

SE and Learning

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Stackelberg Equilibrium

- Asymmetric players - the leader (1) and the follower (2)
- The leader commits to a strategy
- The follower observes the strategy and plays a best response to it
- Strong Stackelberg equilibrium

$$\arg \max_{m_1 \in \mathcal{M}_1} \max_{s_2 \in BR(m_1)} u_1(m_1, s_2) \quad (1)$$

Example

	C	D
A	2, 1	4, 0
B	1, 0	3, 1

- $$R_i^T = \max_{m'_i \in \mathcal{M}_i} \sum_{t=1}^T (u_i(m'_i, m_{-i}^t) - u_i(m_i^t, m_{-i}^t))$$

- $$r_i^t(s_i) = u_i(s_i, m_{-i}^t) - u_i(m_i^t, m_{-i}^t)$$

- $$R_i^{T,+}(s_i) = \max(0, \sum_{t=1}^T r_i^t(s_i))$$

- $$m_i^{T+1}(s_i) = \frac{R_i^{T,+}(s_1)}{\sum_{s'_1 \in \mathcal{S}_1} R_i^{T,+}(s_1)}$$