Econ720 - TA Session 6

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1. Midterm

- Technical tools
  - How to set up the model $\rightarrow$ AD vs. ST
  - How to solve the model $\rightarrow$ sequential language vs. DP
  - How to present the results $\rightarrow$ Define CE vs. RCE
  - How to analyze equilibrium $\rightarrow$ Steady state
- Model: OLG (production/ money), Growth model
- Interpretation
- A good example exercise: 2020 Midterm

2. Recursive Competitive Equilibrium

(CE slides)

*The Growth Model: Discrete Time Competitive Equilibrium

CE vs. Recursive CE

	CE	Recursive CE
HH	DP or Lagrangean	DP (P15)
Firm	Same as before (P6)	agg. state var. (P16)
Equilibrium	Same as before (P8)	RCE (P17)

2. Recursive Competitive Equilibrium

Recursive Competitive Equilibrium

Key feature: aggregate state

- HH optimal decision depends on private state and aggregate state

$$k' = h(k, K)$$

- Firm optimal input depends on price which depends on aggregate state

$$q(K), \quad w(K)$$

2. Recursive Competitive Equilibrium

In a dateless and recursive formulation, we write all prices as functions of the aggregate state variable, K:

$$q(K) \quad w(K)$$

We endow the household with knowledge of the law of motion for aggregate capital

$$K' = \varphi(K)$$

2. Recursive Competitive Equilibrium

The household must think of itself as atomistic

- we must formulate the problem so that the household does not believe that its choices affect prices
- but the household has to believe that its choices affect its own outcomes

For this reason we introduce a distinction between the household's own capital stock, k, and the economy wide capital stock, K

$\Rightarrow$ RCE is often used in heterogeneous model and model with uncertainty.

2. Recursive Competitive Equilibrium

When define a RCE

- everything is written as functions of state variables
- don't forget to include law of motion for aggregate state variables in objects
- don't forget the consistency condition

The consistency condition is the distinctive feature of the recursive formulation of competitive equilibrium. The requirement is that, whenever the individual consumer is endowed with a level of capital equal to the aggregate level (for example, only one single agent in the economy owns all the capital), his own individual behavior will exactly mimic the aggregate behavior. The term consistency points out the fact that the aggregate law of motion perceived by the agent must be consistent with the actual behavior of individuals.

– *Real Macroeconomic Theory, Per Krusell, 2014, P83*