

# BERTRAND EQUIL'UM W/ HOMOGENEOUS GOOD

(SEE J&R Sec. 4.2.2)

$$q_1(p_1, p_2) = \begin{cases} D(p_1) & , \text{ IF } p_1 < p_2 \\ \frac{1}{2} D(p_1) & , \text{ IF } p_1 = p_2 \\ 0 & , \text{ IF } p_1 > p_2 \end{cases}$$

SIMILARLY  
FOR FIRM 2'S  
~~q~~  $q_2(p_1, p_2)$

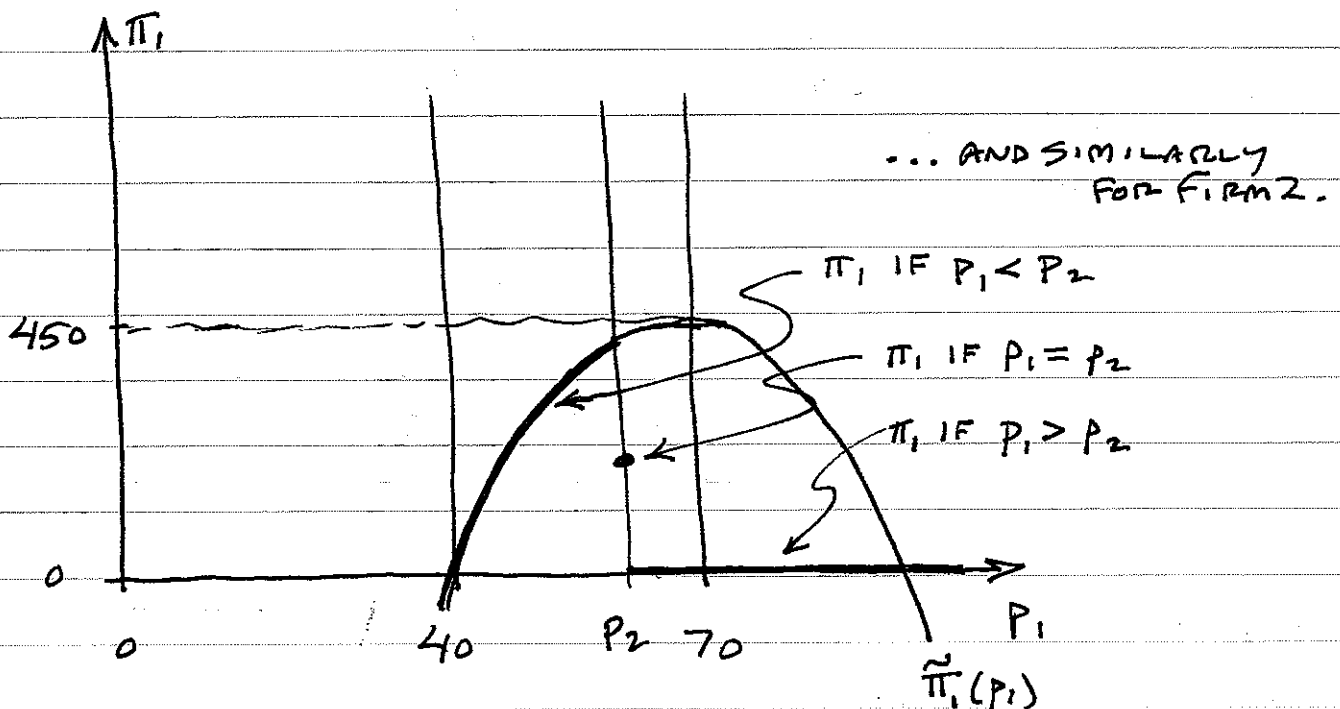
IN OUR EXAMPLE WE THEREFORE HAVE

$$\pi_1(p_1, p_2) = \begin{cases} (p_1 - 40)(50 - \frac{1}{2} p_1) & , \text{ IF } p_1 < p_2 \\ (p_1 - 40)(\frac{1}{2})(50 - \frac{1}{2} p_1) & , \text{ IF } p_1 = p_2 \\ 0 & , \text{ IF } p_1 > p_2 \end{cases}$$

$\leftarrow R-C_1$      $\leftarrow q_1$      $\leftarrow D(p) = 50 - \frac{1}{2} p$

WRITE  $\tilde{\pi}_1(p_1) = (p_1 - 40)(50 - \frac{1}{2} p_1)$

AND  $\tilde{\pi}_2(p_1) = (p_1 - 40)(\frac{1}{2})(50 - \frac{1}{2} p_1)$ .



# REACTION FUNCTIONS & DYNAMICS:

DISCONTINUOUS

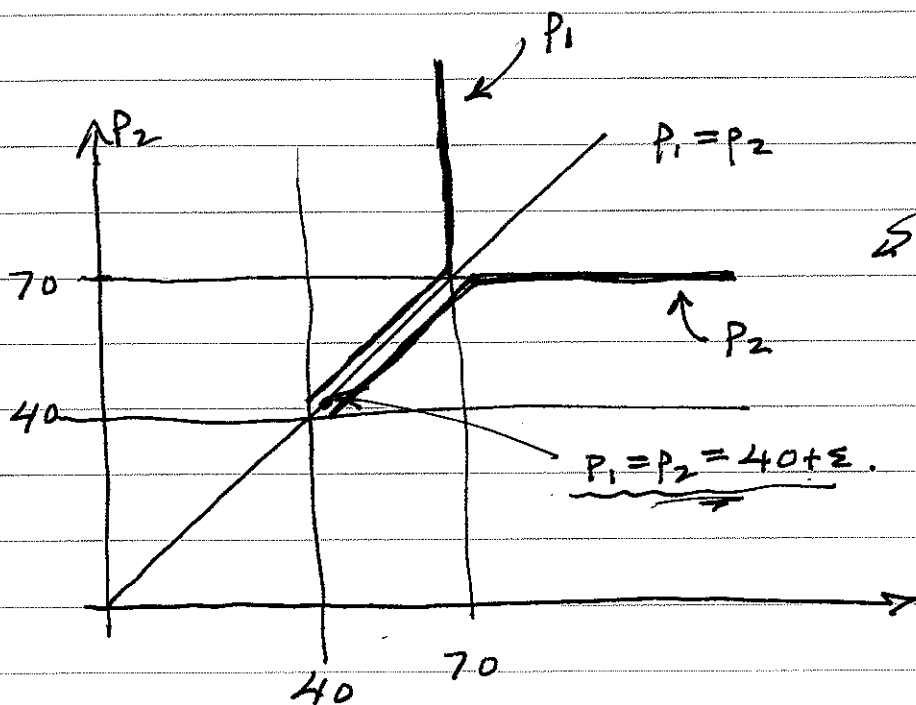
(LET  $\epsilon$  BE SMALLEST PRICE INCREMENT)

IF  $40 + \epsilon < p_2 \leq 70 + \epsilon$ :  $p_1 = p_2 - \epsilon$ .

IF  $p_2 = 40 + \epsilon$ :  $p_1 = p_2 = 40 + \epsilon$ .

IF  $p_2 \leq 40$ :  $p_1 = 40$  OR  $p_1 > 40$  AND  $q_1 = 0$ .

IF  $p_2 > 70 + \epsilon$ :  $p_1 = 70$ .



CURVES NOT DRAWN FOR  $p_1, p_2 < 40$ .

$p_1 = p_2 = 40 + \epsilon$

EACH FIRM UNDERCUTS THE OTHER'S PRICE

UNTIL THEY GET TO  $p_1 = p_2 = 40 + \epsilon = \underline{\underline{MC + \epsilon}}$ .