Handout 8

(Final Exam Review - Part I)

1. Let E, U denote *current* employment and unemployment respectively. E' and U' denote *future* employment and unemployment. Let s and f denote separation rate and job finding rate receptively. Suppose the long-run unemployment model is as follows:

$$E' = fU + (1 - s)E$$
$$U' = (1 - f)U + sE$$

   (a) Use the variables given in this problem to state the labor force (L) and the unemployment rate (u).

   (b) Write down the conditions for steady states.

   (c) Derive an expression for the natural rate of unemployment as a function of the job finding rate and the separation rate in the long run.

   (d) Comment on the following statement: *"unemployment benefits paid to the unemployed are meant to help reduce frictional unemployment."*

2. Consider the following two policies for raising output per worker ($\frac{Y}{L} \uparrow$):

   (I) Permanently increase TFP A.

   (II) Permanently increase the growth rate of labor efficiency g.

   According to the Solow model, *which of the two policies* will have a *greater* effect on output per worker ($\frac{Y}{L}$) in the long-run?

3. Consider a representative household with the following utility function:

$$U(C, \ell) = \log C + 4 \log \ell \qquad (1)$$

   Suppose the household owns an exogenously determined amount of capital and has h unit of time.

   (a) What is the *market format* of this problem?

   (b) Write down the household's utility maximization problem.

   (c) Express the labor supply with *nominal* input factors and capital.

4. Suppose the aggregate demand for goods in the economy is characterized by the following equations that we have in class:

$$C = \bar{C} + mpc \cdot (Y - T)$$

$$I = \bar{I} - d(r + \bar{f})$$

$$G = \bar{G}$$

$$T = \bar{T}$$

$$r = \bar{r} + \lambda \cdot \pi$$

   (a) Use the equations above to derive an IS equation.

   (b) Interpret the IS curve.

   (c) According to the IS curve, does an *increase* in the real interest rate r increase or decrease the total quantity of goods and services demanded by the economy?

5. Consider the following Cobb-Douglas production function:

$$Y = F(K, L) = AK^{\alpha}L^{1-\alpha}. \tag{2}$$

Suppose the factor markets are perfectly competitive and both labor and capital supply are inelastic. Consider the following two possibilities, *ceteris paribus*:

(I) TFP A doubles.

(II) Supply of capital dobules.

   (a) Which of the two following possibilities (if either) will produce the largest increase in output Y?

   (b) Which will produce the largest increase in the real wage?