

Prep Questions for Exam #3
ECON 3133
Dr. Keen

1. *Forward-Looking Theory of Consumption*: Suppose the government unexpectedly decides to temporarily raise taxes for this year only. If taxpayers base their consumption decisions on their permanent income, how much will they change their level of consumption (relative to the tax increase)? Briefly explain. Next, discuss how your answer would change for those taxpayers that are liquidity constrained?
2. *Consumption and the Interest Rate*: Let the following equations describe a simple economy without a foreign sector:

$$\begin{aligned}Y &= C + I + G \\C &= 40 + 0.95 \times (1 - t) \times Y - 2,000 \times R \\I &= 740 - 8,000 \times R \\M^S &= (Y - 20,000 \times R) \times P\end{aligned}$$

where Y is output, C is consumption, I is investment, G is government spending, t is the proportional income tax rate, R is the interest rate, M^S is the money supply, and P is the price level. Furthermore, money supply is 8,100, government spending is 460, the proportional income tax rate is 20%, and the price level is 3.

- a. Briefly describe the substitution and income effects from an increase in the interest rate on consumption. Which effect dominates in this problem? Briefly explain. You may assume that the expected inflation rate equals zero.
 - b. Calculate the equilibrium values of output and the interest rate.
3. *The Optimal Capital Stock*: Suppose the nominal interest rate is 5%, the depreciation rate is 10%, the relative price of capital is 60, and the marginal product capital is given by the equation $MP_K = 200 - 4 \times K$ where K is the capital stock. If rental income is taxed at the rate of 25% and there are no subsidies for the production of capital, what is the rental price of capital and the optimal level of the capital stock (K^*)? Use an optimal capital demand/supply graph to support your answer.
4. *The Optimal Capital Stock*: The real wage rate in the United States is much higher than in China. How does this difference impact the size of the optimal capital stock in the United States to that in China? For simplicity, assume the level of GDP and the rental rate of capital are identical in both countries. Use an optimal capital demand/supply graph to support your answer.
5. *Anticipated Tax Changes*: Suppose firms expect the government to institute investment subsidies next period. How will that change impact the expected price of capital goods next period, the rental rate of capital this period, and the optimal capital stock this period? Briefly explain. Use an optimal capital demand/supply graph to support your answer.

6. *Inventories*: Answer parts a – c below.
- Briefly describe the two types of inventories. What fraction of total inventories does each type comprise?
 - Suppose there is a planned increase in pipeline inventories, what does this indicate about future output? Briefly explain.
 - Suppose there is an unplanned increase in buffer stock inventories, what does this indicate about future output? Briefly explain.
7. *Autonomous Imports*: Suppose the economy is initially at potential output. What are the short-run and long-run impacts of an increase in autonomous imports on output, the interest rate, the price level, the nominal exchange rate, and the real exchange rate? Briefly explain your answer. Use an IS/LM graph and an aggregate demand graph to support that answer.
8. *Monetary Policy and a Real Exchange Rate Target*: Suppose the central bank's objective is to target the real exchange rate. What is the short-run impact of an increase in the world interest rate on output, the domestic interest rate, the price level, the nominal exchange rate, and the real exchange rate? Briefly explain your answer. You can assume that the economy is initially at potential output. Use an IS/LM graph and an aggregate demand graph to support that answer.
9. *Nominal and Real Exchange Rates*: Let the following equations describe an open economy:

$$\begin{aligned}
 Y &= C + I + G + (X - IM) \\
 C &= 26 + 0.92 \times (1 - t) \times Y \\
 I &= 760 - 2,000 \times R \\
 (X - IM) &= 2,050 - 2,000 \times E_R - 0.07 \times (1 - t) \times Y \\
 E_R &= 0.8 + 4 \times R \\
 M^S &= (Y - 20,000 \times R) \times P
 \end{aligned}$$

where Y is actual output, C is consumption, I is investment, G is government spending, $(X - IM)$ is net exports, t is the proportional income tax rate, R is the interest rate, E_R is the real exchange rate, M^S is the money supply, and P is the domestic price level. Furthermore, government spending is 800, the money supply is 15,200, the proportional income tax rate is 20%, the domestic price level is 4, and the rest-of-the-world price level is 8.

- Calculate the equilibrium values of output and the interest rate.
 - Determine the equilibrium nominal and real exchange rates.
10. *A Bank's Balance Sheet*: Show how each of the following would initially affect the assets and liabilities of a bank. Indicate the specific type of assets and/or liabilities that change.
- The Federal Reserve sells \$100,000 in bonds to a bank.
 - A bank makes a \$20,000 loan to a business.
 - A consumer withdraws \$100 from his/her checking account.

11. *Reserves/Money*: Use the information below to calculate the answers to parts a – e.

Borrowed reserves	\$25
Currency-to-deposits ratio	0.25
Nonborrowed reserves	\$1,445
Reserves-to-deposits ratio	0.10

- Total reserves.
 - Checking deposits.
 - Currency.
 - Money supply (M1 – savings accounts).
12. *The Money Multiplier*: Suppose the currency-to-deposits ratio is 0.20 and the reserves-to-deposits ratio is 0.20.
- If the Federal Reserve buys \$6 million in bonds, how much does the money supply change?
 - If the Federal Reserve wants the money supply to decline by \$27 million, how much should it decrease the monetary base?
13. *Federal Funds Rate/Discount Rate*: Briefly describe what the Federal Funds Rate and the Discount Rate are. Does the Federal Reserve directly set or just simply target these rates?
14. *The Fed's Policy Tools*: Name and briefly describe the three main policy tools of the Federal Reserve.
15. *The Taylor Rule*: Suppose the Federal Reserve targets the unemployment rate gap as opposed to the output gap. Use Okun's Law and the Taylor Rule to derive the relationship between the nominal interest rate and the unemployment rate. Does the nominal interest rate target rise or fall when the unemployment rate increases?
16. *Government Deficit/Debt*: Suppose the debt (D) is 12,000, the nominal interest rate (R) is 0.04, government spending is 520, actual output (Y) is 4,800, potential output (Y*) is 5,000, transfer payments (F) equal $300 - 0.2 \times (Y - Y^*)$, and taxes (T) equal $0.25 \times Y$.
- Find the size of the actual budget deficit.
 - Determine the size of the cyclical budget deficit.
 - Calculate next period's government debt.

17. *Government Spending and Automatic Stabilizers*: Let the following equations describe a simple economy without a foreign sector:

$$\begin{aligned}Y &= C + I + G \\C &= 205 + 0.92 \times (1 - t) \times Y \\I &= 760 - 8,000 \times R \\G &= 430 - 0.1 \times (Y - Y^*) \\M^S &= (Y - 16,000 \times R) \times P\end{aligned}$$

where Y is actual output, Y^* is potential output, C is consumption, I is investment, G is government spending, t is the proportional income tax rate, R is the interest rate, M^S is the money supply, and P is the price level. Furthermore, potential output is 4,000, the money supply is 6,950, the proportional income tax rate is 25%, and the price level is 2.5.

- Calculate the equilibrium values of output and the interest rate.
 - Determine the equilibrium level of government spending.
 - Briefly describe how automatic stabilizers (i.e., $-0.1 \times (Y - Y^*)$) impact the slope of the IS curve.
18. *Anticipated vs. Unanticipated Money Supply Increase*: Suppose prices are flexible but firms have imperfect information on the aggregate price level. If the economy is initially at potential output, what is the short-run impact of an unanticipated money supply increase on aggregate output and the aggregate price level? How does your answer change if the money supply increase is anticipated? Use aggregate demand/aggregate supply graphs to support your answer.
19. *Sticky Wages/Wage Setting*: Answer parts a – b below.
- Briefly explain how stickiness in wage setting will cause prices to be sticky.
 - Which of the following will likely lead to a higher wage rate in contract negotiations: a higher unemployment rate or a higher expected inflation rate? Briefly explain your answer.