Econ 100A — 3.1 Lecture 17

Today's Topic: General Equilibrium, Pareto Improvements

CP4. $U_A = 2\ln x_{1A} + \ln x_{2A}$, $U_B = \ln x_{1B} + 2\ln x_{2B}$ } well-behaved ⟶

$\omega_A = (2,2)$ $\omega_B = (3,0)$

$p_1 = 1$ $p_2 = ?$

only relative prices matter, so normalize one!

1. $m_A = 2p_1 + 2p_2 = 2 + 2p_2$

   $m_B = 3p_1 + 0p_2 = 3$

2. find demand functions

   A: $x_{1A}^* = \frac{2}{3} \cdot \frac{2+2p_2}{1}$; $x_{2A}^* = \frac{1}{3} \cdot \frac{2+2p_2}{p_2}$

   B: $x_{1B}^* = \frac{1}{3} \cdot \frac{3}{1} = 1$; $x_{2B}^* = \frac{2}{3} \cdot \frac{3}{p_2} = 2/p_2$

3. markets must clear

$$\begin{cases} x_{1A}^* + x_{1B}^* \leq \omega_{1A} + \omega_{1B} \\ x_{2A}^* + x_{2B}^* \leq \omega_{2A} + \omega_{2B} \end{cases}$$

if good is desired, replace $\leq$ with $=$

$(4+4p_2)/3 + 1 = 2 + 3$

$4 + 4p_2 = 12$

$p_2 = 2$

$(2+2p_2)/3p_2 + 2/p_2 = 2 + 0$

$8 + 2p_2 = 6p_2$

$p_2 = 2$

one good balances the other! market clears if $p_2 = 2p_1$.

↳ Walras's Law: value of aggregate excess demand is zero.

$x_{1A}^* = 4$ $x_{1B}^* = 1$ $x_{2A}^* = 1$ $x_{2B}^* = 1$

sums to 5 ✓ sums to 2 ✓

competitive equilibrium: $x_A = (4,1)$ $x_B = (1,1)$ $p_1/p_2 = 1/2$

Welfare Theorems

First: a point of CE is Pareto efficient if markets exist for all good and are competitive

Second: if you can move ω along a line x', you can improve utility without breaking Pareto efficiency