$$S = \{W, L\} \qquad x = (x, 1-x)$$

$$\begin{cases} u(W, x) = 1 + 2x \\ u(L, x) = 2 + 2(1-x) \end{cases} \quad \text{"L"}$$

3 potential ESS:

- $\sigma_W = (1, 0)$
- $\sigma_L = (0, 1)$
- $\sigma_M = (x, 1-x) = \left(\frac{3}{4}, \frac{1}{4}\right)$

$$\to \sigma^* \rightsquigarrow x \xrightarrow[\text{nudge}]{} x_\varepsilon$$

$$u(\sigma^*, x_\varepsilon) > u(\sigma, x_\varepsilon) \, ?$$

$$\sigma^* = (\mu^*, 1-\mu^*)$$

$$\sigma = (\mu, 1-\mu)$$

$$\delta = u(\sigma^*, \tilde{\lambda}_\varepsilon) - u(\sigma, \tilde{\lambda}_\varepsilon)$$

$$(\text{if } \delta > 0 \Rightarrow \text{ESS})$$

$$\delta = \mu^* u(W, \tilde{\lambda}_\varepsilon) + (1-\mu^*) u(L, \tilde{\lambda}_\varepsilon) - \mu u(W, \tilde{\lambda}_\varepsilon) - (1-\mu) u(L, \tilde{\lambda}_\varepsilon)$$

$$\boxed{\tilde{\lambda}_\varepsilon = \sigma^* + \varepsilon(\sigma - \sigma^*) \text{ vector}}$$

$$\delta = (\mu^* - \mu)\left(u(W, \tilde{\lambda}_\varepsilon) - u(L, \tilde{\lambda}_\varepsilon)\right)$$

parts of vector

but

$$u(W, \tilde{\lambda}_\varepsilon) = 1 + 2x_\varepsilon$$
$$= 1 + 2(\mu^* + \varepsilon(\mu - \mu^*))$$

$$u(L, \tilde{\lambda}_\varepsilon) = 2 + 2(1 - x_\varepsilon)$$
$$= 2 + 2(1 - \mu^* + \varepsilon(1 - \mu - 1 + \mu^*))$$

$$\delta = (\mu^* - \mu)\left(-3 + 4\mu^* + 4\varepsilon(\mu - \mu^*)\right)$$

1: $\mu^* = 1$

$$\delta = (1 - \mu)\left(1 + 4\varepsilon(\mu - 1)\right)$$

$$\delta > 0 \quad \text{if} \quad \varepsilon < \frac{1}{4}$$

$\Rightarrow$ ESS.

2. $\mu^* = 0$

$$\delta = -\mu(-3 + 4\varepsilon)$$

$$\delta > 0 \qquad \varepsilon < \frac{3}{4}$$

$\Rightarrow$ ESS

3. $\mu^* = \frac{3}{4}$

$$\delta = \left(\frac{3}{4} - \mu\right)\left(4\varepsilon\left(\mu - \frac{3}{4}\right)\right)$$

$$\delta = \left(\frac{3}{4} - \mu\right)^2 - 4\varepsilon) < 0$$

$\Rightarrow$ Not ESS.