Economics 302, Sec. 002   Menzie D. Chinn
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University of Wisconsin-Madison
Final Examination

This exam is 80 minutes long, and is worth 80 points. You are given 88 minutes to complete it. Part I is multiple choice, Part II is a short answer. The points are allocated in proportion to the time you should spend on each problem. **Part I and Part II, Q1 go into bluebook A; Part II, Q2 and Q3 go into bluebook B.**

BEGIN BLUEBOOK A   BEGIN BLUEBOOK A   BEGIN BLUEBOOK A

PART I: Multiple Choice [40 minutes total, 2.5 points each]. Do NOT explain. (16 problems)

1. The strong positive correlation between the size of an expected depreciation of a currency and the size of the deviation of the trade-weighted exchange rate from parity
a) is a short-term relationship based on interest rate parity.
b) is a long-term relationship based on purchasing power parity.
c) is a loose relationship that does not really stand up to the weight of empirical testing.
d) is a short-term relationship based entirely on the rigidity of prices in the short run.
e) none of the above.

2. Suppose two groups of workers are bargaining for two-year contracts, one on even years and one on odd years. Both set wages equal to a constant times a price level in the negotiating year and increase it by last year's inflation in the second year of the contract. The Fed initiates four years of disinflationary monetary policy. You should expect to see
a) no recession.
b) some reduction in actual GDP relative to its potential.
c) some increase in unemployment above the natural rate.
d) some pressure to adjust the inflation index of the contract in exchange for increased job security.
e) b, c, and d.

3. Which of the following is a source of growth in potential GDP?
a) Growth in the labor force
b) Growth in the capital stock
c) Growth in labor productivity
d) Reduced inflationary pressure from energy costs
e) All but d

4. Given a rental price for capital, the level of employment of capital
a) increases with the wage rate but decreases with output.
b) increases with both the wage rate and output.
c) decreases with the wage rate and increases with output.
d) decreases with both the wage rate and output.
e) moves either up or down with output depending on the size of income and substitution effects.

5. The rental price of housing is correlated
a) positively with both the real interest rate and the price of physical housing.
b) positively with the real interest rate and negatively with the price of physical housing.
c) negatively with both the real interest rate and the price of physical housing.
d) negatively with the real interest rate and positively with the price of physical housing.
e) only with the real rate of interest because supply and demand in the competitive building industry keep the price of housing extraordinarily stable.

6. When the economy operates at potential GDP,
a) unemployment is equal to the natural rate.
b) the equilibrium real wage and employment level have been reached in the labor market.
c) the labor market is overheated.
d) all of the above.
e) a and b.

7. Suppose that the desired capital stock is always equal to three times total output for any year. In that case, the accelerator principle implies that investment should always
a) equal some constant multiple greater than 3 times the annual change in GDP to accommodate depreciation.
b) be precisely equal to three times the annual change in GDP regardless of the rate of depreciation.
c) equal some constant multiple less than three times the annual change in GDP to accommodate depreciation.
d) be proportional to the annual change in GDP, but the information provided is insufficient to compute the multiple exactly.
e) none of the above.

8. The income tax system of the United States can discourage investment. This tendency, however, can be offset by the stimulative effects of
a) increasing the tax credit percentage that firms can subtract from their tax liabilities.
b) allowing interest payments to be deducted from income before tax liability is computed.
c) allowing depreciation to be deducted more quickly from income before tax liability is computed.
d) lowering the real rate of interest through macroeconomic policy.
e) all of the above.

9. If point A represents an economy's initial position away from equilibrium at point E, which of the panels of the figure below displays a recovery trajectory from a materials price shock that produced unexpected inflation?
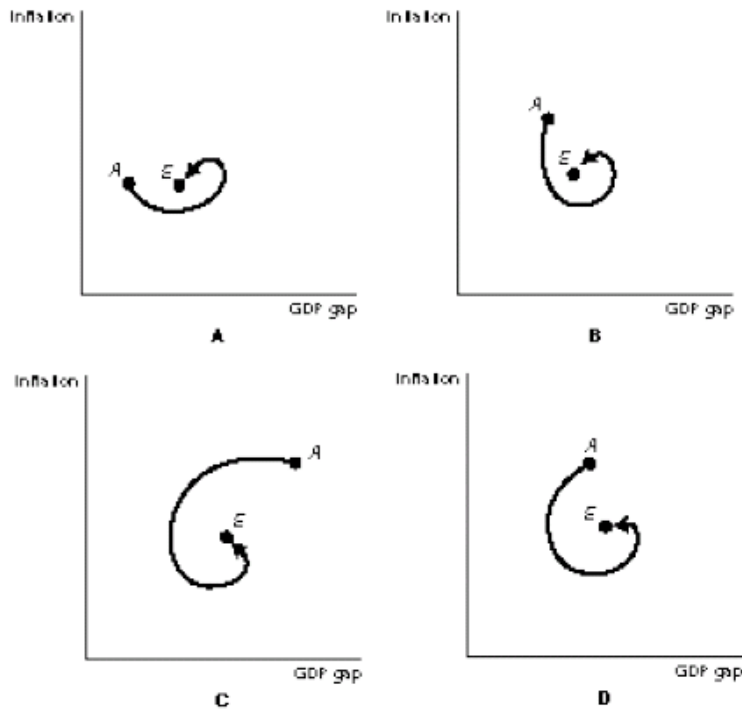
a) A
b) B
c) C
d) D
e) none of the panels

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10. In an economy described collectively by a macroeconomic policy curve of the form

$$\hat{Y}_t = -\frac{\delta}{B+\sigma}(\pi_t - \pi_t^*)$$

And an expectations augmented Phillips curve, and a partially backward-looking definition of how inflation expectations are formed, a decision by the Fed to lower the inflation rate target causes
a) no change in aggregate demand.
b) the macroeconomic policy curve to shift to the left.
c) the macroeconomic policy curve to shift to the right.
d) the real interest rate target to increase.
e) the real interest rate target to decrease.

11. The "acceleration" property states by definition that
a) the unemployment rate must exceed the natural rate if actual GDP falls short of its potential.
b) the unemployment rate must fall short of the natural rate if actual GDP exceeds its potential.
c) the unemployment rate is independent of any accelerated inflation caused by outside price shocks.
d) any attempt to keep actual GDP above its potential must produce accelerating rates of inflation.
e) unemployment can be maintained at the natural rate even given accelerating inflation.

12. Purchasing power parity does not hold up as well in the short run as it does
in the long run because
a) prices are fixed in the short run and the resulting inflexibility is hard to describe theoretically.
b) substitution among similar goods is nearly impossible when an international transaction is involved.
c) goods arbitrage is not an instantaneous, costless process.
d) its conclusions are drawn from price stability, a long-term phenomenon.
e) all of the above.

13. Government policies to improve GDP growth
a) focused mainly on capital formation until recently.
b) are welfare improving provided they are aimed at correcting market failures.
c) include spending on education and incentives to research and development.
d) all of the above.
e) a and c.

14. Which of the following is an assumption of the information-based model of supply developed by Lucas?
a) Prices and wages are assumed to be flexible.
b) People are not fully informed about what is going on in the economy.
c) A positive correlation between supply price and quantity is assumed for firms' individual supply curves.
d) All of the above are accurate.
e) None of the above is accurate.

15. According to the real business cycle theory, macroeconomies are always operating where aggregate supply equals aggregate demand. According to this theory, the business cycle is
a) nonetheless explained by shifts in aggregate demand.
b) caused by negative correlations between the interest rate and work effort.
c) caused by random shifts in the aggregate production function.
d) nonetheless explained by the severe inelasticity of aggregate supply.
e) almost completely explained by the near-perfect elasticity of both aggregate supply and aggregate demand.

16. Let aggregate demand be summarized by $Y = k_0 + k_1(M - P)$ and aggregate supply by $P = \hat{P} + c(Y - Y^*)$.
All notation is standard but for P^, which here represents forecasted general prices. A change in the responsiveness of firms' prices to expectations is captured by a change in
a) only c.
b) only k_1.
c) only k_0.
d) both k_0 and k_1.
e) none of the above.

PART II: Short Answer (40 minutes total)

1. (24 minutes) Suppose equilibrium income is given by:

$$Y_0 = \tilde{\alpha}[\hat{A}_0 + m_w Y_w - \frac{(d + nv)\mu}{h} + \frac{(d + nv)}{h}\left(\frac{M_0}{P}\right)]$$

$$where \ \tilde{\alpha} \equiv \frac{1}{1 - b(1 - t) + m + (d + nv)k/h}$$

$$\hat{A} \equiv a_0 - bTA_0 + e_0 - dR + GO_0 + g_0 - nq_0$$

Note that in this model,

$$\frac{EP}{P_w} = q_0 + vR \quad and \quad T = TA_0 + tY, \ C = a_0 - bTA_0 + b(1 - t)Y$$

1.1 (4 minutes) Show graphically what happens if autonomous consumption declines from a_0 to a_1 (call this Δa). Label axes and curve shifts carefully, showing how far the curve(s) shifts in.

1.2. (4 minutes) Work out algebraically the change US income Show your work! Hint: use total differentials.

1.3. (4 minutes) Work out algebraically the change in US interest rate. Show your work! Hint:

$$R = \left(\frac{\mu_0}{h}\right) - \left(\frac{1}{h}\right)\left(\frac{M_0}{P}\right) + \left(\frac{k}{h}\right)Y$$

1.4. (4 minutes) Work out algebraically what the change in the real exchange rate. Show your work!

1.5. (4 minutes) Show the change in net exports (or the "trade balance"). Hint:

$$X = g_0 - mY - n\left(\frac{EP}{P_W}\right)$$

Is the change positive or negative, keeping in mind the value of Δa?

1.6 (4 minutes) Show the resulting change in the budget balance, *BuS*, which is the difference between tax receipts and government spending. Hint: $BuS \equiv T - G$

END BLUEBOOK A   **END BLUEBOOK A**   **END BLUEBOOK A**

2. (10 minutes total) Suppose we have an economy where the central bank follows a Taylor rule:

$$r_t = \pi_t + \beta\hat{Y}_t + \delta(\pi_t - \pi_t^*) + R_t^*$$

And the macroeconomic policy rule is given by:

$$\hat{Y}_t = \frac{-\delta}{\beta + \sigma}(\pi_t - \pi_t^*)$$

Where the IS curve is given by:

$$R_t - R_t^* = -\sigma\hat{Y}_t$$

2.1 (5 minutes) Explain what happens if the central bank decreases the target inflation rate, using graphs. Assume the action takes place in period 2. You can assume price adjustment takes the form:

$$\pi_t = \pi_{t-1} + f\hat{Y}_{t-1} + Z_t$$

Be sure to label the curve shifts clearly.

2.2 (5 minutes) Explain using graphs what happens if instead there is an oil price shock such that in period 2 $Z_t = 0.10$ (but it is 0 in every other period).

3. (6 minutes) Suppose in period 1, K (the capital stock) declines so that potential GDP declines, but policy authorities do not realize potential GDP has declined. Using Aggregate Supply-Aggregate Demand, show what happens if the policy authorities try to keep output at the original levels in period 0, using either fiscal or monetary policy.

For simplicity, you can assume that initially inflation is zero, and output equal potential. The relevant price adjustment equation is given by:

$$\pi_t = \pi_{t-1} + f\hat{Y}_{t-1} + Z_t$$

In your answer, use text to describe what is shown your the AD-AS graph.