

13. Correct. The answer is true. First order conditions are  $F = MR - MC - t_{\pi}(MR - MC + dOC/dQ) = 0$ . Solving we get  $MR - MC = t_{\pi}(dOC/dQ)/(1-t_{\pi})$ . We would expect  $dOC/dQ > 0$ , thus  $MR-MC$  is positive unless  $t_{\pi} > 1$ . Second order conditions require that  $F_Q < 0$ . Using the implicit function theorem we get that  $dQ/dt_{\pi} = -F_{t_{\pi}}/F_Q$ .  $F_Q < 0$  from the second order conditions  $F_{t_{\pi}} = -(MR - MC + dOC/dQ)$ . Since  $MR-MC$  is positive and  $dOC/dQ > 0$  then  $dQ/dt_{\pi} = -(-)/(-) < 0$  or raising a tax on accounting profits lowers output. In this case a tax of less than 100% would drive a producer out of business. Or  $TR - TC - t_{\pi}(TR - TC + OC) < 0$  when  $t_{\pi} > (TR - TC)/(TR - TC + OC)$