

Dynamics of the Model

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Dynamics of the model.

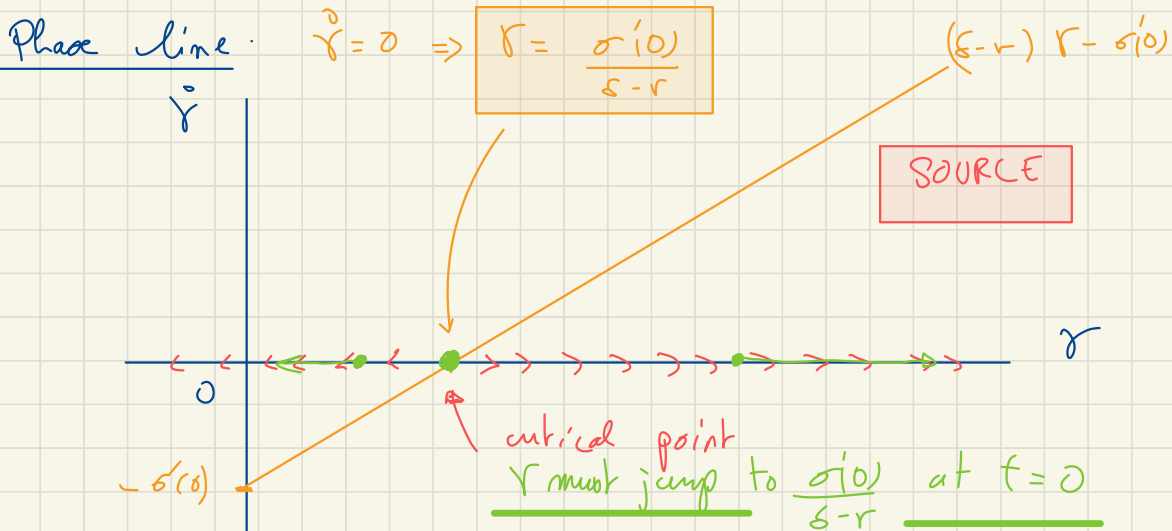
key differential equation: Euler equation describing consumption / saving over time

$$\dot{\gamma}(t) = [s - r(t)] \gamma(t) - \sigma'(w(t) - \bar{w}(t))$$

- $r(t) = r$ (inflation + nominal interest rate are fixed)
- homogeneous households \rightarrow hold same wealth
 $\rightarrow w(t) = \bar{w}(t)$

Euler equation simplifies to,

$$\dot{\gamma}(t) = (s - r) \gamma(t) - \sigma'(0)$$



r is a costate variable, determined by consumption

↳ non-pre-determined variable

(it can jump at t)

Although r, c are given by a differential equation $\rightarrow r, c$ directly jump to critical point of dynamical system at $t=0 \rightarrow$ no transition to critical point, transition is immediate.

At $t=0$, $r = \sigma'(0) / [\delta - r]$ and consumption is given by:

$$c = \left[\frac{\delta - r}{\sigma'(0)} \cdot \frac{1}{1 + \tau(\theta)} \right]^{\frac{1}{\epsilon}}$$

$$0 < c < \infty$$

↑
inertia