

ECON 401

Advanced Macroeconomics

Fabio Ghironi

University of Washington

Homework 3

Due in class on Wednesday, May 22, 2019

Textbook Chapter 27, Problems 1

Textbook Chapter 29, Long-Lasting Jobs:

(a) Set up the Lagrangian and obtain the Euler equation for labor force participation. Note: The correct Euler equation has this form:

$$\frac{h'(lfp_t) - u'(c_t)\chi}{p_t u'(c_t)} = (1 - \tau_t^n)w_t - \chi + (1 - \rho)E_t \left\{ \Xi_{t+1|t} (1 - p_{t+1}) \frac{h'(lfp_{t+1}) - u'(c_{t+1})\chi}{p_{t+1} u'(c_{t+1})} \right\}. \quad (A12)$$

(A12) is the number of this equation in the 2012 *Journal of Political Economy* article by David Arseneau and Sanjay Chugh that contains a somewhat more complicated version of the model in your textbook. χ is the unemployment benefit, denoted with b in your textbook; τ_t^n is the rate of labor income taxation, denoted with t_t in your textbook; $\Xi_{t+1|t}$ is equal to $\beta u'(c_{t+1})/u'(c_t)$; and the expectation operator does not show up in your textbook version of the model because it is assuming perfect foresight.

Note: Some versions of your textbook may have the job finding probability p^{FIND}_t multiplying the after-tax labor income in the household's budget constraint at the top of page 463. p^{FIND}_t should not be there. It is a typo that was added by MIT Press confusion across different print runs of the textbook.

(b) Set up the Lagrangian and obtain the Euler equation for job creation in slide 10. (Recall that $\beta u'(c_{t+1})/u'(c_t) = 1/(1+r_t)$.)