

ECON 311 - Intermediate Macroeconomics (Professor Gordon) Second Midterm Examination: Winter 2020

YOUR NAME: _____

NetID: _____

Circle the TA session you attend: Jason – 3PM

Ana - 3PM

Emre - 3PM

Jason - 4PM

Ana - 4PM

Emre - 4PM

INSTRUCTIONS:

1. The exam lasts **1 hour**.
2. The exam is worth 60 points in total: 30 points for the multiple choice questions (Part A) and 30 points for the four analytical problems (Part B).
3. On your multiple choice answer sheet, write and bubble **the final four digits of your NetID** in the section labeled **Student ZipGrade ID**. (If your NetID only has three digits, use those.)

EXAMPLE: If Net ID is **xyz1213**, write and bubble **1213**

Digits of NetID

| | | | |
|---|---|---|---|
| 1 | 2 | 1 | 3 |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

4. On your multiple choice answer sheet, write your **TA's name and your TA session time** in the section labeled TA.
5. **USE PENCIL to bubble your answers for part A (the multiple choice section) on the answer sheet.** You will not get credit for circled answers in the multiple choice section.
6. If you need to change a multiple choice answer, **erase the old answer completely.**
7. **Place all of your answers for part B in the space provided.**
8. You must show your work for part B questions. There is no need to explain your answers for the multiple choice questions.

Good luck!

PART A: MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) In the dollar-yen market, a movement of the exchange rate from 130 to 125 yen per dollar is good news for Japanese _____ and good news for U.S. _____.
 - A) importers of U.S. goods, exporters to Japan
 - B) importers of U.S. goods, importers of Japanese goods
 - C) exporters to the U.S., exporters to Japan
 - D) exporters to the U.S., importers of Japanese goods

- 2) A recession normally causes _____ in government net tax revenues, _____ the budget deficit is an example of _____ automatic stabilization.
 - A) a decrease, decreasing, the working of
 - B) a decrease, increasing, a failure of
 - C) a decrease, increasing, the working of
 - D) an increase, increasing, the working of
 - E) an increase, decreasing, a failure of

- 3) If labor unions negotiate an increase in the nominal wage rate the SAS curve will shift
 - A) upward to the left and output will decrease.
 - B) upward to the right and output will increase.
 - C) downward to the left and output will decrease.
 - D) downward to the right and output will increase.

- 4) Which of the following was NOT a creation of Franklin D. Roosevelt's New Deal?
 - A) Bretton Woods exchange rate system.
 - B) Federal Deposit Insurance Corporation.
 - C) Civilian Conservation Corps.
 - D) Works Progress Administration.

- 5) If the purchasing power parity theory was valid at all times,
 - A) the nominal exchange rate would be very volatile.
 - B) aggregate demand would be relatively stable.
 - C) the real exchange rate would be stable.
 - D) All of the above.

- 6) Referring to a bank's t-account, the difference between total assets and total liabilities is called
 - A) equity.
 - B) leverage.
 - C) deposits.
 - D) reserves.

- 7) The _____ effect is a destabilizing effect associated with a falling price level.
 - A) expectations
 - B) real balance
 - C) Pigou
 - D) Keynes

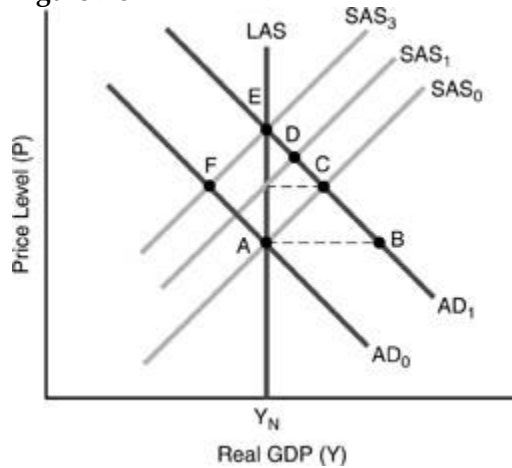
- 8) Persistent deficit after 1980 was almost entirely due to
 - A) Higher tax revenue.
 - B) higher share of expenditures in GDP.
 - C) lower share of expenditures in GDP.
 - D) none of the above.

- 9) Term premium refers to

- A) the difference between the corporate bond rate and the risk-free rate of Treasury bonds.
 - B) the average difference over a long period of the interest rate on short-term financial instruments and the interest rate on the discount rate.
 - C) the difference between prime rate and the discount rate.
 - D) the difference between the long-term government bond rate and the short-term federal funds rate.
- 10) The Big Mac example reported in the Economist and discussed in class shows
- A) The Big Mac is relatively cheap in the U.S.
 - B) Currencies in countries like Norway and Sweden are undervalued
 - C) Currencies in countries like Russia and South Africa are overvalued
 - D) The dollar is overvalued against most countries
- 11) A rise in the nominal money supply will
- A) shift the AD curve right and raise the equilibrium level of nominal GDP.
 - B) shift the SAS curve right and raise the equilibrium level of nominal GDP.
 - C) shift the IS curve and shift the AD curve.
 - D) All of the above are correct.
- 12) In the current debate over fiscal policy, advocates of returning to significant budget surpluses
- A) contended that the economic miracle of the late 1990s caused the budget surpluses.
 - B) believe that tax cuts will continue the dependence of the United States on borrowing from foreigners.
 - C) think that tax cuts will benefit the wealthy.
 - D) All of the above.
- 13) For an individual nation inside the Eurozone, like Italy, which of the following is true?
- A) fixed exchange rates with other Euro nations
 - B) flexible exchange rates with other Euro nations
 - C) autonomous Italian monetary policy
 - D) restricted capital movements with other Euro nations
- 14) When the exchange rate of the dollar declines, as from 2002 to 2007, the U.S. international investment position
- A) Becomes more negative by the amount of the U.S. current account deficit
 - B) Becomes more positive by the amount of the U.S. current account deficit
 - C) Becomes less negative than the amount of the U.S. current account deficit
 - D) Becomes more negative than the amount of the U.S. current account deficit
- 15) If PPP theory were perfectly valid, movements in nominal exchange rates
- A) would never occur, so that inflation differentials would cause fluctuating real exchange rates.
 - B) would counteract inflation differentials and create equal movements in the real exchange rates.
 - C) would be amplified by inflation differentials into wider movements of real exchange rates.
 - D) would be matched by inflation differentials in such a way that real exchange rates never change.
- 16) Which of the following is least likely to increase the ratio of investment to real GDP? A reduction in _____.

- A) spending on highways B) defense outlays
- C) transfer payments D) subsidies to farms and corporations

Figure 7-5



- 17) In Figure 7-5 above, at point F, the real wage is _____ its equilibrium value, leading to changes in the nominal wage that _____.
- A) below, shift AD₀ further to the left B) above, shift AD₀ back to AD₁
 - C) below, shift SAS₃ upward D) above, shift SAS₃ downward
- 18) The "official reserve transactions balance" will be positive when
- A) the current account and capital account taken together are in surplus.
 - B) the current account is in surplus.
 - C) exports exceed imports.
 - D) U.S. official holdings of foreign exchange are falling.
- 19) In a closed economy, a decrease in government spending while taxes remain the same will be accompanied by
- A) an increase in private investment and a decrease in private savings.
 - B) an increase in private savings only.
 - C) a decrease in private investment and an increase in private saving.
 - D) a decrease in private investment only.
- 20) During recent Global Economic Crises, consumers' real wealth in the U.S. declined as a result of
- A) the expansionary fiscal policy, and the expansionary monetary policy.
 - B) the stock market crash, pricking of the housing bubble, and the increased household borrowing.
 - C) the lack of fiscal and monetary policy coordination.
 - D) the banks' decision not to issue additional loans.
- 21) The process of combining many different debt instruments like home mortgages into a pool of hundreds of thousands of individual contracts and then selling new financial instruments is called
- A) Securitization. B) Leveraging. C) NINJA loaning. D) Sub-priming.
- 22) The demand for labor is determined by

- A) marginal product of labor and the price of goods.
 - B) the marginal product of labor, the price of goods, and nominal wages.
 - C) the marginal product of labor, and technology.
 - D) None of the above.
- 23) In the recent Global Economic Crisis, the negative wealth effect from a 50 percent decline in the stock market caused
- A) LM curve to shift to the left. B) LM curve to shift to the right.
 - C) LM curve to shift to the right. D) IS curve to shift to the left.
- 24) Which of the following events will tend to increase net exports of the United States?
- A) an increase in the U.S. real interest rate
 - B) a fall in the real interest rate in several western European countries
 - C) an appreciation of the dollar
 - D) none of the above
- 25) The purchasing power parity (PPP) theory of the exchange rate breaks down if
- A) governments make large foreign transfers or subsidize exports and tax imports.
 - B) one country discovers new deposits of raw materials that it can sell to other countries.
 - C) one country invents new products that other countries want to import.
 - D) all of the above.
- 26) The government's primary deficit is its total deficit minus the interest payments. If the nominal interest rate is less than the growth rate of nominal GDP
- A) the debt-GDP ratio shrinks if the primary deficit is zero
 - B) the debt-GDP ratio rises if the primary deficit is zero
 - C) the debt-GDP ratio rises if the primary deficit is negative (i.e., there is a surplus)
 - D) the debt-GDP ratio is constant if the primary deficit is negative
- 27) Which of the following did NOT occur during 1929-33, during the collapse of the economy in the Great Depression?
- A) stock market declined by 90% B) thousands of banks failed
 - C) Herbert Hoover cut taxes D) high tariffs were imposed on U.S. imports
- 28) At every point to the right of the AD curve there is
- A) an excess supply of real balances. B) an excess demand for real balances.
 - C) an excess supply of commodities. D) an excess demand for commodities.
- 29) If China decided to sell its \$1.5 trillion of U.S. government bond holdings
- A) Chinese exports would become more expensive for U.S. buyers
 - B) Chinese exports would become less expensive for U.S. buyers
 - C) the Chinese currency would depreciate
 - D) both B) and C)
- 30) If the federal government borrows to build a new dam in North Dakota with a rate of return above the borrowing rate, and later raises federal income taxes to pay the interest, future welfare in the United States is
- A) not redistributed and not lowered overall.

- B) redistributed but not lowered overall.
- C) redistributed and lowered overall.
- D) not redistributed but lowered overall.

- 1) A
- 2) C
- 3) A
- 4) A
- 5) C
- 6) A
- 7) A
- 8) B
- 9) D
- 10) D
- 11) A
- 12) D
- 13) A
- 14) C
- 15) D
- 16) A
- 17) D
- 18) A
- 19) A
- 20) B
- 21) A
- 22) B
- 23) D
- 24) D
- 25) D
- 26) A
- 27) C
- 28) C
- 29) A
- 30) B

PART B: Analytic Problems

QUESTION 1 (6 points): Fiscal stimulus and budget deficit

Suppose an economy is described by the following equations:

$$\text{IS: } Y = 450 - 15r,$$

$$\text{LM: } Y = 250 + 10r,$$

with a multiplier of 2 (i.e., $k=2$).

- a) Find the equilibrium real GDP and interest rate. (2 points)

$$450 - 15r = 250 + 10r$$

$$200 = 25r$$

$$r = 8, Y = 330$$

(realize that the multiplier is redundant information here)

- b) Suppose now that autonomous taxes are zero ($T_a=0$), government spending is 70 ($G=70$) and the average marginal income tax is 20% ($t=0.2$). Calculate the government's budget balance ($T-G$). Does the government run a surplus or deficit? (1 point)

$$\text{Budget balance as function of income: } T(Y) - G = T_a + 0.2Y - G = 0.2Y - 70$$

$$\text{Plug in actual GDP to get actual budget balance: } T(330) - G = 0.2 \times 330 - 70 = -4$$

Government runs a deficit.

Suppose that natural real GDP (Y^N) is 350. What level of government spending (G) is needed to increase or decrease the actual real GDP (derived above) to natural real GDP? (Note: We want the level of government spending, not the change.) (2 points)

$$\text{LM: } 250 + 10r = 350 \# r = 10.$$

$$A_p = 225 - 7.5r = 155 - 7.5r + G$$

$$\text{IS: } 350 = 2(155 + G - 7.5 \times 10) \# G = 95$$

(multiplier is needed here)

- c) Calculate the new budget balance ($T-G$). (1 point)

$$T(Y) - G = 0.2 \times 350 - 95 = -25$$

QUESTION 2 (9 points): AS-AD

In this question we will connect AS-AD with IS-LM and monetary policy in a **closed economy**. Suppose throughout that natural output is given by $Y^N = 48$.

- a) Let the demand side of an economy (i.e. the IS-LM part of the economy) be described by the following IS and LM curves:

$$\text{IS: } Y = 60 - r$$

$$\text{LM: } Y = 3(M^S/P) + 3r$$

Suppose that the initial *nominal* money supply is $M^S = 20$. Using the IS and LM curves, derive the AD curve. (*Hint: Begin by solving the IS curve for r . Then substitute r into the LM curve to get the AD curve. When you do that your answer will be in the form $Y = A/P + B$, where A and B are numbers that you solve for.*) (3 points)

1. Shift r to the LHS and Y to the RHS of (IS): $r = 60 - Y$

2. Substitute the above into the (LM) curve and solve for Y :

$$Y = 3(M^S/P) + 3r$$

$$Y = 3M^S/P + 3(60 - Y)$$

$$4Y = 3(20/P) + 180$$

$$Y = 15/P + 45$$

- b) We now turn to the short-run equilibrium of the economy. Suppose that nominal wages are initially $W=10$, and short run aggregate supply is described by:

$$\text{SAS: } Y = 75 - W - (5/P)$$

Find the short-run and long-run equilibrium values of Y and P in this economy. (3 points)

Short-Run

Solve for the equilibrium condition for short-run.

$$Y(\text{AD}) = Y(\text{SAS})$$

$$15/P + 45 = 65 - 5/P$$

$$20/P = 20$$

$$P^*(\text{SR}) = 1$$

And therefore:

$$Y^*(\text{SR}) = 15/1 + 45 = 65 - 5/P = 60$$

Long-Run

$$Y(\text{AD}) = Y^N$$

$$15/P + 45 = 48$$

$$P^*(\text{LR}) = 5 \text{ and } Y^*(\text{LR}) = Y^N = 48$$

- d) Eventually, nominal wages will adjust to bring the economy back to natural output. What is the value of W that makes the SAS curve, the LAS curve, and the AD curve all intersect at the long-run equilibrium value of $Y=Y^N = 48$? (3 points)

We know the long-run price level from the previous part.

$$P(\text{LR}) = 5$$

Then we can solve for wages from the SAS curve.

$$Y^N = 75 - W - 5/P(\text{LR})$$

$$48 = 75 - W - 5/5$$

$$W = 26$$

QUESTION 3 (15 points): Open-economy IS-LM model

Let a **small open economy** with perfect **capital mobility** and a **flexible exchange-rate regime** be described by the following equations:

$$C = 80 - r + 0.7(Y-T)$$

$$T = 40 + 0.2Y$$

$$G = 50$$

$$I_p = 50 - 2r$$

$$NX = 73 - 0.06Y - 10e$$

$$M^D/P = 0.5Y - 2r$$

$$M^S/P = 105$$

where e is the exchange rate.

- a) Assume that, initially, foreign and domestic interest rates are equal ($r = r^f$) and let the foreign exchange rate be $e=2$. Derive the IS and LM equations. (4 points)

IS Curve:

$$k = 1/s(1-t) + t + nx = 1/0.3(1-0.2) + 0.2 + 0.06 = 2$$

$$A_p = 80 - r - 0.7 \times 40 + 50 + 50 - 2r + 73 - 10e = 225 - 3r - 10e = 205 - 3r$$

$$Y = kA_p = 2(225 - 3r - 10e) = 2(205 - 3r)$$

$$Y = 410 - 6r$$

LM Curve:

$$105 = 0.5Y - 2r$$

$$Y = 210 + 4r$$

- b) Find the equilibrium values of i) real GDP, ii) net exports, and iii) the domestic interest rate. (3 points)

$$410 - 6r = 210 + 4r$$

$$200 = 10r$$

$$r = 20 \text{ and } Y = 290$$

$$NX = 73 - 0.06 \times 290 - 10 \times 2 = 35.6$$

- c) Suppose that the government increases G to 100. How would real GDP, the domestic interest rate, and net exports change if we allow the domestic and foreign interest rates to diverge? (4 points)

$$\text{IS: } Y = 2(255 - 3r) = 510 - 6r$$

$$\text{LM: } Y = 210 + 4r$$

$$r = 30, Y = 330, NX = 53 - 330 \times 0.06 = 32.2$$

- d) To return to equilibrium, the exchange rate must adjust to bring the domestic interest rate into equality with the foreign interest rate. Find the exchange rate that brings us back to equilibrium. (4 Points)

The high domestic interest rate will induce investors to increase their holdings of local assets. Buying those assets will put upward pressure on the local currency. As a result, the local currency appreciates, i.e. e goes up.

By interest rate parity, $r = r^f = 20$.

LM: $Y = 210 + 3r = 320$.

$$\begin{aligned} \text{IS: } Y &= k \cdot A_p(r) \\ &= k \cdot (C_a - c \cdot T_a + G + I_a - b \cdot r + NX_a - k \cdot e) \\ &= 2 \cdot (275 - 3r - 10e) \\ &= 2 \cdot (215 - 10e) \\ &= 430 - 20e \\ 320 &= 430 - 20e \\ e &= 5.51 \end{aligned}$$