

The problem of the commons, from Mas-Colell, Whiston and Green, Microeconomic Theory (1995), chapter 11.

Lake Ec can be freely accessed by fishermen. The cost of sending a boat out on the lake is $r > 0$. When b boats are sent out onto the lake, $f(b)$ fish are caught in total [so each boat catches $f(b)/b$ fish], where $f'(b) > 0$ and $f''(b) < 0$ at all $b \geq 0$. The price of the fish is $p > 0$, which is unaffected by the level of the catch from Lake Ec.

- (a) Characterize the equilibrium number of boats that are sent out on the Lake Ec.
- (b) Characterize the optimal number of boats that should be sent out on the lake. Compare this with your answer in (a).
- (c) What per boat tax would restore efficiency?
- (d) Suppose that the boat instead is owned by a single individual who also can choose how many boats to send out. What level would this owner choose?