Information Economics, Fall 2014
Homework 4

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Note. DO NOT submit this homework. This problems are only for you to practice by yourselves. Doing these problems definitely help you understand course materials more and increase your chance for getting good grades in exams. The solution will be provided on December 26, 2014. Of course, you are more than welcome to discuss these problems with the instructor or TA.

1. Consider the signaling game illustrated in Figure 1. First of all, player F's type $t \in \{H, L\}$ is drawn randomly, where $\Pr(t_1) = \Pr(t_2) = \frac{1}{2}$. Then player F selects between actions L and R. Then player C selects between actions B and N without observing player F's type.

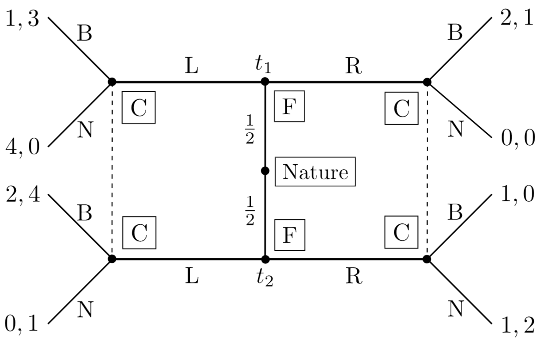

Figure 1: A signaling game

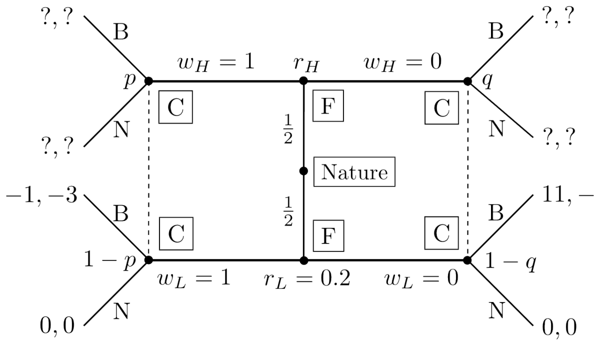

Figure 2: A signaling game

   (a) What do the two dashed lines represent?

   (b) Is there a pooling equilibrium in which both types of player F play L?

   (c) Is there a pooling equilibrium in which both types of player F play R?

   (d) Is there a separating equilibrium in which type t_1 plays L and type t_2 plays R?

   (e) Is there a separating equilibrium in which type t_1 plays R and type t_2 plays L?

   (f) Completely write down all the pure-strategy equilibria of this game. Please do not forget that an equilibrium include each player's strategy and the posterior belief.

2. Consider the signaling game illustrated in Figure 2, which is similar to the one we studied in the videos. The only difference is that now r_H may vary within $[0.2, 1]$. Note that as r_H becomes different, the firm's and consumer's payoffs must be recalculated from the original parameters ($\theta = 20$, $\eta = 5$, $t = 11$, and $k = 15$) as functions of r_H.

   (a) For what values of r_H there is a separating equilibrium in which the reliable firm offers a warranty and the unreliable one does not? What may be the consumer strategy in this separating equilibrium?

   (b) For what values of r_H there is a separating equilibrium in which the unreliable firm offers a warranty and the reliable one does not? What may be the consumer strategy in this separating equilibrium?