

ECON 0100 | Part D

Vignette D1

Q1 (1 of 3) | Shrake Fishery

The Shrake is a powerfully magical fish with significant interest as a potent ingredient in potions. Since their spines easily damage fishing nets, only two massive cooperative firms (confidentially called Firm A and Firm B) remain in the market after independently developing highly secretive technology for harvesting Shrake. Both firms have the ability to harvest vast quantities of Shrake but can make substantial profit even with low harvests. At low capacities (L) the fishery could support both firms, but at high capacities (H) overfishing would lead to population collapse in future years. Following these two fishing strategies, the lifetime profits (in Galleons) for the are summarized by the following payoff matrix.

		Firm B		
		L	H	
Firm A	L	10, 6	2, 10	(1)
	H	18, 1	3, 3	

- A. What is Firm A's best response?
- B. What is Firm B's best response?
- C. Find all Nash Equilibrium.
- D. Find the socially efficient strategies.

Q2 (2 of 3) | Shrake Fishery

Fearing a total collapse of the Shrake fishery, the Ministry of Magic hired Remus Lupin to develop a policy solution to the looming issue. Remus offered a few proposals but the policy chosen by the Ministry was to distribute a fishing permit to both Firm A and Firm B to harvest at low capacity (L) each season. This would lead to a sustainable population of Shrake into future seasons. Since there are only two firms supplying Shrake, the market is highly visible to regulators making the permits very enforceable. Any firm in violation, choosing a high capacity (H), would be required to pay a fine equal to half their seasonal profit. The following matrix summarizes the two firms' lifetime profits after the enforceable permits.

		Firm B		
		L	H	
Firm A	L	10, 6	2, 5	(2)
	H	9, 0.5	1.5, 1.5	

- A. What is Firm A's best response?
- B. What is Firm B's best response?

- C. Find all Nash Equilibrium.
- D. Find the socially efficient strategies.

Q3 (of 3) | Study Room Dynamics

Students in Ravenclaw and Hufflepuff share a secondary study room, which is open to all students from both houses at all hours. Every year the heads of house from both houses organize the sharing of cleaning duties. Cleaning improves the quality of the study room for members of both houses, but the chore is inconvenient. If both houses clean, the study room is a fantastic resource. But cleaning takes precious time away from studying, so neither house prefers doing it. The following matrix represents the benefits of each possible strategy combination.

		Hufflepuff		(3)
		Clean	Don't Clean	
Ravenclaw	Clean	10, 10	6, 12	
	Don't Clean	12, 6	8, 8	

- A. What is Ravenclaw’s best response?
- B. What is Hufflepuff’s best response?
- C. Find all Nash Equilibrium.
- D. Find the socially efficient strategies.