

# TOPICS IN MACRO: PROBLEM SET 4

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## McCall Search Model

Consider the McCall Search Model described in lecture. Recall that workers live forever, when unemployed the worker draws a wage each period from the distribution  $F(w)$ , once a wage is accepted the jobs last forever, the worker receives unemployment benefit  $c$  when not employed, and has discount factor  $\beta$ . The value function for this problem satisfies the Bellman equation

$$V(w) = \max \left\{ \frac{w}{1 - \beta}, c + \beta \mathbb{E}[V(w')] \right\}$$

a) For the following parameters:  $\beta = 0.9$ ,  $c = 2$ , and the wage distribution described by:  $w_i = 1, 2, 3, 4, \dots, 99, 100$  and prob  $w_i = 0.01, 0.01, 0.01, 0.01, \dots, 0.01, 0.01$ . Write a program to solve the Bellman equation by value function iteration.

b) What does the reservation wage equal?

c) Repeat a) and b) for a wage offer distribution with a thin right tail. Specifically, assume that for  $w_i = 1, 2, 3, \dots, 100$ ,

$$Pr(W = w_i) = \frac{w_i^{-1}}{\sum_{j=1}^{100} w_j^{-1}}$$

d) How does the reservation wage differ? What about the Value Functions? Why?

e) What happens when you increase/decrease the model parameters,  $c$  and  $\beta$ ? In particular what happens as  $\beta \rightarrow 0$  and  $\beta \rightarrow 1$ ?