

EconS 424- Strategy and Game Theory

Homework #3 - Due date: Friday, March 26th.

1. Consider the following matrix based on the movie "Friday the 13th!"

		<i>Beth</i>				<i>Beth</i>	
		<i>Front</i>	<i>Back</i>			<i>Front</i>	<i>Back</i>
<i>Tommy</i>	<i>Front</i>	-1, -1, 2	-1, 1, 1	<i>Tommy</i>	<i>Front</i>	2, 2, 0	1, -1, 1
	<i>Back</i>	1, -1, 1	2, 2, 0		<i>Back</i>	-1, 1, 2	-1, -1, 2
		<i>Jason</i>				<i>Jason</i>	
		<i>(Front)</i>				<i>(Back)</i>	

- (a) Is there any strictly dominated strategy for Jason? And for Tommy?
 - (b) Can you find any pure strategy Nash Equilibrium (psNE) in this game?
 - (c) Find the mixed strategy Nash Equilibrium (msNE) of the game.
 - (d) Represent this game in its extensive form (game tree), where Tommy acts first, Beth acts second and Jason acts third.
2. Consider the game tree in Figure 1 representing the sequential -move version of the Chicken game, where player 1 acts first, and observing its move player 2 responds.
- (a) Find the best responses of the second mover, for each of the first mover's actions.
 - (b) Find the first mover's equilibrium action and describe the subgame perfect Nash equilibrium of the game.
 - (c) Does the equilibrium behavior in the sequential-move game differ from its simultaneous-move version?

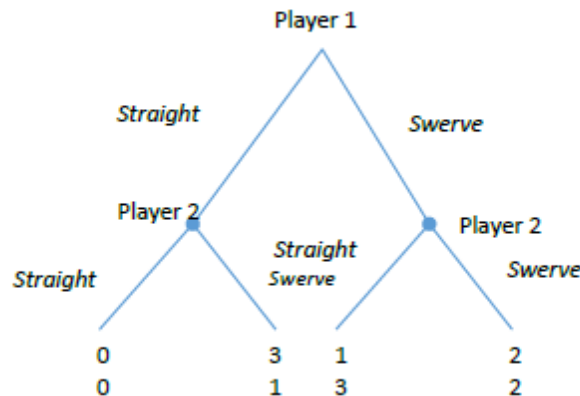


Figure 1

3. Consider the game tree in Figure 2, describing a sequential-move game played between two political parties. The Red party acts first choosing an advertising level. The Blue party acts after observing Red party's advertising level (Low, Middle or High) and responds with its own advertising level. Find the SPNE of the game.

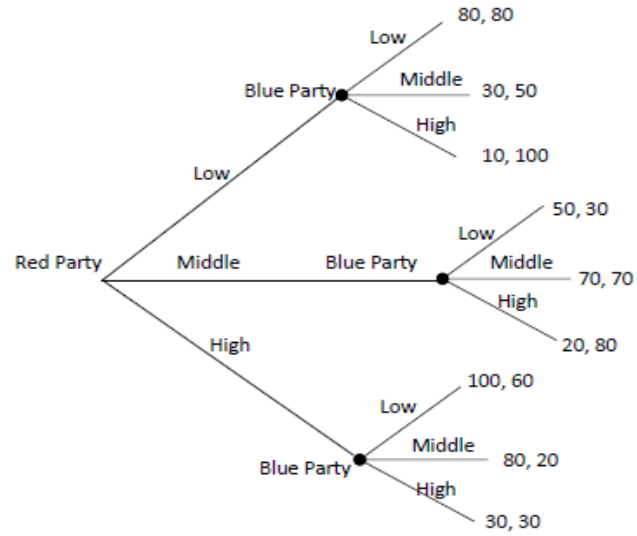


Figure 2