

PROJECT PART A

Summary

This project is worth 40 percent of your final grade. You should form groups of preferably three but up to four (where all students will be awarded the same grade), but no more than four in a group is permitted. You will be graded on the relevance and applicability of your problem to business (such as whether the questions you pose are interesting to businesspeople, and why your experiments might shed light on them) as well as the analysis itself. If they are too easy or too hard nobody learns anything from them.

Part A is due Friday December 5.

Part A (15 percent): Motivation and Game

Part A comprises the motivation, game, and report from the preliminary trials. It essentially consists of a short paper organized around the following points:

1. Provide a motivating introduction for the problem you wish to study. It should be a business issue in accounting, marketing, finance, industrial organization, or labor relations, but not sports or politics. You should explain and justify who are the main players, what they can do, how much do they know when their choices are made, what extraneous factors come into play, and what the important consequences of their choices and the extraneous factors.
2. Show how to represent the problem as an extensive form game. Clearly specify the players, the game tree (as dictated by the actions of the different players and nature), the payoffs at each of the terminal nodes, and the information sets. Your discussion of the payoffs in the terminal nodes of your game should be related back to the important consequences you described in the first part. They might include a short discussion of the discounted future costs and revenues, the probability of success, estimated market shares and so on. Once you have done the calculations you should transform the payoff to a number so that your colleagues will not spend too much time with calculations. Just show how you obtain the transformation in the report writeup.
3. Write down or define the strategy space for each player (the list of possible strategies for each player) in your game. If the game involves four players or less, write down a matrix representation of the normal form (up to two column and row players) for those parts of the game that cannot be solved by the first rule (backwards induction). If this is a two or three player game, are there any dominant or dominated strategies in your matrix? Are there any strategies that can be removed using the principle of

iterated dominance? What are the set of Nash equilibriums for the reduced game in this case? Are they mixed or pure strategy equilibrium?

4. Use the methods we have developed in classes for folding back the perfect information parts of the game (where each information set consists of just one node) and solving the strategic parts of the game (where information sets have two or more nodes in them) to solve the game. Explain using diagrams that illustrate how your game is reduced as you work back up the tree to reach the solution.
5. Play through several rounds of your game within your group, and briefly report the results, to prove that your game works, makes sense, and that your group will learn something when trying it out on the whole class. Treat this exercise as a trial run that fully prepares you for the real thing. Report the results in this paper.
6. *Please separately submit the game file to Pei, the TA, so that she can also confirm your game works flawlessly.*