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Mid-term Exam for Macroeconomics (Apr 10, 2023)

Part 1: Please select only ONE answer for each question that follows. Each question is worth 2 points.

(A) 1. GDP is all of the following *except* the total:
A) expenditure of everyone in the economy.
B) income of everyone in the economy.
C) expenditure on the economy's output of goods and services.
D) output of the economy.

(D) 2. Unlike the GDP deflator, the CPI includes the prices of:
A) goods purchased by firms.
B) goods purchased by governments.
C) exported goods.
D) imported goods.

(C) 3. A competitive firm chooses the:
A) price at which to sell the product produced.
B) wage to pay labor.
C) quantity of labor and capital to employ.
D) rental price to pay capital.

(B) 4. In a fixed economy, crowding out occurs when an increase in government spending _____ the interest rate and investment _____.
A) increases; increases
B) increases; decreases
C) decreases; increases
D) decreases; decreases

(C) 5. The money supply consists of:
A) currency plus reserves.
B) currency plus the monetary base.
C) currency plus demand deposits.
D) the monetary base plus demand deposits.

(C) 6. Open-market operations change the _____; changes in interest rate paid on reserves change the _____; and changes in the discount rate change the _____.
A) monetary base; monetary base; monetary base
B) money multiplier; money multiplier; money multiplier
C) monetary base; money multiplier; monetary base
D) money multiplier; monetary base; money multiplier

(A) 7. If velocity is constant and, in addition, the factors of production and the

production function determine real GDP, then:
A) the price level is proportional to the money supply.
B) real GDP is proportional to the money supply.
C) the price level is fixed.
D) nominal GDP is fixed.

(D) 8. The one-to-one relation between the inflation rate and the nominal interest rate, the Fisher effect, assumes that the:
A) money supply is constant.
B) velocity is constant.
C) inflation rate is constant.
D) real interest rate is constant.

Europe → China

预习 (D) 9. If a U.S. corporation purchases a product made in Europe and the European producer uses the proceeds to purchase a U.S. government bond, then U.S. net exports _____ and net capital outflows decreases
A) increase; increase
B) increase; decrease
C) decrease; increase
D) decrease; decrease

(C) 10. If purchasing-power parity holds, then changes in domestic saving will _____ the real exchange rate.
A) increase
B) decrease
C) not change
D) either increase or decrease

(D) 11. The unemployment insurance system may be desirable because unemployment insurance:
A) raises the natural rate of unemployment.
B) reduces the rate of job finding.
C) increases workers' uncertainty about their incomes.
D) induces workers to reject unattractive job offers.

(A) 12. Assume that a country experiences a reduction in productivity that shifts the labor demand curve downward and to the left. If the real wage were rigid, this would lead to:
A) no change in the real wage and a rise in unemployment.
B) no change in the real wage and no change in unemployment.
C) no change in the real wage and a fall in unemployment.
D) a decrease in the real wage.

(B) 13. When an economy begins above the Golden Rule, reaching the Golden

Rule:
A) produces lower consumption at all times in the future.
B) produces higher consumption at all times in the future.
C) requires initially reducing consumption to increase consumption in the future.
D) requires initially increasing consumption to decrease consumption in the future.

（B）14. If a war destroys a large portion of a country's capital stock but the saving rate is unchanged, the Solow model predicts that output will grow and that the new steady state will approach:
A) a higher level of output per person than before.
B) the same level of output per person as before.
C) a lower level of output per person than before.
D) the Golden Rule level of output per person.

（B）15. The balanced growth property of the Solow growth model with population growth and technological progress predicts which of the following sets of variables will grow at the same rate in the steady state?
A) output per effective worker, capital per effective worker, real wage
B) output per worker, capital per worker, real wage
C) real rental price of capital, real wage, output per worker
D) capital-output ratio, output per worker, capital per worker

Part 2: Please answer the following questions briefly. Each question is worth 4 points.

1. Suppose a government of fixed economy moves to reduce a budget deficit by reducing government purchases. Please tell what will happen to the real interest rate, national saving, investment, and consumption.

2. According to the following table of a bank's balance sheet, please tell the owner's equity will fall to zero if loan defaults reduce the value of total assets by what percent?

Bank Balance Sheet			
Assets		**Liabilities & Net Worth**	
Reserves	$ 10,000	Deposits	$100,000
Loans	100,000	Debt	20,000
Securities	40,000	Equity	30,000

3. If there are no unexpected changes in money supply in an economy, can there still be unexpected inflation in the economy?

$MV=PY$

4. What determines the real exchange rate and what determines the nominal exchange rate in a small open economy with perfect capital mobility, fully employed factors of production, and flexible prices?

5. If the economy were at a steady-state unemployment rate with a separation rate of 0.02 per month and a job-finding rate of 0.10 per month, and the labor force was 100 million, how many individuals would lose their jobs each month?

$$\text{unemployment rate} = \frac{U}{L} = \frac{s}{s+f} = \frac{0.02}{0.02+0.1} = \frac{1}{6}.$$

6. Suppose the government reduces the number of weeks of unemployment insurance that unemployed workers can receive, please explain whether this policy is likely to affect frictional or structural unemployment, and increase or decrease the measured unemployment rate.

7. Suppose a government is able to impose controls that limit the number of children people can have. Please use the Solow growth model of Chapter 9 to graphically

illustrate the impact of the slower rate of population growth on the steady-state level of output per worker.

Part 3: Application questions (42 points)

1. (8 points) In a fixed economy, assume that a competitive economy can be described by a constant returns to scale (Cobb–Douglas) production function and all factors of production are fully employed. Holding other factors constant, including the quantity of labor and technology, carefully explain how a one-time, 50-percent decrease in the quantity of capital (perhaps the result of war damage) will change each of the following:

a. the level of output produced; **(2 points)**
b. the real wage of labor; **(2 points)**
c. the real rental price of capital; **(2 points)**
d. capital's share of total income. **(2 points)**

2. (8 points) An economy has a monetary base of 1,000 $1 bills. Calculate the money supply in scenarios (a)–(d) and then answer part (e).

a. All money is held as currency. **(1 points)**
b. All money is held as demand deposits. Banks hold 100 percent of deposits as reserves. **(1 points)**
c. All money is held as demand deposits. Banks hold 20 percent of deposits as reserves. **(2 points)**
d. People hold equal amounts of currency and demand deposits. Banks hold 20 percent of deposits as reserves. **(2 points)**
e. The central bank decides to increase the money supply by 10 percent. In each of the above four scenarios, how much should it increase the monetary base? **(2 points)**

3. (8 points) Assume that a series of inflation rates is 1 percent, 2 percent, and 4 percent, while nominal interest rates in the same three periods are 5 percent, 5 percent, and 6 percent, respectively.

a. What are the ex post real interest rates in the same three periods? **(2 points)**

b. If the expected inflation rate in each period is the realized inflation rate in the previous period, what are the ex ante real interest rates in periods two and three? **(3 points)**

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c. If someone lends in period two, based on the ex ante inflation expectation in part b, will he or she be pleasantly or unpleasantly surprised in period 3 when the loan is repaid? **(3 points)**

→ unpleasantly surprised

π	1%	2%	4%
i	5%	5%	6%
ex post r	4%	3%	2%
π^e	no	1%	2%
ex ante r		4%	4%

4. (9 points) The government of a small open economy wishes to promote trade policies that will result in currency appreciation.

a. Would protectionist policies (higher tariffs and more quotas) or freer trade policies (tariff reductions and quota eliminations) be more effective in generating currency appreciation? **(2 points)**

b. Illustrate graphically the impact of the trade policy on the exchange rate of the small open economy. **(2 points)**

c. What will happen to the trade balance of the small open economy as a result of the trade policies, assuming that the country started from a position of free trade? **(2 points)**

d. What will happen to the quantity of exports and imports as a result of the trade policies? **(3 points)**

5. (9 points) An economy has a Cobb–Douglas production function:

$$Y=K^{a}(LE)^{1-a}.$$

The economy has a capital share of a third, a saving rate of 24 percent, a depreciation rate of 3 percent, a rate of population growth of 2 percent, and a rate of labor-augmenting technological change of 1 percent. It is in steady state.

a. At what rates do total output, output per worker, and output per effective worker grow? **(3 points)**

b. Solve for capital per effective worker, output per effective worker, and the marginal product of capital. **(3 points)**

c. Does the economy have more or less capital than at the Golden Rule steady state? How do you know? To achieve the Golden Rule steady state, does the saving rate need to increase or decrease? **(3 points)**

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