

Problem 1:

Consider the market for a good subject to congestion such as fishing. Assume that there are a large number of potential places to fish (indexed by j). The number of fish caught per fisherman is $F_j(N_j)$, where N_j is the number of fisherman that fish at location j . You can assume that $F_j(N_j)$ is decreasing in N_j . Assume that all fishing locations are owned by the government and that the government sets a flat fee of C to fish at any location. Assume that there are a fixed number of fisherman, N , and that each fisherman can choose to fish at any location.

- A. What will determine the allocation of fisherman across locations? How will the allocation of fisherman across locations vary with the price of fish and the fee charged by the government?
- B. Assume that the aggregate demand for fish is given by $Q = D(P)$, where P is the price of fish. How will the price and quantity of fish be determined in equilibrium?
- C. How will the quantity of fish caught vary with the fee charged by the government and the demand for fish?
- D. Now assume that fees are not the same in each location so that the government charges different fees based in part on “how good the fishing is at each location.” What will the equilibrium look like now? Will the “good” spots yield more fish? Why?
- E. How will an increase in the demand for fish affect the price and quantity of fish now? Could the quantity supplied fall as the demand for fish increases? Why or why not?
- F. Now assume that one of the locations is privatized so that a firm can set its fee to maximize profits. Will the private firm choose to set its fee higher or lower than the government fee (compare the case where the government sets a common fee versus location specific fees)? Why? How would your answer change if the number of fisherman were elastically supplied at a fixed wage rather than fixed at N ?
- G. Now assume that all locations are privatized to different firms in order to generate a competitive market. How will the fees, the distribution of fisherman across locations and the price of fish be determined now? When would the market yield the same fee for all locations? Why?