Introduction to Dynamic Programming

Part II: Functional Equation

PPE Phil(e)[1]

[1]material @ https://github.com/PPEphile

September 2021

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Stokey, N.L., Lucas, R.E. and Prescott, E.C. (1989) *Recursive Methods in Economic Dynamics*. Cambridge, Harvard University Press.

The Functional Equation (Recap)

Functional Equation

$$v(x) = \max_{y \in \Gamma(x)} \{F(x, y) + \beta v(y)\} \tag{FE}$$

where $\Gamma(x)$ is the set of admissible values of y given the current state x.

- (FE) only necessary but not sufficient
  - e.g. $v(x) = \pm\infty$ is an universal solution
- Supremum: least upper bound

Upper bound