Answers

Fall 2004

ECON 3080-01: Intermediate Macroeconomic Theory
Midterm II—B

Name: _________________________      SID: _________________________

I. ESSAY QUESTIONS (20 points each)

1. Suppose that the nominal interest rate in the United States is 5% and that in Canada it is 7%. Due to NAFTA, the real interest rates are equalized in the two countries.

   A) What can you infer about expected inflation in the United States and Canada? Be as specific as you can.

      \[ \left( i^C = 5\% = r^C + \pi^C \right) \]

      \[ i^C = 7\% = r^C + \pi^C \]

      \[ i^C - i^US = 2\% = (r^C - r^US) + \pi^C - \pi^US \]

      \[ i^C - i^US = \pi^C - \pi^US = 2\% \]  (\( \geq 0 \) since \( r^US = r^C \))

   B) If real GDP growth rate is equal to 3% in both Canada and the United States, can we infer what the money supply growth rates are in both countries (assuming that velocity is fairly stable in both countries)?

      \[ \left( \% \Delta M \right)^C = \pi^C + \left( \% \Delta Y \right)^C \]

      \[ - \left[ \left( \% \Delta M \right)^US = \pi^US + \left( \% \Delta Y \right)^US \right] \]

      \[ \left( \% \Delta M \right)^C - \left( \% \Delta M \right)^US = \pi^C - \pi^US + \left( \% \Delta Y \right)^C - \left( \% \Delta Y \right)^US \]

      \[ \left( \% \Delta M \right)^C - \left( \% \Delta M \right)^US = 2\% \quad \frac{3\%}{3\%} - \frac{3\%}{3\%} \]
2. Consider a small open economy where

\[ I(r) = 2200 - 20r \]
\[ C(Y - T) = 600 + 0.8(Y - T) \]
\[ Y = 10,000 \]
\[ T = 2,000 \]
\[ G = 2,000 \]
\[ r^* = 10\% \]

A) What is the capital account balance, \( I - S \)?

\[ I = 2200 - 20(10) = 2000 \]

\[ S = Y - 6 - C = 10000 - 2000 - [600 + 0.8(2000)] \]
\[ = 1000 \]

\[ S = 1000 \]

\[ I - S = 2000 - 1000 = 1000 \]
B) What is the current account balance, NX?

\[ NX = S - I = -1000 \]

C) Depict your results in a diagram with investments and saving on the x-axis and the interest rate on the y-axis.
D) Describe the effects on this economy of an increase in taxes of 1,000 (i.e. taxes increase to $4,000 from 2,000).

\[ \text{new } S = Y - G - C \]
\[ = 10,000 - 2,000 - [600 + 0.8(7,000)] \]
\[ = 1,800 \]

\[ I - S = 2,000 - 1800 = 200 \]
\[ UX = -200 \]

I. MULTIPLE CHOICE (3 points each)

1. In a country with a small open economy, the real interest rate will always be:
   A) above the world real interest rate.
   B) below the world real interest rate.
   C) equal to the world real interest rate.
   D) equal to the world nominal interest rate.

2. An increase in the trade surplus of a small open economy could be the result of:
   A) a domestic tax increase.
B) an increase in government spending.
C) a decrease in the world interest rate.
D) all of the above.

3. In a small open economy, policies that increase:
   A) investment tend to cause a trade surplus.
   B) investment tend to cause a trade deficit.
   C) saving do not affect the trade balance.
   D) saving tend to cause a trade deficit.

4. The assumption of constant velocity of is equivalent to assuming that the demand
   for real money balances depends on:
   A) income alone.
   B) the interest rate alone.
   C) income and interest rates.
   D) People economizing on real balances as the interest rate rises.

5. If the price level is equal to 4, real GDP is 2,000 and the money supply is 1,000,
   the income velocity equals
   A) 2
   B) 4
   C) 6
   D) 8

6. If nominal GDP is equal to 2,000, the money supply is equal to 400, the nominal
   interest rate equals
   A) 5 and 2000
   B) 10 and 1500
   C) 10 and 1000
   D) 12 and 1500

7. If velocity is constant and the growth rate of real GDP is equal 4 percent, then for
   the inflation rate to equal zero the money supply should grow at the rate of
   A) 2 percent
   B) 3 percent
   C) 4 percent
   D) 5 percent

8. If the rate of job separation, s, is equal to 1 percent, the rate of job finding, f, is
   equal to 9 percent and the number of unemployed is equal to 0.5 million, then the
   labor force is equal to
   A) 3 million
   B) 4 million
   C) 5 million
   D) 6 million
9. At any particular point in time, the output of the economy is
   \( \text{A} \) is fixed because the supplies of capital and labor and the technology are fixed.
   \( \text{B} \) is fixed because the demand for goods and services is fixed.
   \( \text{C} \) varies because the supplies of capital and labor vary.
   \( \text{D} \) varies because the technology for turning capital and labor into goods and services varies.

10. A closed economy has a real interest rate that equals 3 percent. The current world real interest rate is equal to 5 percent. If this economy, which is relatively small, opened up to world trade and capital flows, it would have
   \( \text{A} \) a current account deficit and a capital account surplus
   \( \text{B} \) a current account surplus and a capital account deficit
   \( \text{C} \) current and capital account deficits
   \( \text{D} \) current and capital account surpluses

A small open economy has a real GDP of $2 trillion, household consumption equal to $800 billion, and government spending of $500 billion. If total income taxes equal $600 billion and the level of domestic investment equals $1.2 trillion:

11. In this small open economy, net exports are equal to
   \( \text{A} \) - 250 billion
   \( \text{B} \) 250 billion
   \( \text{C} \) 500 billion
   \( \text{D} \) - 500 billion

12. In this small open economy, net capital inflows are equal to
   \( \text{A} \) - 250 billion
   \( \text{B} \) 250 billion
   \( \text{C} \) 500 billion
   \( \text{D} \) - 500 billion

13. The natural rate of unemployment is
   \( \text{A} \) the average rate of unemployment around which the economy fluctuates
   \( \text{B} \) about 5 percent of the labor force
   \( \text{C} \) a rate that never changes
   \( \text{D} \) the transition of individuals between employment and unemployment

14. The income velocity of money
   \( \text{A} \) is defined as \( MV = PY \)
   \( \text{B} \) is defined as \( MV = PT \)
   \( \text{C} \) is the same thing as the income velocity of money
   \( \text{D} \) will be smaller than the income velocity of money if the quantity of transactions is greater than income.

15. Policies that promote investment in an open economy will
A) increase national saving and lead to a trade surplus
B) decrease national saving and lead to a trade deficit
C) not affect national saving and lead to a trade surplus
D) not affect national saving and lead to a trade deficit

16. In the Solow model with technological progress and population growth, the growth of per capita real GDP in the steady state equals
A) zero
B) g
C) n + g
D) n + g + d

17. Suppose that the rate of population growth, n, equals 1 percent, that of depreciation, d, equals 5 percent, and the rate of saving, s, equals 48 percent. If the production function is given by \( y = k^{0.5} \) and the steady state level of capital equals 4, then the rate of technological progress must be equal to
A) 20 percent
B) 18 percent
C) 16 percent
D) 14 percent

18. If the demand for real balances is proportional to real income, velocity will
A) increase as income increases
B) increase as income decreases
C) vary directly with the interest rate
D) remain constant

19. In a small open economy, net exports equal 50 billion. Net capital outflows equal
A) 150 billion
B) −150 billion
C) 50 billion
D) −50 billion

20. In a small open economy, investments equal 200 billion; national saving equals 300 billion and imports equal 100 billion; and exports equal
A) 100 billion
B) −100 billion
C) 200 billion
D) −200 billion