Economics 205B
Winter 2003

Midterm

Instructions: Answer any 3 questions. The questions carry equal weight.

1. Consider the following simple *RBC* model: Preferences are given by

$$E_t \sum_{i=0}^{\infty} \beta^i \left[\theta_{t+i} \ln c_{t+i} + \Omega \ln(1 - n_{t+i})\right] \qquad 0 < \beta < 1,$$

where c_t is consumption, $1 - n_t$ is leisure, and θ_t is a stochastic preference shock. The economy's technology is:

$$y_t = e^{z_t} k_t^a n_t^{1-a}$$

and the resource constraint is

$$c_t + k_{t+1} - (1 - \delta)k_t = y_t$$

Assume θ has mean 1 and is serially uncorrelated.

   (a) Set up the social planner's problem for this economy and derive the first order conditions. Eliminate the value function so that the first order conditions only involve the utility function and/or the production function.

   (b) Does θ enter any of the equilibrium conditions? Explain intuitively how you would expect a greater than average realization of θ to affect consumption and labor supply. In your explanation, be sure to explain how your intuition is consistent with the way θ enters the model's equilibrium conditions.

   (c) Do your answers to part (b) change if θ is positively serially correlated?

   (d) Do preference shocks help account for the weak correlation between real wages and employment that is observed in the data?

2. Consider the following simple *RBC* model: Preferences are given by

$$E_t \sum_{i=0}^{\infty} \beta^i \left[b c_{t+i}^{1-\eta} + (1 - b) l_{t+i}^{1-\eta}\right]^{1/(1-\eta)} \qquad 0 < \beta < 1,$$

where $l = 1 - n$ is leisure, technology is given by

$$y_t = e^{z_t} k_t^a n_t^{1-a},$$

and the resource constraint:

$$c_t + k_{t+1} - (1 - \delta)k_t = y_t.$$

(a) Set up the social planner's problem for this economy and derive the first order conditions.

(b) Instead of a social planner, assume there are households that maximize utility and firms that maximize profits. Households and firms interact in competitive markets. Write down the decision problems of the representative household and firm. Derive the first order conditions and show they imply the same equilibrium as derived from the social planner approach.

(c) For a given value of c_t, how does an increase in b affect the labor supply curve? Explain.

(d) If $\eta = 1$, discuss how you would calibrate b.

3. Explain how a balanced-budget reduction in government purchases affects consumption, output, labor supply, and real wages in an equilibrium RBC model. For simplicity, assume taxes are lump-sum. How does the response to fiscal policy in an RBC model differ from the predictions of an IS-LM-type model? Use words, not equations to answer this question.

4. What do you see as the strengths and weaknesses of the equilibrium, real business cycle approach as a framework for understanding economic fluctuations? How do you assess such models that include only productivity disturbances? what about models that incorporate fiscal shocks?