Agent in sector i produces if

$$R(Y_i, Y_{-i}).\,y \geq c_i$$

↳ idiosyncratic cost shock

a) Expected production in sector i

$$Y_i^E = \int_0^{c^* = R(Y_i, Y_{-i}).y} y\,f(c)\,dc$$

Symmetric eq° $\Rightarrow$ $Y_i = Y_{-i}$

So if we call Aggregate output Y_A $\Rightarrow$ $Y_i = \frac{1}{2} Y_A$
$Y_{-i} = \frac{1}{2} Y_A$

And Symmetric Nash Eq° for agg. output is given by

$$F(Y_A) = Y_A - Y_A^E = 0 \quad \therefore$$

$$F(Y_A) = Y_A - \underbrace{2\int_0^{R(\frac{1}{2}Y_A, \frac{1}{2}Y_A)y} y.f(c).\,dc}_{} \qquad (1)$$

↳ expected production in both sectors.

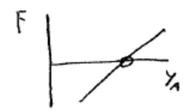
b)

$$\frac{\partial F(Y_A)}{\partial Y_A} = 1 - 2y\, f\left(R(\tfrac{1}{2}Y_A, \tfrac{1}{2}Y_A)y\right) \cdot \frac{\partial\left[R(\tfrac{1}{2}Y_A, \tfrac{1}{2}Y_A)\right]}{\partial Y}$$

$$= 1 - 2y\, f(R(\cdot,\cdot)y)\left[\frac{R_1(\cdot)}{2} + \frac{R_2(\cdot)}{2}\right]y$$

$$= 1 - 2y\, f(R(\cdot,\cdot)\cdot y)\left[\underset{(<0)}{R_1(\cdot)} + \underset{(>0)}{R_2(\cdot)}\right]y$$

if R_1 dominates R_2 $\Rightarrow$ $\dfrac{\partial F(\cdot)}{\partial Y_A} > 0$



Unique eq°

if R_2 dominates R_1 $\Rightarrow$ There may be multiple eq°

In general, complementarities coming from R_2 increase the likelihood of ME.

c) $R_1 < 0$ "strategic substitutability"
$R_2 > 0$ "strategic complementarity"

d) Co-movement among sectors along the business cycle (Long + Plosser)