

## MACROECONOMICS QUALIFIER

### PART I: (33%)

Answer one of the following questions:

1. Consider the following model:

$$\begin{aligned}
 (1) \quad & Y = F(N), & F' > 0 \\
 (2) \quad & \frac{W}{P} = (1 - \mu)F'(N), & F'' < 0 \\
 (3) \quad & Y = C + I, \\
 (4) \quad & C = C(Y), & 1 > C_Y > 0 \\
 (5) \quad & I = I(i, \mu) + I_0, & I_i < 0, \quad I_\mu > 0 \\
 (6) \quad & \frac{M}{P} = L(Y, i), & L_Y > 0, L_i < 0.
 \end{aligned}$$

Endogenous variables:  $Y, N, C, I, i, P$ .

Exogenous variables:  $M, I_0, W, \mu$ .

$I_0$  is autonomous investment spending.  $\mu$  represents the degree of aggregate monopoly power existing in the economy; it is the inverse of the elasticity of aggregate demand (in absolute value). It is assumed to be determined exogenously by institutional factors. It lies between zero and one. Under perfect competition  $\mu = 0$ .

Explain your answers as fully as you can, using math, graphs and words.

- A. Interpret equation (2).
- B. Why do you think  $I_\mu > 0$ ?
- C. Derive the IS, LM and AD functions.
- D. Derive the aggregate supply function for this economy. Explain which factors would affect the AS function and how.
- E. Analyze the impact of an increase in money stock on the endogenous variables of the model.
- F. Analyze the impact of a decline in the degree of monopoly on the endogenous variables of the model. How does your answer depend on the sign of  $I_\mu$ ? Why?

2. Consider the following model:

$$y_t = y^* + \gamma(p_t - {}_{t-1}p_t^e) + \alpha({}_{t-1}p_t^e - p_{t-1}) + u_t, \quad \gamma, \alpha > 0,$$

$$m_t - p_t = y_t + \varepsilon_t$$

$${}_{t-1}p_t^e = E(p_t | I_{t-1})$$

$y$  is real output;  $y^*$  is the natural rate of output;  $p$  is the price level;  $m$  is money stock (all in logs).

$u$  and  $\varepsilon$  are error terms with zero means and finite variances.

- a. Find the reduced form equation for  $y_t$ . Does invariance proposition hold in this model?
- b. Suppose that the monetary authority is trying to minimize  $E(y_t - y^*)^2$ . Calculate the optimal feedback rule for  $m$ . Show that the neutrality result fails.
- c. Why do you think the neutrality proposition fails in this model? (Hint: Which models covered in class would be similar?)

**PART B: (33%)**

Answer one of the following questions:

1. "Unemployment rate will be higher if labor and product markets are not competitive."
  - a. Present two models comparing employment under competition and imperfectly competition (graphical representation would suffice) to explain why this statement would be true.
  - b. Some economists use this proposition to explain high unemployment in the European countries (relative to the U.S.). Do you agree? Why or why not?
  
2. How does real wage vary across the cycle according to the mainstream Keynesian, new Keynesian, and real business cycle models? Explain.

**PART 3: (33%)**

Answer one of the following questions:

1. Both new-Classical and disequilibrium macroeconomic models are based on rigorous microeconomic foundations. Write an essay explaining what is meant by the term "microfoundations," and similarities and differences between the microfoundations of these two schools.
  
  2. "Models embodying rational expectations hypothesis always yield Pareto optimal outcomes." Do you agree? Explain.
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