

Problem Set #1

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Produced in Collaboration with []

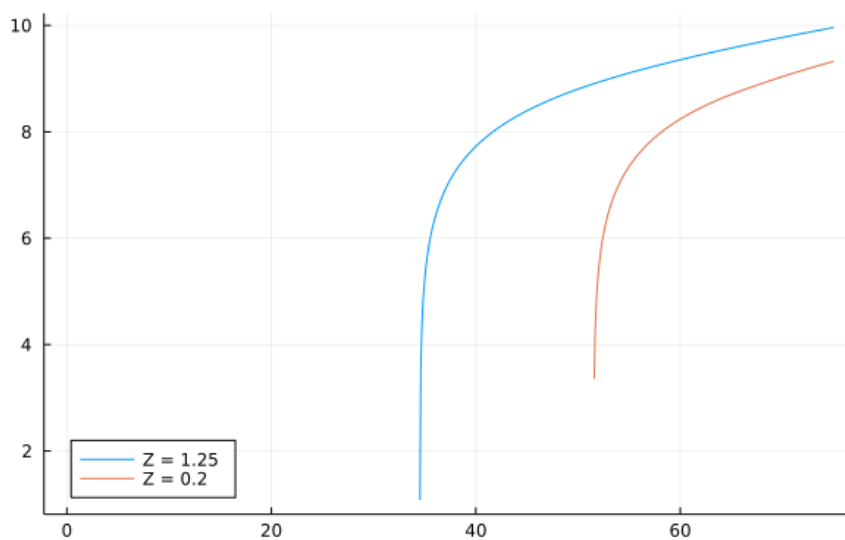
1. The dynamic programming problem is:

$$\max_{\{K_{t+1}, C_t\}_{t=1}^{\infty}} \mathbb{E} \left[\sum_{t=1}^{\infty} \beta^t \log(C_t) \right] \text{ s.t. } C_t + K_{t+1} - (1-\delta)K_t \leq Z_t K_t^{\theta} \quad \forall t = 1, 2, 3, \dots$$

Which can be represented by the following Bellman equation:

$$V(K, Z) = \max_{K'} \{ \log(ZK^{\theta} + (1-\delta)K - K') + \beta \mathbb{E}[V(K', Z)|Z] \}$$

2. Value Functions



3. Policy Functions

