Showing that $s_t = \alpha\beta$ is the unique solution to the simple RBC Model w/ $\sigma_t = 0$, $\delta = 1$

- In class (and Romer book, p. 188) we get the following expectational difference equation:

$$\frac{s_t}{1-s_t} = \alpha\beta E_t\left(\frac{1}{1-s_{t+1}}\right) \qquad \alpha\beta < 1 \qquad (*)$$

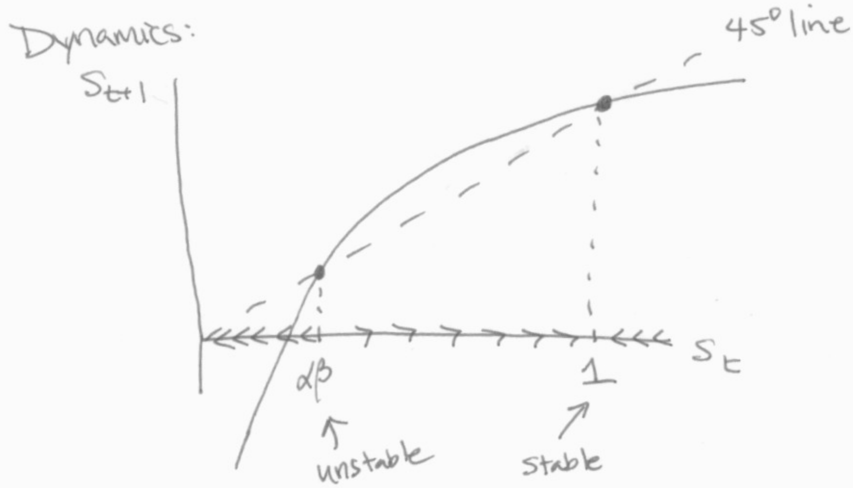
- Let's analyze the <u>deterministic</u> version ⇒ what agent/planner would choose if no future shocks

$$1 - s_{t+1} = \alpha\beta\left(\frac{1-s_t}{s_t}\right)$$

$$\Rightarrow \quad s_{t+1} = f(s_t) = 1 - \alpha\beta\left(\frac{1-s_t}{s_t}\right)$$

Two fixed points: $s_t = \alpha\beta$ and $s_t = 1$.

Dynamics:



⇒ If we start w/ $s_t > \alpha\beta$, agent <u>expects</u> $s_t \to 1$. Can this be optimal? No! Violates TVC and is dynamically inefficient.

⇒ Only solution is to set $s_t = \alpha\beta \ \forall t$.

Note: This solves our original equation (*).