

STRATEGIC THINKING

Problem Set 2

Note: To be handed in by Groups: 1, 3, 7, 9, 14, 16, 18

1. **Lucy and Charlie.** Charlie Brown meets Lucy after school.
L: “Hi, Charlie Brown. Who do you think will win the State of Origin match? I’ll bet you two dollars that New South Wales beats Queensland.”
C: “Aaaagh!!”
L: “What’s the matter, Charlie Brown? All right, I’ll bet two dollars on Queensland and *you* bet on New South Wales.”
C: “Good grief! I’m from Melbourne: I don’t know anything about rugby, and I think I’m being tricked. I’d rather bet the two dollars on the toss of a coin and buy you an ice-cream cone for sure besides.”

Demonstrate that Charlie Brown is not acting logically, assuming he does not like buying Lucy ice-cream cones.

2. **A Three-Way Battle.** There are three television stations in an American city, each affiliated with one of the three major networks, ABC, CBS, and NBC. All three stations have the option of running the evening network news program at either 6:30 pm (a “live feed”) or at 7:00 pm (a “taped delayed broadcast”). Among network news viewers, 60% prefer to watch the news at 6:30 pm, and 40% prefer to watch it at 7:00 pm because of competition at 6:30 pm with “The Simpsons” on an independent station. Moreover, head-to-head, ABC’s news program is the most popular, CBS’s is the next most popular, and NBC’s is the least popular. The share of evening news viewers captured by each station as a function of when the station shows its news in this simultaneous-play interaction is given in the Table. Each station’s objective is to maximise its share of the viewing audience, because that determines the station’s advertising revenue.
 - a. What is the definition of a dominated strategy?

- b. Find all the dominated strategies. Explain.
- c. Eliminate the dominated strategies found in part (b) and find all the Nash equilibria in pure strategies of the simplified game. Explain. (Payoffs below: (ABC, CBS, NBC).)

| | | | |
|---------------------------|---------|-----------------|-----------------|
| ABC News @ 6:30 pm | | C B S N e w s | |
| | | 6:30 pm | 7:00 pm |
| NBC News | 6:30 pm | (42%, 34%, 24%) | (37%, 40%, 23%) |
| | 7:00 pm | (34%, 26%, 40%) | (60%, 22%, 18%) |
| ABC News @ 7:00 pm | | C B S N e w s | |
| | | 6:30 pm | 7:00 pm |
| NBC News | 6:30 pm | (40%, 34%, 26%) | (34%, 26%, 40%) |
| | 7:00 pm | (24%, 60%, 16%) | (42%, 34%, 24%) |

3. **The Two Hauliers.** The players are the presidents of two competing trucking companies. They can choose to send their trucks along normal routes or unusual routes. The unusual routes are winding, mountainous roads that cut down on travel time if there is little traffic. They are very unprofitable, however, if other trucking firms begin to use them. Normal routes entail less risk and typically lead to moderate financial returns.

The profits for the two firms, in hundreds of thousands of dollars, are shown below:

| R o u t e | | P r o f i t | |
|-----------|------------|-------------|------------|
| You | Other Firm | You | Other Firm |
| normal | normal | 2 | 2 |
| risky | normal | 6 | -1 |
| normal | risky | -1 | 6 |
| risky | risky | -4 | -4 |

You are both aware of the risky and normal routes. You both know too that you both know them. You cannot collude with each other, since that's illegal. Each period you find out soon after you've chosen (irreversibly) which route the other firm has taken.

- a. Draw up the 2×2 payoff matrix for this simultaneous interaction.
- b. Describe the nature of this interaction, as a once-off. Is the equilibrium efficient? Explain.
- c. In your designated group, split into two teams and play repeatedly, after one practice round. Describe (briefly) what happened.