Eco 202
Smith

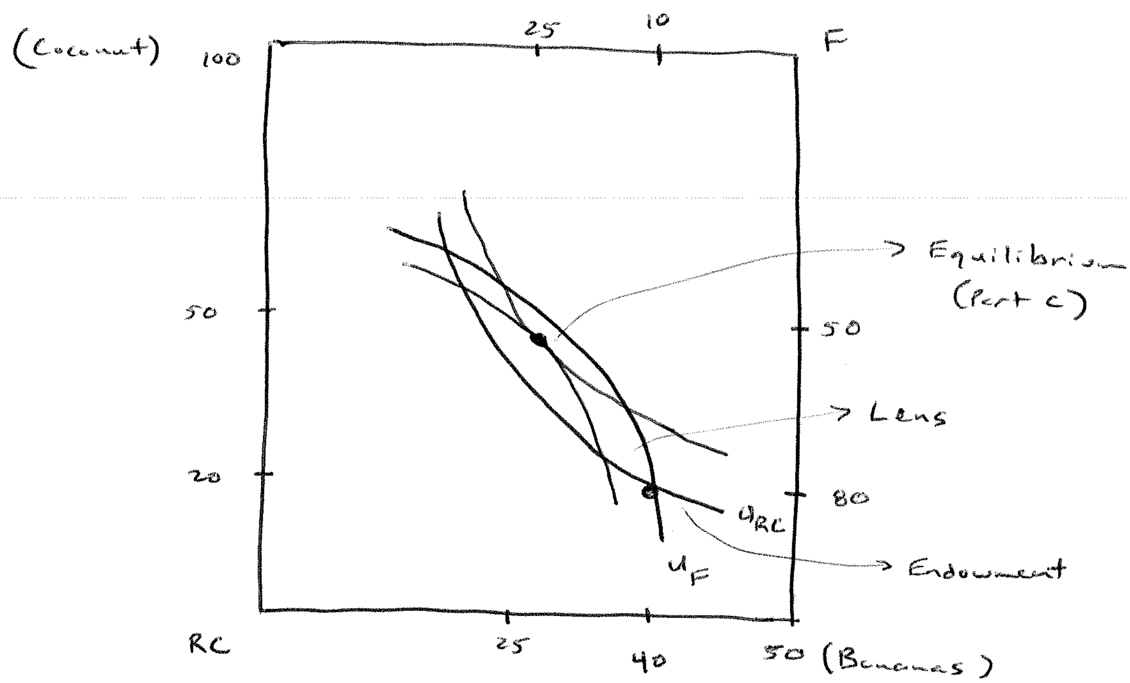
Practice Problems for Review Two

1

a) 50 B, 100 C } Totals

RC ⇒ 40 B 20 C

F ⇒ 10 B 80 C



b) $U_{RC} = B \cdot C$ $U_F = B \cdot C$

$MRS_{RC} = \frac{MU_B}{MU_C} = \frac{C}{B}$ $MRS_F = \frac{MU_B}{MU_C} = \frac{C}{B}$

$MRS_{RS} = \frac{20}{40} = 1/2$ $MRS_F = \frac{80}{10} = 8$

c) $B_{RC} = \frac{1}{2} \cdot \frac{I}{P_B}$ $B_F = \frac{1}{2} \cdot \frac{I}{P_B}$

$C_{RC} = \frac{1}{2} \cdot \frac{I}{P_C}$ $C_F = \frac{1}{2} \cdot \frac{I}{P_C}$

$I_{RC} = 40\,P_B + 20\,P_C \qquad\qquad I_F = 10\,P_B + 80P_C$

For equilibrium $\Rightarrow$ Total Demand = Total Supply

Banana Market

Endowments

$$\underbrace{B_{RC} + B_F}_{\text{Demand}} = \underbrace{\overline{B}_{RC} + \overline{B}_F}_{\text{Supply}}$$

$$\frac{1}{2}\cdot\frac{(40P_B + 20P_C)}{P_B} + \frac{1}{2}\cdot\frac{(10P_B + 80P_C)}{P_B} = 40 + 10$$

$$40 + 20\frac{P_C}{P_B} + 10 + 80\frac{P_C}{P_B} = 100$$

$$100\,\frac{P_C}{P_B} = 50$$

$$\frac{P_C}{P_B} = \frac{50}{100} \qquad \text{If } P_C = 1, \text{ then } P_B = 2$$

<u>So</u>

$$I_{RC} = 40(2) + 20(1) = 100$$

$$I_F = 10(2) + 80(1) = 100$$

$$B_{RC} = \frac{1}{2}\cdot\frac{100}{2} = 25 \qquad B_F = \frac{1}{2}\cdot\frac{100}{2} = 25$$

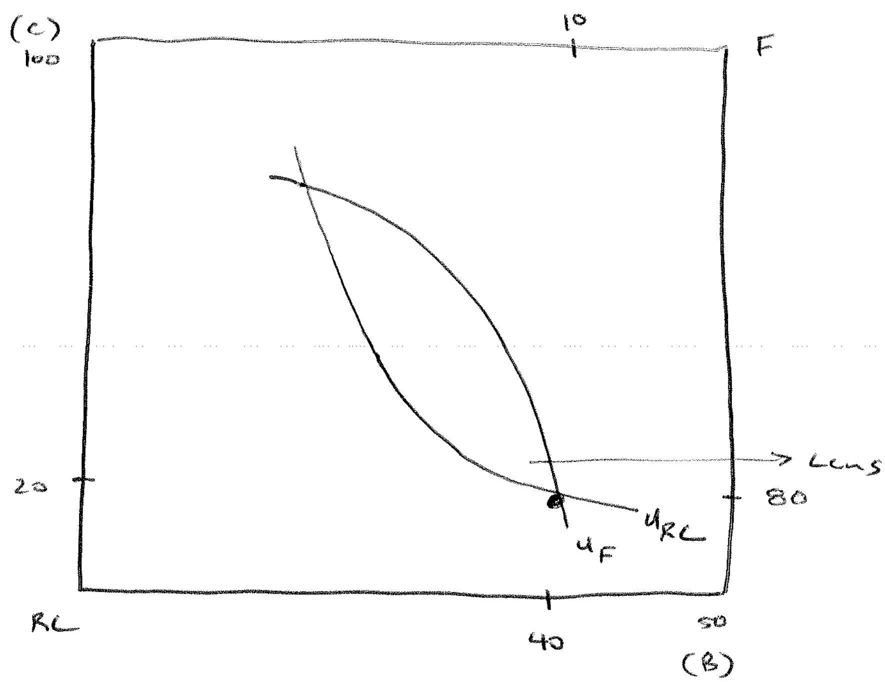
$$C_F = \frac{1}{2}\cdot\frac{100}{1} = 50 \qquad B_F = \frac{1}{2}\cdot\frac{100}{1} = 50$$

$\boxed{2}$

a) no change in box size, endowment...

but indifference curves will be slightly different

due to the change in exponents.



b) $u_{RC} = BC^2$ $\qquad\qquad$ $u_F = B^2C$

$$MRS_{RC} = \frac{MU_B}{MU_C} = \frac{C^2}{2BC} = \frac{C}{2B}$$

$$MRS_F = \frac{2BC}{B^2} = \frac{2C}{B}$$

At endowment:

$$MRS_{RC} = \frac{20}{2(40)} = \frac{1}{4} \qquad MRS_F = \frac{2(80)}{10} = 16$$

c)

$$B_{RC} = \frac{1}{3} \cdot \frac{I}{P_B} \qquad B_F \quad \frac{2}{3} \cdot \frac{I}{P_B}$$

$$C_{RC} = \frac{2}{3} \cdot \frac{I}{P_C} \qquad C_F = \frac{1}{3} \cdot \frac{I}{P_C}$$

Set:

Demand = Supply

$$B_{RC} + B_F = \bar{B}_{RC} + \bar{B}_F$$

$$\frac{1}{3} * \frac{(40P_B + 20P_C)}{P_B} + \frac{2}{3} * \frac{(10P_B + 80P_C)}{P_B} = 40 + 10$$

$$40 + \frac{20P_C}{P_B} + 2\left(10 + \frac{80P_C}{P_B}\right) = 150$$

$$60 + \frac{20P_C}{P_B} + 160\frac{P_C}{P_B} = 150$$

$$180\frac{P_C}{P_B} = 90$$

$$\frac{P_C}{P_B} = \frac{90}{180} \Rightarrow \text{if} \quad P_C = 1, \quad P_B = 2$$

So, $I_{RC} = 100 \qquad I_F = 100$

$$B_{RC} = \frac{1}{3} \cdot \frac{100}{2} = 16.67 \qquad B_F = \frac{2}{3} \cdot \frac{100}{2} = 33.33$$

$$C_{RC} = \frac{2}{3} \cdot \frac{100}{1} = 66.67 \qquad C_F = \frac{1}{3} \cdot \frac{100}{1} = 33.33$$

d) At the proposed equilibrium:

$$MRS_F = MRS_{RC} = \frac{P_B}{P_C} = \frac{2}{1}$$

$$\downarrow \qquad \downarrow$$

$$\frac{2(33.33)}{33.33} \qquad \frac{66.67}{2(16.67)}$$

This tells us that each "consumer" would be willing to give up 2 coconuts to get 1 more banana. However, we are told that the MRT is one. This means that our "producers" could "produce" (gather) one more banana at an opportunity cost of only $\underline{\underline{1}}$ coconut. Therefore, $\frac{P_B}{P_C} \neq MRT$ and this can't be a "true" equilibrium. The economy should reconfigure its production to "make" more of the good (bananas) that are valued more highly.