

ASSIGNMENT 2 (9 points)

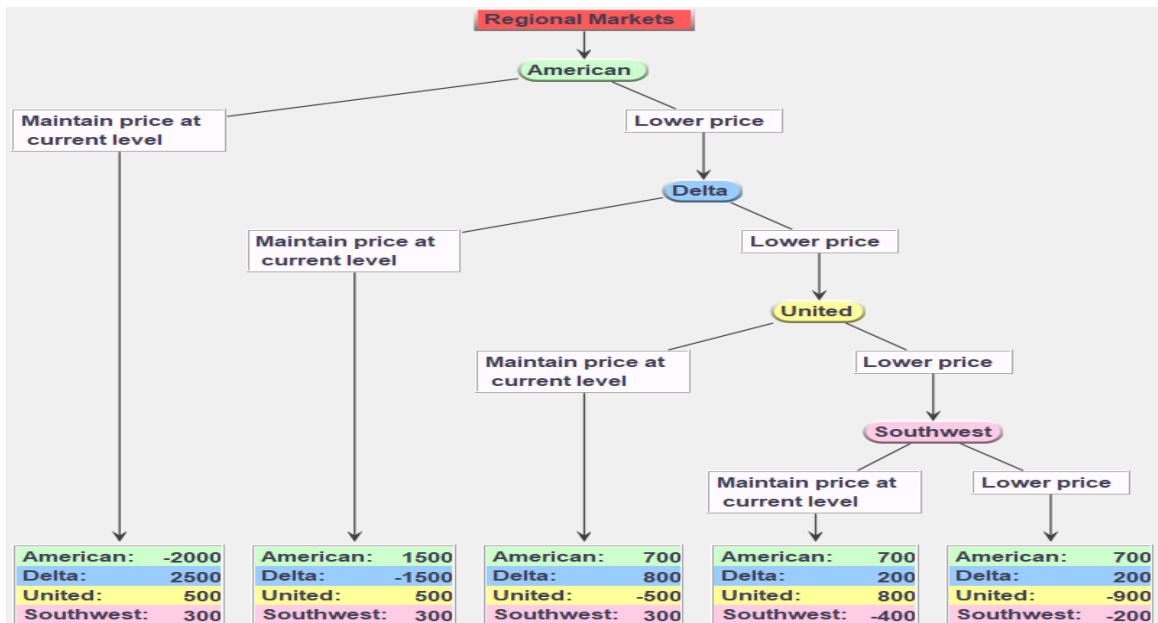
(Due Sunday November 2. One point per day will be deducted for each day late.)

There are three multipart questions and three experiments.

Question 1 (3 points) . . . regional markets

A prominent feature of geographically based markets, such as personal services, retailing, distribution, and travel is that the regional markets overlap. Thus, competition in one market can spill over into the next, creating a cascading effect. Perhaps nowhere is this more evident than in the airline industry. In this example, American competes with Delta, Delta also competes with United, United competes with Delta, and Southwest, while Southwest only competes with United. Thus the payoff to Southwest is unaffected by rivalry between American and Delta.

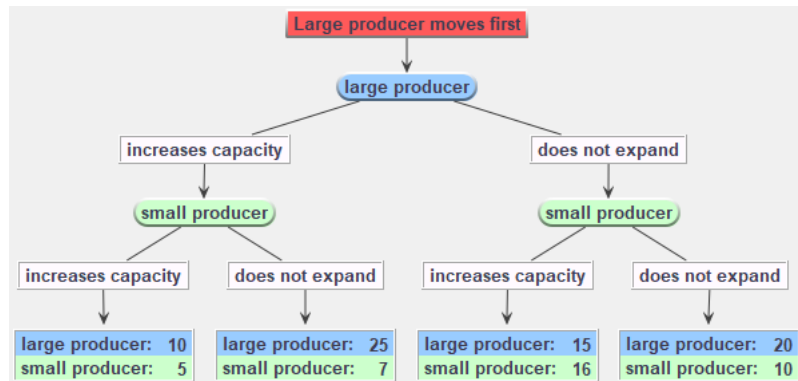
- (a) Explain why the best response of American does not depend on what any of the airlines do next. American has a dominant strategy. What is it?
- (b) Explain why Delta also has a dominant strategy. What is it?
- (c) Does United have a dominant strategy? In other words does the best move by United depend on what Southwest will do?
- (d) What will Southwest do if it has an opportunity to move?
- (e) What should United do?



Question 2 (3 points) . . . *first mover advantage*

Who enters a new market first might make a difference. In the following two panels we investigate a “new market” entry game between two producers, each of whom has the option of increasing their capacity to enter a new market. We see how the producer taking the initiative can benefit quite a lot, at the expense of the laggard.

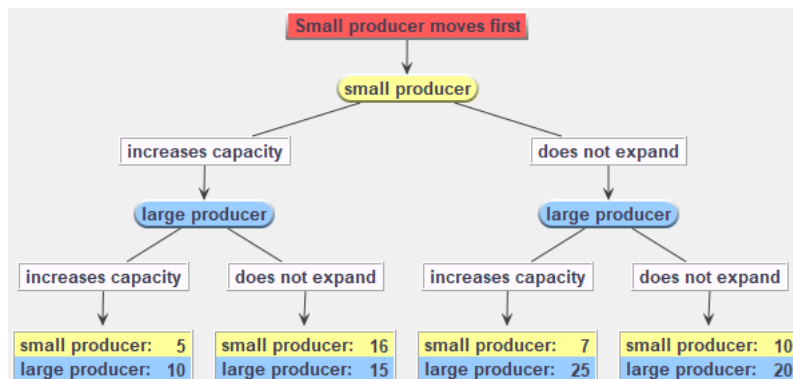
Diagram A



In *Diagram A*, the large producer moves first, perhaps because it commits earlier, and requires a longer start up time:

- Play this game within your **experimental group** four or more times and report a snapshot of the outcomes. (We do not grade your performance.)
- What is the empirical distribution and what is the best response to the empirical distribution?
- Solve the game depicted in *Diagram A* and predict which firm or firm will enter the new market (that is increase capacity).

Diagram B



In *Diagram B*, the small firm makes the first move, perhaps because it is more flexible.

- (a) Redraw the extensive form as shown above (to reverse the order of who moves first) and play this game within your **experimental group** four or more times and report a snapshot of the outcomes. (We do not grade your performance.)
- (b) What is the empirical distribution and what is the best response to the empirical distribution?
- (c) Solve the game depicted in *Diagram B* to predict which firm or firms enter.

Question 3 (3 points) . . . *simultaneous decision making by rivals?*

With reference to the question above, now suppose the payoffs are the same, but that both firms move without knowing what the other firm has done. That is each player makes a move as if it were simultaneous. This is called a simultaneous move game, and the moves in the extensive form correspond exactly to the strategies in the strategic form:

- (a) How is the simultaneity represented in the extensive form, in a game tree? Design the game in extensive form using comlabgames and paste the tree into your answer sheet. Does it matter which player is at the top of the tree in this case?
- (b) How is the simultaneity represented in the strategic form, in a bi-matrix game? Design the game in strategic form using comlabgames and paste the bi-matrix into your answer sheet.
- (c) Play one or the other representation you coded in (a) or (b) within your **experimental group** four (or more) times and report the results using a snapshot.
- (d) What is the empirical distribution of your group, and what is the best reply to the empirical distribution?
- (e) Compare the payoffs achieved by both firms in the empirical distribution when the moves are simultaneous, versus your prediction about what would happen if the firms moved in a “more orderly” way.
- (f) Using best response arrows in the bi-matrix game representation, display the NE. What is it, or what are they? (Hint: there might be more than one, so we need to think about that later in the course.)