

  - Are all feasible and individually rational allocations candidate bargained agreements? No, such allocations can be c to mutually beneficial counterproposal

To be continued next lecture with examples