

Signaling

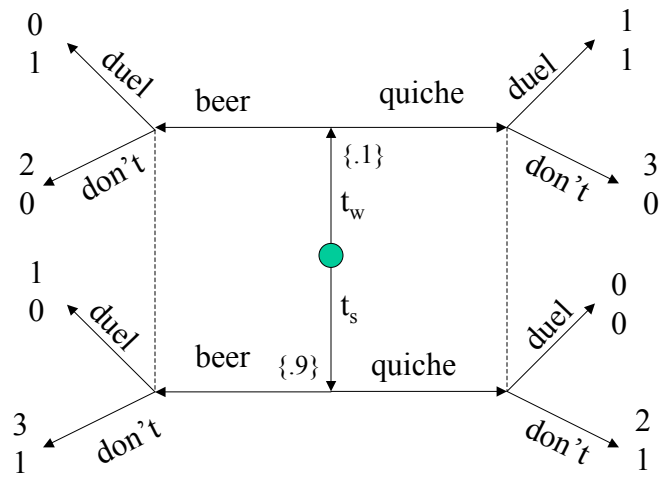
14.12 Game Theory

Road map

1. Signaling games – review
 1. Pooling equilibrium
 2. Separating equilibrium
 3. Mixed
2. Job-market signaling (short, time permitting)
3. Review
4. Evaluations

Signaling Games

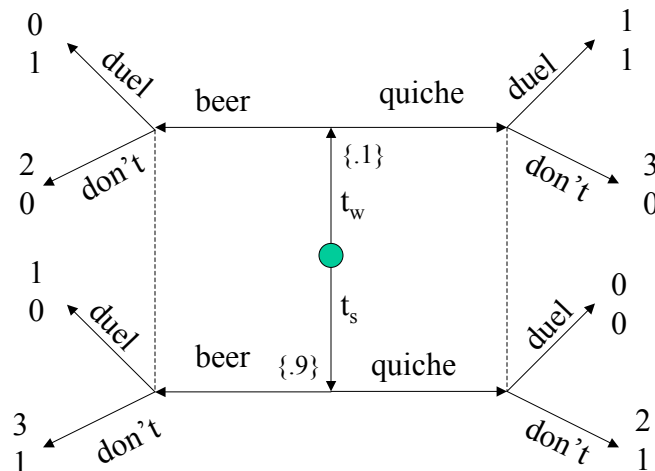
Beer – Quiche



Signaling Game -- Definition

- Two Players: (S)ender, (R)eceiver
- Nature selects a type t_i from $T = \{t_1, \dots, t_I\}$ with probability $p(t_i)$;
 - Sender observes t_i , and then chooses a message m_j from $M = \{m_1, \dots, m_I\}$;
 - Receiver observes m_j (but not t_i), and then chooses an action a_k from $A = \{a_1, \dots, a_K\}$;
 - Payoffs are $U_S(t_i, m_j, a_k)$ and $U_R(t_i, m_j, a_k)$.

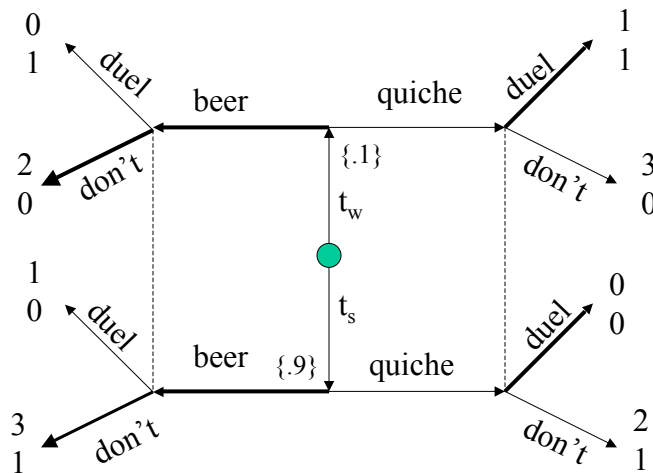
Beer – Quiche



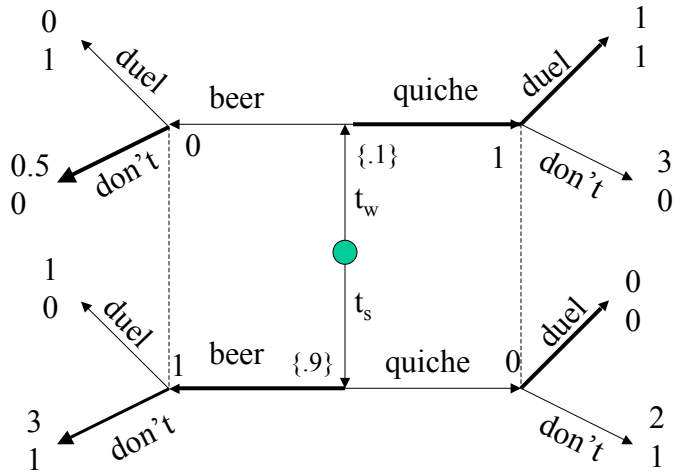
Types of Equilibria

- A **pooling equilibrium** is an equilibrium in which all types of sender send the same message.
- A **separating equilibrium** is an equilibrium in which all types of sender send different messages.
- A **partially separating/pooling equilibrium** is an equilibrium in which some types of sender send the same message, while some others sends some other messages.

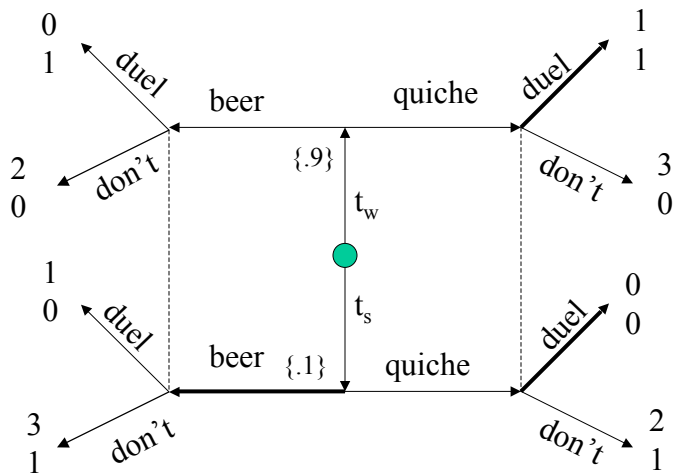
A Pooling equilibrium



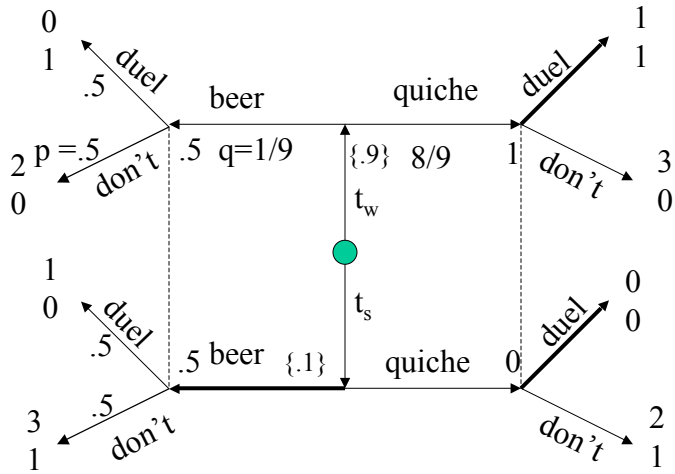
A Separating equilibrium



A Mixed equilibrium



A Mixed equilibrium



Job Market Signaling

Model

- A worker
 - with ability $t = H$ or $t = L$ (his private information)
 - $\Pr(t = H) = q$,
 - obtains an observable education level e ,
 - incurring cost $c(t,e)$ where $c(H,e) < c(L,e)$, and
 - finds a job with wage $w(e)$, where he
 - produces $y(t,e)$.
- Firms compete for the worker: in equilibrium,
 $w(e) = \mu(H|e)y(H,e) + (1 - \mu(H|e))y(L,e)$.

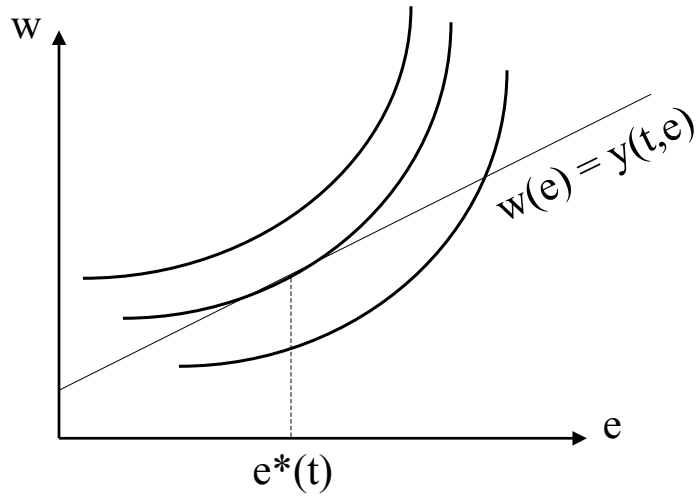
Equilibrium

$(e_H, e_L, w(e), \mu(H|e))$ where

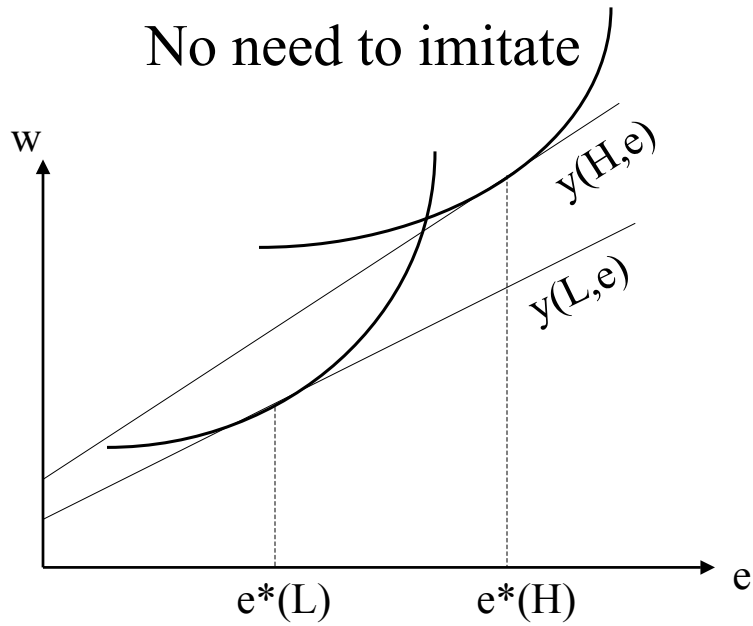
- $e_t = \operatorname{argmax}_e w(e) - c(t,e)$ for each t ;
- $w(e) = \mu(H|e)y(H,e) + (1 - \mu(H|e))y(L,e)$;
$$q\Pr(e_H = e)$$
- $$\mu(H|e) = \frac{q\Pr(e_H = e)}{q\Pr(e_H = e) + (1-q)\Pr(e_L = e)}$$

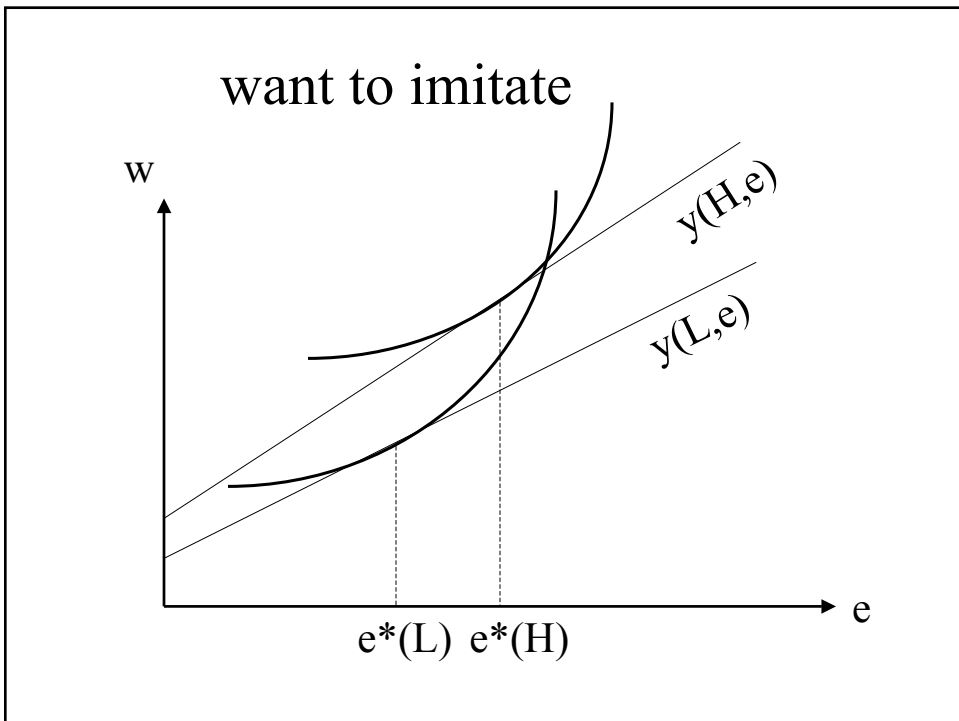
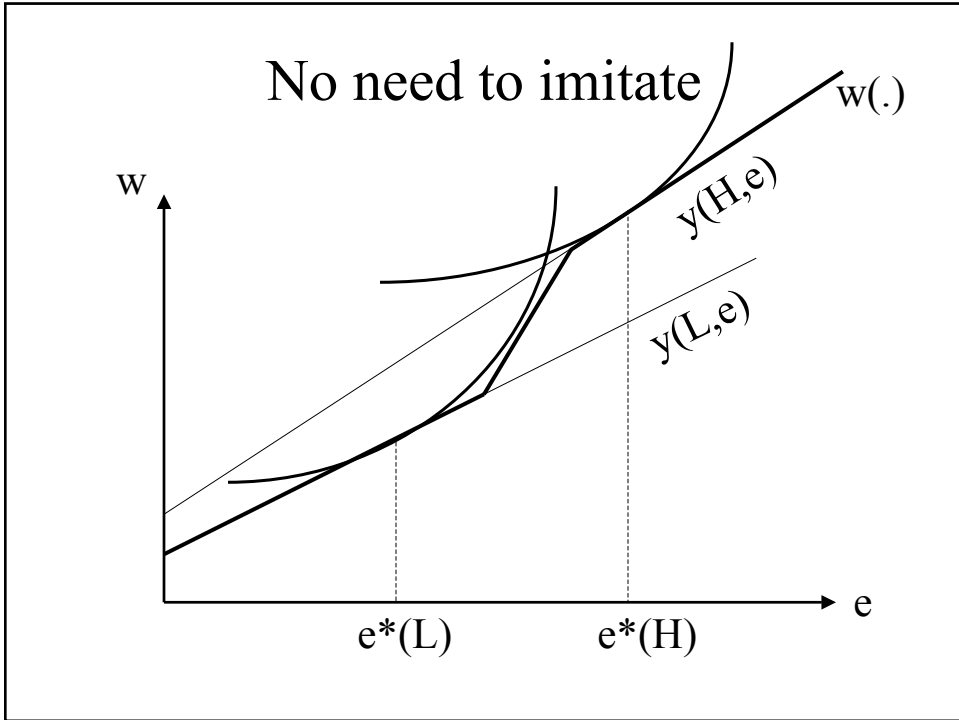
whenever well-defined.

If t were common knowledge

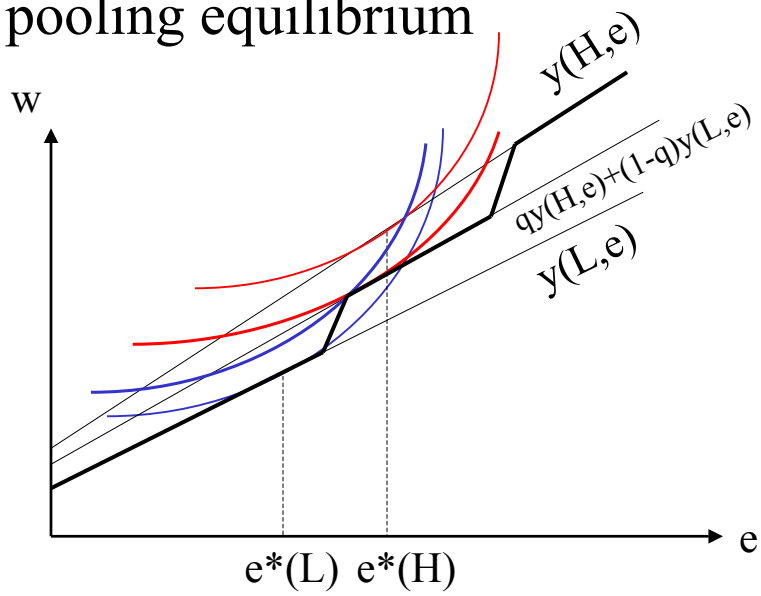


No need to imitate

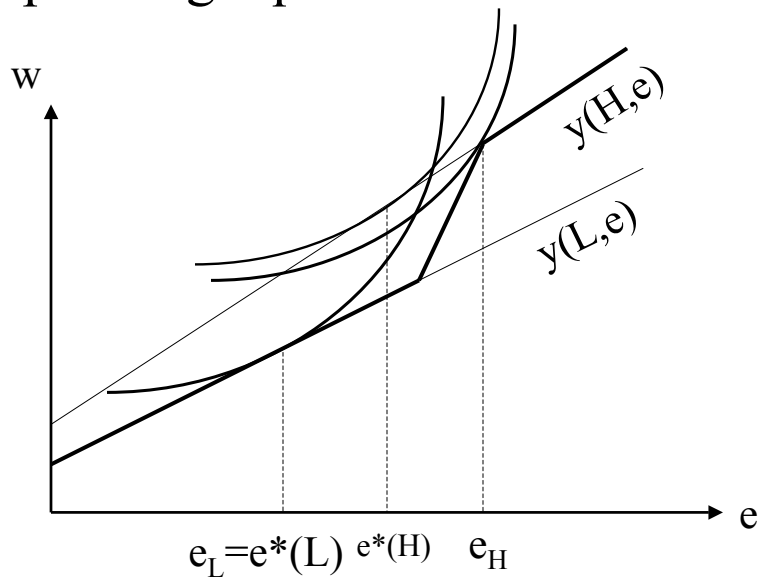




A pooling equilibrium



A separating equilibrium



An intuitive separating equilibrium

