

ECON 311 - Intermediate Macroeconomics (Professor Gordon)
Second Midterm Examination: Winter 2018
Answer sheet

YOUR NAME: _____

Student ID: _____

Circle the TA session you attend: Mackenzie – 3PM Riccardo - 3PM Chris - 3PM Kristina - 3PM
Mackenzie - 4PM Riccardo - 4PM Chris - 4PM Kristina - 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. **Write your answers for part A (the multiple choice section) in the blanks below.** You won't get credit for circled answers in the multiple choice section.
4. **Place all of your answers for part B in the space provided.**
5. You must show your work for part B questions. There is no need to explain your answers for the multiple choice questions.
6. **You must turn in both the answers and the multiple-choice questions. DO NOT PULL THEM APART.**

Good luck!

PART A: Multiple Choice Problems

Answer multiple choice questions in the space provided below.

USE CAPITAL LETTERS.

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

PART B: Analytic Problems

Question 1: Government Deficits (9 points)

Suppose that:

$$Y_N \text{ (Natural Real GDP)} = 10,000$$

$$Y_A \text{ (Actual Real GDP)} = 8,000$$

$$T_a = 200$$

$$t = 0.25$$

$$G = 2,000$$

- a) Compute the **Actual Surplus** and the **Natural Employment Surplus**. (2 points)

$$\text{Actual Surplus} = 200 + 0.25(8,000) - 2,000 = 200$$
$$\text{Natural Employment Surplus} = 200 + 0.25(10,000) - 2,000 = 700$$

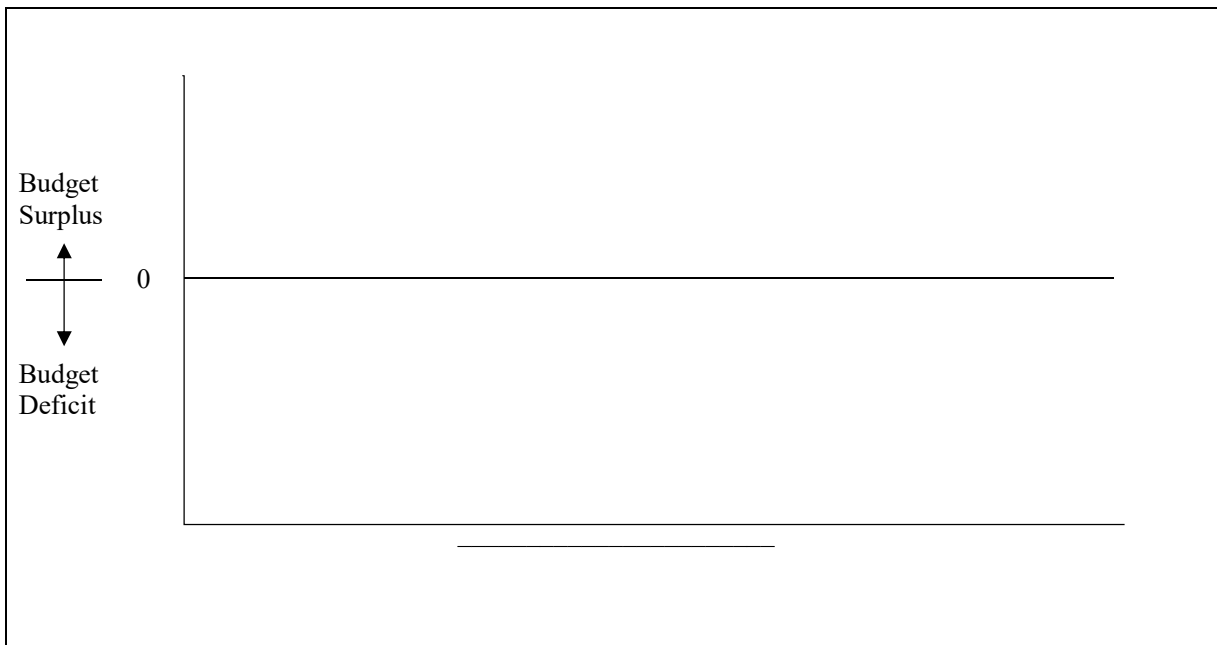
- b) Plot the budget line on the graph below. **Label the horizontal axis and the points below, with coordinates:**

A: Actual Deficit

N: Natural Employment Deficit

Z: Zero Deficit

(3 points)



- c) What is the **slope** of the budget line? (1 point)

$$t=0.25$$

d) What would happen to the budget line if, holding tax rates fixed, **government spending increased**? (1 point)

Shift downwards

e) What would happen to the budget line if, holding government spending fixed, the **tax rate (t) decreased**? (1 point)

Flatten (about its fixed y-intercept).

f) Suppose policymakers want to use fiscal policy to raise Actual Real GDP to Natural Real GDP. This requires two actions:

1. G increases by 500 to 2,500.
2. The tax rate t is cut by 0.05 to 0.20.

What is the **new Natural Employment Surplus**? (1 points)

Natural Employment Surplus = $200 + 0.2(10,000) - 2,500 = -300$.

QUESTION 2 (10 points): AS-AD

In this question we seek to connect AS-AD with IS-LM and monetary policy in a **closed economy** in which natural output is given by $Y^N = 34$.

(A.) Suppose the demand side of the economy (i.e. the IS-LM part of the economy) is described by the following IS and LM curves:

$$\text{IS: } Y = 40 - r$$

$$\text{LM: } Y = 4(M^S/P) + 3r$$

Consider a case where initial *nominal* money supply is $M^S = 16$. Using the IS and LM curves, derive the AD curve. (Hint: Begin by solving the IS curve for r. Then substitute out r in the LM curve to derive an expression in terms of the endogenous variables of the AD curve.) (2 Points)

1. Shift r to the LHS and Y to the RHS of (IS): $r = 40 - Y$

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

$$Y = 4(M^S/P) + 3r$$

$$Y = 4(M^S/P) + 3(40 - Y)$$

$$4Y = 4(M^S/P) + 120$$

$$Y = 16/P + 30$$

3. Though I don't expect students to do this on the test, it will be helpful to note that—due to the zero lower bound and the requirement that the demand side of the economy be in equilibrium at all points on the AD curve— $Y=40$ for $P \leq 16/10$.

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

$$\text{SAS: } Y = 50 - W - (4/P)$$

Find the short-run equilibrium values of (Y,P) for this economy. (2 Point)

Solve for the equilibrium condition.

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

$$16/P + 30 = 40 - 4/P$$

$$20/P = 10$$

$$\mathbf{P^*(\text{SR}) = 2}$$

And therefore:

$$Y^*(\text{SR}) = 16/2 + 30 = 8 + 30 = \mathbf{38}.$$

(C.) Suppose that nominal wages adjust until the economy is at natural output. Which curve(s) will move, and in which direction? What is the long-run value of nominal wages? (3 Point)

Note that wages only enter into the SAS curve; therefore, we know the **SAS will be the only curve to move**. From part c, we know that output is above long-run equilibrium; therefore, **nominal wages will need to increase to shift the SAS curve inward** to natural output at a higher price level.

We can solve for equilibrium prices from the old AD (which does not shift).

$$Y^N = 16/P + 30$$

$$34 = 16/P + 30$$

$$\mathbf{P(\text{LR}) = 16/4 = 4}$$

Then we can solve for wages from the SAS curve.

$$Y^N = 50 - W - 4/P(\text{LR})$$

$$34 = 50 - W - 1$$

$$\mathbf{W = 15}$$

(D.) Let's go back to the short run equilibrium in point B. Suppose that the government tries to influence the monetary authority. The President asks the Chair of the Central Bank to choose money supply so that the short-run level of output increases to 42.

First, state how you would need to change money supply M^S to do this (increase or decrease it). Then, explain whether or not this is technically possible. Finally, (and regardless of your answers to the above) outline the short-run effects of increasing Y with monetary policy on (i) real wages and (ii) firm profits. Would you recommend such a policy to the President? (3 Point)

MS would need to increase. It is not possible to increase Y to 42 because we run into the zero lower bound at $Y=40$. This can be seen by examining the IS curve in part A.

If Y were increased with monetary policy then we would be moving away from the natural output level. In the short run, real wages fall because nominal wages do not change while the price level increases. Firm profits rise because they are now paying workers less in real terms.

The "recommendation" part - the main idea should be: "I would not recommend because we are moving away from the natural rate of output."; "recommend against because it is not feasible".

QUESTION 3 (11 points): Open-economy IS-LM model

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

$$C = 100 - r + 0.6(Y-T),$$

$$T = 50 + 0.1Y,$$

$$G = 40,$$

$$I_p = 60 - 3r,$$

$$NX = 80 - 0.04Y - 10e,$$

$$M^D/P = 0.4Y - 0.8r,$$

$$M^S/P = 120,$$

where e is the exchange rate.

Initially, foreign and domestic interest rates are equal ($r = r^f$), the foreign exchange rate is $e=5$, and the IS and LM equations are given as follows:

$$\text{IS: } Y = 500 - 8r - 20e$$

$$\text{LM: } 120 = 0.4*Y - 0.8r$$

(A.) Find the equilibrium income, interest rate and net export. (2 points)

$$400 - 8r = 300 + 2r$$

$$100 = 10r$$

$$r = 10 \rightarrow Y = 320$$

$$NX = 80 - 0.04*320 - 10*5 = 30 - 12.8 = 17.2$$

(B.) Suppose that the government faces large debt repayment next year and decides to increase government revenue by raising income tax to 36.7% (0.367). Additionally, the government decides to build new bridge between two largest cities and increases government spending by 80. How would GDP, the domestic interest rate and net exports change if we let the domestic and foreign interest rate diverge?

Hint: don't expect even numbers, round to 1 decimal place (3 points)

$$k' = 1 / (1 - 0.6*0.633 + 0.04) = 1.5$$

$$\text{IS: } Y = 1.5*(330 - 50 - 4r) = 420 - 6r$$

$$\text{LM: } Y = 300 + 2r$$

$$r = 15, Y = 330, NX = 30 - 330*0.04 = 16.8$$

(C.) Does interest rate parity hold? If not, then investors and possibly the government and central bank will have to react. What is the new output and domestic interest rate? What factors adjust to get the economy here? (3 Points)

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

By interest rate parity, $r = r^f = 10$.

LM: $Y = 300 + 2r = 320$.

(D.) What is the new exchange rate? (3 Points)

$$\begin{aligned} \text{IS: } Y &= k \cdot A_p(r) \\ &= k \cdot (C_a - c \cdot T_a + G + I_a - b \cdot r + NX_a - k \cdot e) \\ &= 1.5 \cdot (330 - 40 - 10e) \\ &= 1.5 \cdot (290 - 10e) \\ &= 435 - 15e \\ 320 &= 435 - 15e \\ e &= 7.7 \end{aligned}$$

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

- 1) Teaser interest rates refer to
 - A) the initial rates that are typically below market rate and are offered by lenders to entice the clients to borrow.
 - B) rates charged on all subprime mortgages.
 - C) mortgage rates.
 - D) none of the above.

- 2) In addition to being subject to the Fed's reserve requirements, the banks are also required to maintain a capital requirement, which is
 - A) the ratio of its deposits to its reserves.
 - B) the ratio of its total assets to its total liabilities.
 - C) the ratio of its loans to its reserves.
 - D) the ratio of its equity to its total assets.

- 3) The securities, such as stocks or bonds, constitutes a(n) _____ for the borrowers and a (n) _____ for the saver.
 - A) debt or an asset; liability or an asset
 - B) asset; liability
 - C) asset; debt
 - D) liability; asset

- 4) The common feature of the Great Depression and the Global Economic Crisis is
 - A) the active role of the Government before the crises.
 - B) the active role of the FED before the crises.
 - C) the immediate and the aggressive response by both government and the FED.
 - D) that they were preceded by an asset price bubble.

- 5) Which of the following were NOT government actions during 1929-32, the first four years of the Great Depression?
 - A) reduced taxes
 - B) raised tariffs
 - C) reduced the money supply
 - D) allowed banks to fail

- 6) Suppose we are modeling a "closed" economy. The only way its government can obtain more goods and services than it can claim with net tax revenues is for
 - A) exports to exceed imports.
 - B) investment to exceed saving.
 - C) imports to exceed exports.
 - D) saving to exceed investment.

- 7) Which of the following reasons was given in lecture to explain why the U.S. international indebtedness position did not become more negative during 2002-2006?
 - A) positive net exports
 - B) negative net exports
 - C) appreciation of the dollar
 - D) depreciation of the dollar

- 8) A true and unambiguous burden on future generations will be created whenever government deficit spending
 - A) pays for goods that yield no future benefits.
 - B) increases the ratio of government expenditure to GDP.
 - C) is used as part of a countercyclical fiscal expansion.
 - D) pays for capital expenditures.

- 9) The acronym PIIGS was used in class to denote
- A) indebted corporations
 - B) indebted European nations
 - C) indebted consumers
 - D) indebted government
- 10) The reason the U.S. current account was positive in 1991, unlike all other years since 1980, was
- A) soaring net exports
 - B) Gulf war
 - C) large capital inflows
 - D) large capital outflows
- 11) Suppose that interest income is exempted from taxation, which costs the Treasury \$100 billion in tax revenues, while at the same time transfer payments are reduced by \$100 billion. Together, these two changes in fiscal policy _____ national saving while moving the distribution of income toward greater _____ .
- A) reduce, inequality
 - B) increase, inequality
 - C) reduce, equality
 - D) do not affect, equality
 - E) increase, equality
- 12) The "official reserve transactions balance" will be positive when
- A) exports exceed imports.
 - B) U.S. official holdings of foreign exchange are falling.
 - C) the current account and capital account taken together are in surplus.
 - D) the current account is in surplus.
- 13) The experiences of countries with fixed exchange rates and unrestricted capital flows did NOT include
- A) appreciation of the nominal exchange rate.
 - B) a stock market crash.
 - C) withdrawal of foreign capital.
 - D) rising interest rates.
- 14) If the Federal Reserve intervenes in the foreign-exchange markets by selling foreign currencies
- A) the U.S. money supply rises and foreign currencies appreciate.
 - B) the U.S. money supply rises and foreign currencies depreciate.
 - C) the U.S. money supply falls and foreign currencies appreciate.
 - D) the U.S. money supply falls and foreign currencies depreciate.
- 15) Suppose that a computer memory chip costs 600 yen in Japan and \$3 in the United States and that the exchange rate was 250 yen/\$. In this situation traders would _____ increasing the _____ and causing the dollar to _____.
- A) buy chips in Japan; demand for yen; strengthen
 - B) buy chips in United States; demand for yen; weaken
 - C) buy chips in United States; demand for \$; strengthen
 - D) buy chips in Japan; supply of \$; weaken
- 16) Suppose that U.S. and British inflation rates are equal, and \$2 exchanges for 1 British pound. Then if U.S. inflation slows down relative to British inflation, the PPP theory predicts _____ of the dollar, so that the pound will cost _____ than \$2.
- A) an appreciation, less
 - B) a depreciation, more
 - C) an appreciation, more
 - D) a depreciation, less

- 17) From 1995 to 1998, the _____ of the dollar led to _____.
- A) depreciation, collapse of net exports
 - B) appreciation, a substantial increase in net exports
 - C) appreciation, collapse of net exports
 - D) depreciation, a substantial increase in net exports
- 18) The "real exchange rate" is the nominal exchange rate
- A) adjusted for inflation rate differentials between nations.
 - B) that would exist in the absence of central bank intervention in foreign exchange markets.
 - C) adjusted for interest rate differentials between nations.
 - D) inverted, so it expresses the home currency price of foreign currencies.
- 19) Monetary policy is more powerful than fiscal policy under _____ exchange rates due to the amplifying effect from changes in interest rates to exchange rates to _____.
- A) flexible, net exports
 - B) fixed, net exports
 - C) flexible, monetary accommodation
 - D) fixed, monetary accommodation
- 20) A rise in the nominal money supply will
- A) shift the AD curve and raise the equilibrium price level.
 - B) shift the LM curve and shift the AD curve.
 - C) shift the AD curve and raise the equilibrium level of nominal GDP.
 - D) All of the above are correct.
- 21) The slope of the SAS curve is important because it
- A) explains the impact of supply side policies on the economy.
 - B) partially explains the impact of AD stabilization policies on Y and P.
 - C) explains the impact of both supply and demand side policies on Y and P.
 - D) None of the above.
- 22) The long-run buildup of an economy's capital stock _____ the marginal product of labor thus shifting the labor demand curve to the _____, which then causes _____.
- A) increases, left, SAS to shift to the left
 - B) increases, right, SAS to shift to the right
 - C) increases, right, movement up the SAS curve
 - D) decreases, right, SAS to shift to the left
 - E) decreases, left, movement down the SAS curve
- 23) That the LAS curve is vertical means that
- A) firms are willing to produce any amount of output demanded at the fixed price level.
 - B) natural real GDP does not depend on the price level.
 - C) output never deviates from the natural real GDP.
 - D) actual real GDP does not depend on the value of natural real GDP.
- 24) Which of the following would NOT happen if foreign central banks stopped buying U.S. government debt?
- A) higher U.S. interest rates
 - B) lower U.S. interest rates
 - C) depreciation of the dollar
 - D) less negative net exports
- 25) Which of the following happened in the years 2015-17?
- A) QE1
 - B) QE2
 - C) QE3
 - D) no QE

- 26) In the IS-LM Model, assuming downward sloping IS curve and upward sloping LM curve; increase in consumers' wealth is going to
- A) cause a leftward shift of the LM curve.
 - B) cause a rightward shift of the LM curve.
 - C) cause a movement along the IS curve.
 - D) cause a rightward shift of the IS curve.
- 27) Actual output exceeds the natural output when
- A) the actual budget surplus is below the structural surplus.
 - B) the actual budget surplus is above the structural surplus.
 - C) the structural surplus is negative.
 - D) the structural surplus is positive.
- 28) In a recession, automatic stabilization _____ tax revenues and _____ the debt-GDP ratio.
- A) lowers, lowers
 - B) lowers, raises
 - C) raises, raises
 - D) raises, lowers
- 29) Along a short-run aggregate supply curve firms are willing to produce more output if a _____ causes the real wage to _____.
- A) higher price level, fall
 - B) higher nominal wage, rise
 - C) lower nominal wage, rise
 - D) lower nominal wage, fall
 - E) higher price level, rise
- 30) Which of the following fiscal policy actions has the lowest multiplier effect?
- A) cut corporate tax rates
 - B) raise food stamps more generous
 - C) raise unemployment compensation
 - D) raise military spending

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