3.8-9 Production and Pricing

Saturday, January 30, 2021 11:48 AM

Timeline

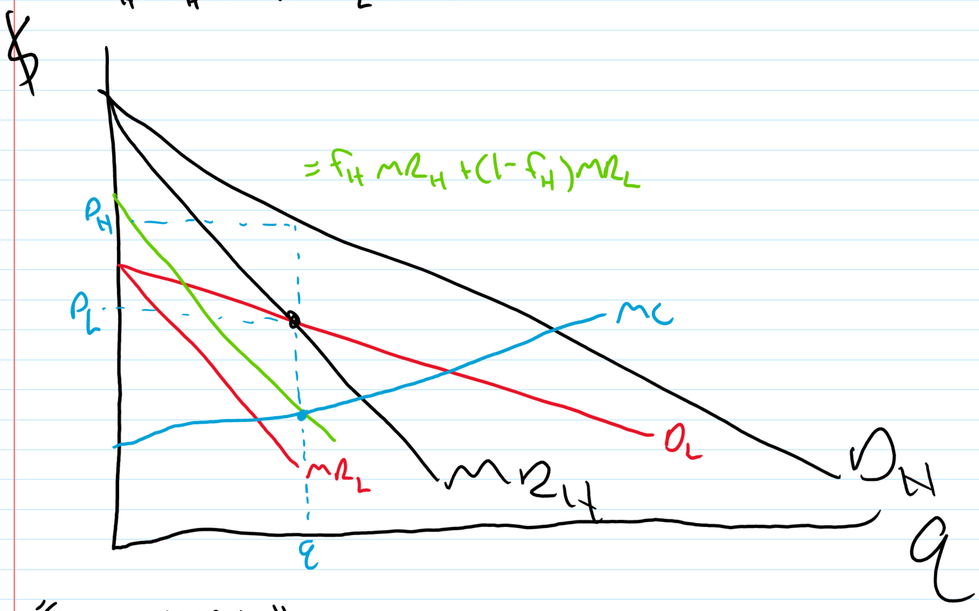
$P_r(H)$ = probability of high demand
$P_r(L)$ = Prob of Low demand

q_H p_H q_L p_L

$E(\pi) = P_r(H)\, p_H(q)\, q + (1 - P_r(H))\, p_L(q)\, q - C(q)$

$\frac{d\pi}{dq} = f_H MR_H + (1 - f_H) MR_L - MC = 0$

$f_H MR_H + (1 - f) MR_L = MC$



"free disposal"

$E(\pi) = P_r(H)\, p_H(q_H)\, q_H + P_r(L)\, p_L(q_L)\, q_L$

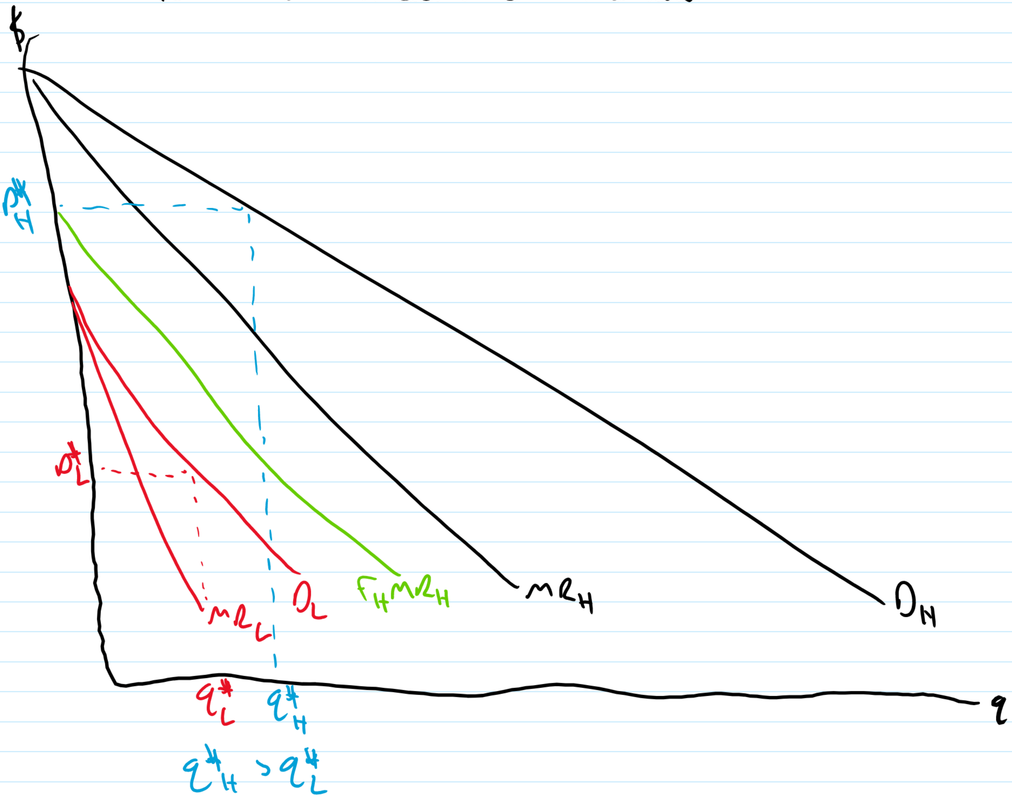
s.t. $q_H \le q$ $\quad q_H = q$
$q_L \le q$

$\max_{s.t.\ q_H \ge q_L} E(\pi) = P_r(H)\, p_H(q_H) + P_r(L)\, p_L(q_L) - C(q_H)$

$\frac{dE(\pi)}{dq_H} = P_r(H) \cdot MR_H - MC = 0$

$\frac{dE(\pi)}{dq_L} = MR_L = 0$

Plan to max R if demand is too low



$q_H^* > q_L^*$

If $q_H^* < q_L^*$, nonsense constraint violated!
Go back to $q_H = q_L = q$