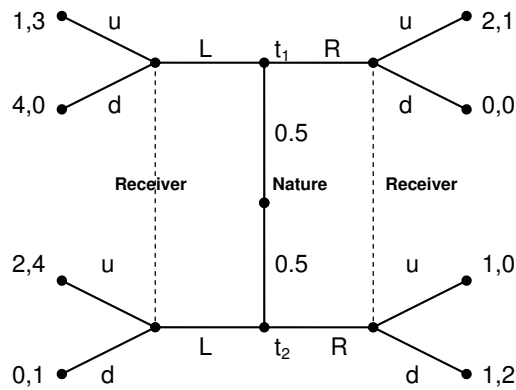
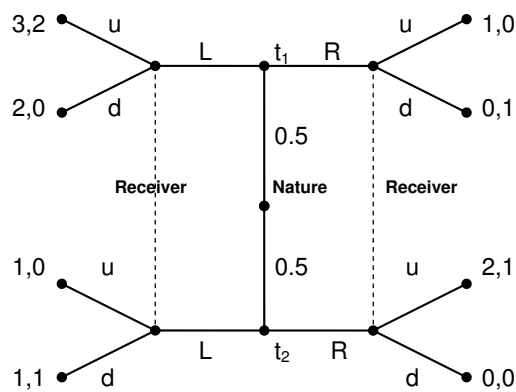


6 Signaling games

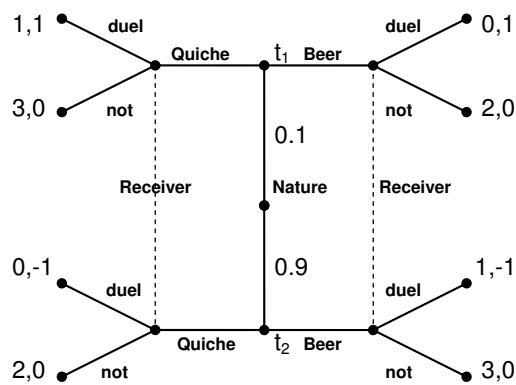
6.1. Find all perfect Bayesian equilibria for the following signaling game.



6.2. Consider the following signaling game. Show that there is a pooling equilibrium where the Sender always plays L. Discuss the plausibility of this equilibrium; in particular, comment on the beliefs sustaining the equilibrium.



6.3. Consider the Beer-Quiche signaling game below.



- (a) Show there are no separating equilibria. Show there are two pooling equilibria in Beer and Quiche respectively. Find the corresponding equilibrium beliefs.
- (b) In the pooling equilibrium with Quiche, what is the payoff to each of the Sender's types? What is the maximum payoff that each type could attain by sending the message Beer? Compare this to the beliefs sustaining the equilibrium. Comment.

6.4. Consider again the job market signaling model discussed in class for the *envy case*, where the low-productivity type prefers the contract offered to the high-productivity type in a complete information setup.

- (a) Argue why it does not seem plausible to believe that the low-productivity type will choose $e > e_s$ with e_s such that

$$y(L, e^*(L)) - c(L, e^*(L)) = y(H, e_s) - c(L, e_s).$$

- (b) Let \hat{e} be any education level such that $\hat{e} > e_s$. Would we expect the high-productivity type to choose \hat{e} in a separating equilibrium? *Hint:* What kind of beliefs are needed to have the high-productivity type choose \hat{e} in a separating equilibrium? Compare to the previous question.
- (c) Consider the pooling equilibrium with education level e_p discussed in class and assume that the probability of high-productivity worker is sufficiently high so that the utility of a high-productivity worker in the pooling equilibrium is higher than her utility in a separating equilibrium with education level $e(H) = e_s$. Define e' and e'' as the education levels such that

$$\begin{aligned} y(H, e') - c(L, e') &= y(w_p, e_p) - c(L, e_p) \\ y(H, e'') - c(H, e'') &= y(w_p, e_p) - c(H, e_p) \end{aligned}$$

What kind of off-equilibrium beliefs do we need about e such that $e' < e < e''$ to sustain the pooling equilibrium? If an education level e such that $e' < e < e''$ is observed, how would you expect the market to interpret e ? What kind of beliefs seem more plausible? In what respect is the kind of argument used here to rule out that the low-productivity type sends $e > e'$ different from the argument used to rule out $e > e_s$ before?