Department of Economics

Queen's University

Econ320: Macroeconomic Theory II

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Tutorial 5

Long Questions

1. Consider the following economy:

Desired consumption: $C^d = 1275 + 0.5(Y - T) - 200r$

Desired investment: $I^d = 900 - 200r$

Real money demand: $L = 0.5 - 200i$

Full-employment output: $\overline{Y} = 4600$

Expected inflation: $\pi^e = 0$

(a) Suppose that $T = G = 450$ and that $M = 9000$. Find an equation describing the IS curve. Finally, find an equation for the aggregate demand curve.

(b) What are the equilibrium values of output, consumption, investment, the real interest rate, and the price level.

2. Consider an economy in which workers are covered by contracts that specify nominal wages and give employers the right to choose the level of employment. The production function is

$$Y = \overline{K}^{1/2} N^{1/2}$$

where N is employment and $\overline{K} = 400$ is the capital stock which is fixed in the short run.

Suppose that the fixed nominal wage is $\overline{W} = 20$.

(a) Derive the labour demand curve specifying N as a function of the real wage W/P.

(b) Derive the implied aggregate supply relationship.

Now suppose that the IS and LM curves of the economy are described by the following question:

$$Y = 120 - 50(R - \pi^e)$$

$$M/P = 0.5Y - 500R$$

(c) If $M = 300$ and $\pi^e = 0$, derive the aggregate demand relationship for this economy.

(d) What are the equilibrium values of the price level, output, employment, the real wage and the real interest rate?

3. Consider the following static Keynesian economy:

$$W = \overline{W}$$

$$N = N^d(W/P)$$

$$Y = F(\overline{K}, N)$$

$$Y = C(Y - T, R - \pi^e) + I(R - \pi^e) + G$$

$$L(R, Y) = M/P$$

(a) If the production function takes the Cobb–Douglas form $Y = \overline{K}^{1/2} N^{1/2}$, derive the aggregate supply (AS) relationship between Y and P.

(b) Suppose, in addition that an econometrician has estimated that the consumption function takes the linear form

$$C = 10 + 0.5(Y - T) - 0.1(R - \pi^e)$$

that the investment function takes the form

$$I = 2 - 0.1(R - \pi^e)$$

and that the money demand function is given by

$$L = 3 + 0.5Y - 0.2R$$

Derive the implied aggregate demand relationship between Y and P. Note that the relationship depends on π^e, T , G and M. Briefly explain the intuition behind the effect of each of these exogenous variables on the relationship.

(c) Let $\overline{W} = 2$ and $\overline{K} = 40$. Also, let $\pi^e = 0$,$M = 30$ and let $G = T = 22$. Compute the equilibrium aggregate price level and aggregate income (Hint: only positive values make sense here).

(d) If the labour supply curve is estimated to be

$$N^s = 50W/P$$

what is the unemployment rate in this economy?