Week 22

AP Macroeconomics

Homework bundle for this week

本周作业合集

exercises.lol

Contents 目录

5. Long-Run Consequences of Stabilization Policies Starter Quiz · 课前小测

AP Macroeconomics Name: _____ Score: _____

1. Expansionary monetary policy shifts AD in the same direction as:
   - ☐ expansionary fiscal policy (both shift AD right)
   - ☐ contractionary fiscal policy
   - ☐ a leftward AD shift
   - ☐ no shift at all
2. The short-run Phillips curve slopes downward, showing:
   - ☐ a trade-off between inflation and unemployment
   - ☐ that both always rise together
   - ☐ no relationship
   - ☐ inflation is always zero
3. The equation of exchange is:
   - ☐ $MV = PQ$
   - ☐ $M + V = P + Q$
   - ☐ $M = PQ - V$
   - ☐ $MP = VQ$
4. A government runs a budget deficit when, in a year:
   - ☐ spending is greater than tax revenue
   - ☐ tax revenue is greater than spending
   - ☐ spending equals tax revenue
   - ☐ the debt is fully repaid
5. Firms and the government both borrow from the market for:
   - ☐ loanable funds
   - ☐ foreign exchange
   - ☐ final goods
   - ☐ labour
6. Select **both** goals of stabilization policy.
   - ☐ full employment
   - ☐ price stability

☐ maximum inflation

☐ the largest possible deficit

Tick every correct option.

7. V, how many times each dollar is spent in a year, is the _____ of money.

   _____

8. The national _____ is the total owed, built up from all past deficits.

   _____

9. Real GDP grows 5% and the population grows 2%. Approximate per-capita growth, in percent?

   _____ percent

10. Roads, ports, power, and broadband are examples of _____.

    _____

AP Macroeconomics

1. **expansionary fiscal policy (both shift AD right)**

   Both cut interest rates or taxes to raise spending, shifting AD right.

2. **a trade-off between inflation and unemployment**

   Lower unemployment comes with higher inflation, and vice versa — a short-run trade-off.

3. **MV = PQ**

   MV (total spending) = PQ (money value of goods sold).

4. **spending is greater than tax revenue**

   Spending above revenue is a deficit; below is a surplus; equal is balanced.

5. **loanable funds**

   The loanable-funds market channels savings to borrowers.

6. **full employment; price stability**

   Stabilization aims for full employment and price stability.

7. **velocity**

   The quantity theory assumes velocity is roughly constant in the long run.

8. **debt**

   Debt is the stock; the deficit is this year's flow into it.

9. **3 percent**

   Per-capita growth $\approx 5 - 2 = 3\%$.

10. **infrastructure**

    Infrastructure raises the return on private capital.

AP MACROECONOMICS • EXERCISE SHEET

5.1 Fiscal and Monetary Policy Actions in the Short Run

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

KEY WORDS monetary 货币 • fiscal 财政 • monetary policy 货币政策 • fiscal policy 财政政策 • stabilization policy

Objective

Build the skills to answer exam questions on **fiscal and monetary policy actions in the short run**.

You must be able to:

- combine **fiscal** 财政 and **monetary** 货币 policy to analyse their joint effect
- use the AD–AS and money-market models together
- state the goals of **stabilization policy** 稳定政策: full employment and price stability

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Two policy levers

Fiscal policy (spending and taxes) and **monetary policy** (money supply and interest rates) both shift **aggregate demand**.

■ Used together

Trace an expansionary mix: more government spending shifts AD right directly, while a cut in interest rates raises investment, shifting AD right again.

■ The goals

Stabilization policy aims for **full employment** and **price stability**.

2 Practice

2.1 State the two goals of stabilization policy. [2]

2.2 State one fiscal and one monetary tool used to fight a recession. [2]

2.3 State which policy is run by the central bank. [1]

3 Exam-style questions

3.1 Stabilization policy aims for full employment and [1]

- **A** high inflation
- **B** price stability
- **C** a trade surplus
- **D** low saving

3.2 Both expansionary fiscal and expansionary monetary policy shift AD [1]

- **A** to the left
- **B** to the right
- **C** not at all
- **D** downward

3.3 An economy is in a deep recession.

(a) Name an expansionary **fiscal** action. [1]

(b) Name an expansionary **monetary** action. [1]

(c) State the combined effect on AD. [1]

Solutions

2.1 full employment and price stability.

2.2 fiscal: increase government spending (or cut taxes); monetary: cut interest rates (buy bonds).

2.3 monetary policy.

3.1 B.

3.2 B.

3.3 (a) increase government spending or cut taxes. (b) buy bonds / cut interest rates. (c) AD shifts right (increases).

1. Assume that the economy of Moneyland is in equilibrium with an actual unemployment rate equal to the natural rate of unemployment.

(a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.

(i) The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively
(ii) The full employment output, labeled Y_F

(b) Assume that consumer spending in Moneyland decreases from $110,000 to $100,000 as a result of a decrease in disposable income in Moneyland from $135,000 to $110,000.

(i) Calculate the marginal propensity to consume in Moneyland. Show your work.
(ii) Show the short-run effect of the decrease in consumer spending in Moneyland on your graph in part (a), labeling the new equilibrium real output and price level Y_2 and PL_2, respectively.

(c) Following the decrease in consumer spending, explain how the economy would adjust in the long run in the absence of any policy actions.

(d) The central bank of Moneyland is concerned about the short-run effects of the decrease in consumer spending on the broader economy and is considering taking action rather than waiting for the long-run adjustment process. Assuming the banking system in Moneyland has ample reserves, identify a specific monetary policy action the central bank of Moneyland would take to increase consumer spending.

(e) Draw a correctly labeled graph of the reserve market in Moneyland, and show the effect of the monetary policy action identified in part (d) on the policy rate.

(f) How would the change in the policy rate shown on your graph in part (e) affect each of the following in Moneyland in the short run?

(i) The quantity of national savings
(ii) Unemployment. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. Assume that the economy of country Zen is in long-run macroeconomic equilibrium.

(a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.

(i) The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively
(ii) The full-employment output, labeled Y_F

(b) On your graph in part (a), show the short-run effect of an increase in consumer confidence. Label the new equilibrium real output Y_2 and the new equilibrium price level PL_2.

(c) Assume that the banking system in Zen has ample reserves. Suppose that the central bank's goal is to maintain a stable price level at PL_1. Based on the change in the price level shown in part (b), identify one specific monetary policy action the central bank would take to achieve its goal.

(d) Based on the monetary policy action identified in part (c), will real output increase, decrease, or stay the same in the short run? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

3. The government budget of the country of Geeland is currently balanced. The government budget is composed of tax revenues (T), transfer payments (TR), and government spending (G).

(a) Assume the economy moves into a recession and there is no discretionary policy action.

(i) Will the government budget move into a deficit or a surplus in the short run? Explain using the appropriate components of the government budget identified above.
(ii) Based on your answer to part (a)(i), what will happen to the government debt?

(b) Based on your answer to part (a)(i), identify one specific fiscal policy action that will balance the budget.

(c) How will the fiscal policy action from part (b) affect the actual unemployment rate in the short run? Explain.

(d) Did the government efforts to maintain a balanced budget make Geeland's recession more severe or less severe in the short run? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

AP MACROECONOMICS • EXERCISE SHEET

5.2 The Phillips Curve

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS phillips curve 菲利普斯曲线 • natural rate of unemployment 自然失业率 • short-run phillips curve 短

Objective

Build the skills to answer exam questions on **the Phillips curve**.

You must be able to:

- describe the **short-run Phillips curve** 短期菲利普斯曲线 as an inflation-unemployment trade-off
- explain why the **long-run Phillips curve** is vertical at the natural rate
- relate movements and shifts of the Phillips curve to the AD–AS model

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Short-run Phillips curve

A downward-sloping **trade-off**: lower unemployment comes with higher inflation, and vice versa.

■ Long-run Phillips curve

Vertical at the **natural rate** of unemployment — in the long run there is **no** trade-off.

■ Link to AD–AS

A rightward shift of **AD** moves the economy **up** the short-run Phillips curve (lower unemployment, higher inflation); this matches a move up the SRAS curve.

2 Practice

2.1 State what the short-run Phillips curve shows. [1]

2.2 State the shape of the long-run Phillips curve and where it sits. [1]

2.3 State the short-run effect of an increase in AD on unemployment and inflation. [2]

3 Exam-style questions

3.1 The short-run Phillips curve shows a trade-off between inflation and [1]

- **A** growth
- **B** unemployment
- **C** the exchange rate
- **D** saving

3.2 The long-run Phillips curve is vertical at the [1]

- **A** zero rate
- **B** natural rate of unemployment
- **C** business-cycle peak
- **D** full inflation rate

3.3 The central bank runs expansionary policy, raising AD.

(a) State the short-run effect on unemployment. [1]

(b) State the short-run effect on inflation. [1]

(c) State the long-run effect on unemployment. [1]

Solutions

2.1 the short-run trade-off between inflation and unemployment.

2.2 vertical, at the natural rate of unemployment.

2.3 unemployment falls and inflation rises.

3.1 B.

3.2 B.

3.3 (a) it falls. (b) it rises. (c) it returns to the natural rate.

2. The economy of Foxhound is in short-run equilibrium with the macroeconomic data shown in the table.

Labor force	15,000,000
Number of people not working but looking for work	900,000
Number of people who are retired	200,000
Number of people not working and not looking for work	100,000
Natural rate of unemployment	3%
Actual inflation rate	2%

Part A

How many people are employed in Foxhound?

Part B

Calculate the actual unemployment rate in Foxhound. Show your work.

Part C

Draw a correctly labeled graph of the short-run and long-run Phillips curves for the economy of Foxhound, and label the short-run equilibrium point as X. Plot the relevant numerical values on your graph.

Part D

If some individuals who are counted as employed in Foxhound retire, will the unemployment rate increase, decrease, or remain the same? Explain.

1. Assume that the economy of Vortania is in long-run equilibrium.

A. Draw a correctly labeled graph of the short-run and long-run Phillips curves for the economy of Vortania, and label the long-run equilibrium point as P.

B. Assume that new residential construction projects are being implemented in Vortania.

i. Will real output in Vortania increase, decrease, or remain the same in the short run? Explain.

ii. Assuming no change in inflationary expectations, on your graph in part A, show the short-run effect of the new residential construction projects on Vortania's economy, labeling the new short-run equilibrium point as S.

C. Vortania and Rhodara are trading partners with flexible exchange rates. The currency of Vortania is the Vortanian crown (VTC), and the currency of Rhodara is the Rhodaran mark (RHM). Assume that Vortania's capital and financial account (CFA) balance is zero. Now assume that Vortania imposes new tariffs on imports from Rhodara. Draw a correctly labeled graph of the foreign exchange market for the Vortanian crown, and show the effect of the tariffs on the SUPPLY of the Vortanian crown and the international value of the Vortanian crown.

D. Based solely on the change in the international value of the Vortanian crown shown in part C, will Vortania's net exports increase, decrease, or remain the same in the short run?

E. Based on the change in net exports identified in part D, what will happen to each of the following in the short run?

i. The capital and financial account (CFA) balance in Vortania. Explain.

ii. Employment in Vortania

F. Assume the central bank of Vortania wants to return the Vortanian crown to its international value before the imposition of the tariffs. Would the central bank buy or sell Vortanian crowns in the foreign exchange market? Explain.

1. Assume that the economy of Barrikos is in short-run equilibrium, with its economic data summarized in the table provided. The government budget is balanced, and the capital and financial account (CFA) balance is zero.

Cyclical unemployment rate	6%
Natural unemployment rate	4%
Structural unemployment rate	1%
Actual inflation rate	3%
Expected inflation rate	5%

A. What is the numerical value of the actual unemployment rate in Barrikos?

B. Using the relevant numerical values, draw a correctly labeled graph of the short-run and long-run Phillips curves for Barrikos. Indicate the current short-run equilibrium with a point labeled X. Plot the relevant numerical values on the graph.

C. Based on your graph in part B, identify one specific fiscal policy action that the government of Barrikos would take to move the economy toward long-run equilibrium.

D. Assume that the fiscal policy action identified in part C is implemented.

i. Will the government budget in Barrikos move into surplus, move into deficit, or remain balanced? Explain.

ii. Assume there is no change in inflationary expectations. On your graph in part B, show a possible new short-run equilibrium point, labeled Z, that would result from the fiscal policy action identified in part C.

iii. Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part C on the real interest rate.

E. Barrikos has an open economy and a flexible exchange rate. Based solely on the change in the real interest rate in Barrikos shown on your graph in part D (iii), will Barrikos' capital and financial account (CFA) balance move into surplus, move into deficit, or remain the same? Explain.

F. Based on the change in Barrikos' capital and financial account (CFA) balance identified in part E, what will happen to the international value of Barrikos' currency? Explain.

2. The economy of Noralandia is in short-run equilibrium with an actual inflation rate that is currently higher than the expected inflation rate.

   (a) Draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium point as X.

   (b) The banking system in Noralandia has ample reserves. Identify a specific monetary policy action that the central bank of Noralandia would take to bring the inflation rate closer to the expected inflation rate.

   (c) Noralandia has an open economy and a flexible exchange rate. Based solely on the effect of the monetary policy action identified in part (b) on interest rates in Noralandia, will there be an increase, a decrease, or no change in the flow of international financial capital into Noralandia? Explain.

   (d) Based on your answer to part (c), what will happen to the international value of Noralandia's currency? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. The economy of Northland is in short-run equilibrium with an actual unemployment rate of 7% and an actual inflation rate of 1%. The natural unemployment rate in Northland is 5%.

(a) Using the relevant numerical values given, draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium point as X. Plot the relevant numerical values provided on the graph.

(b) Is the expected inflation rate greater than, less than, or equal to 1% ? Explain.

(c) Assume the marginal propensity to consume is 0.9.

(i) If the government decreases income taxes by $20 billion, calculate the maximum change in aggregate demand. Show your work.
(ii) If instead the government increases spending by $20 billion, calculate the maximum change in aggregate demand. Show your work.

(d) On your graph in part (a), show a possible new short-run equilibrium point labeled Z that would result if the government increases spending and there is no change in inflationary expectations.

(e) How would an increase in unemployment compensation affect aggregate demand in the short run? Explain.

(f) Assume instead the government takes none of the preceding policy actions. (Northland is still in short-run equilibrium; the actual unemployment rate is 7%, the actual inflation rate is 1%, and the natural unemployment rate is 5%.) What will happen to each of the following in the long run?

(i) The short-run aggregate supply curve. Explain.
(ii) The short-run Phillips curve
(iii) The actual unemployment rate

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. An economy is currently in short-run equilibrium with a recessionary output gap of $600 billion.

(a) Draw a single correctly labeled graph with both the short-run and long-run Phillips curves. Label the initial short-run equilibrium point X.

(b) Suppose the government implements fiscal policy in order to achieve full-employment output and the marginal propensity to consume is 0.75.

(i) Calculate the minimum change in government spending required to increase aggregate demand by the amount of the output gap of $600 billion. Show your work.

(ii) Suppose instead the government wants to change taxes rather than government spending. Calculate the minimum change in taxes required to increase aggregate demand by the amount of the output gap of $600 billion. Show your work.

(c) Assume instead the government takes no policy action to close the output gap shown in part (a). Explain how the economy will adjust in the long run.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

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2. Assume the expected inflation rate in a country is 3%, the current unemployment rate is 6%, and the natural rate of unemployment is 4%.

(a) Draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium as point X and plot the numerical values above on the graph.

(b) Is the actual inflation rate greater than, less than, or equal to the expected inflation rate of 3%?

(c) Assume loans were made taking into account the expected inflation rate of 3%. Will lenders be better off or worse off after they realize the actual inflation rate identified in part (b) ? Explain.

(d) Based on the relationship between the actual and the expected inflation rates identified in part (a), what will happen to the natural rate of unemployment in the long run?

MACROECONOMICS
Section II
Total Time—60 minutes
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume that the economy of Country X has an actual unemployment rate of 7%, a natural rate of unemployment of 5%, and an inflation rate of 3%.

   (a) Using the numerical values given above, draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium as point B. Plot the numerical values above on the graph.

   (b) Assume that the government of Country X takes no policy action to reduce unemployment. In the long run, will each of the following shift to the right, shift to the left, or remain the same?

      (i) Short-run aggregate supply curve. Explain.

      (ii) Long-run Phillips curve

   (c) Identify a fiscal policy action that could be used to reduce the unemployment rate in the short run.

   (d) Draw a correctly labeled graph of aggregate demand and short-run aggregate supply, and show the impact on the equilibrium price level and real gross domestic product (GDP) of the fiscal policy action identified in part (c).

   (e) Based on the change in real GDP identified in part (d), will the supply of Country X's currency in the foreign exchange market increase, decrease, or remain the same? Explain.

   (f) Based on your answer to part (e) and assuming a flexible exchange rate system, will Country X's currency appreciate, depreciate, or remain the same in the foreign exchange market?

MACROECONOMICS
Section II
Total Time—60 minutes
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.
   (a) Draw a single correctly labeled graph with both the long-run Phillips curve and short-run Phillips curve. Label the current short-run equilibrium point P.
   (b) Assuming no policy actions are taken, will the short-run Phillips curve shift to the right (upward), shift to the left (downward), or remain the same in the long run? Explain.
   (c) If the Federal Reserve Bank wants to lower unemployment, what expansionary open-market operation should it use?
   (d) How will the open-market operation you identified in part (c) affect each of the following?
      (i) Federal funds rate. Explain.
      (ii) Real interest rate in the short run.
   (e) Given your answer in part (d)(ii), what is the effect on real gross domestic product (GDP) in the short run? Explain.
   (f) Japan and the United States are major trading partners. Indicate how the change in real GDP you identified in part (e) will affect the demand for the Japanese yen in the foreign exchange market.
   (g) Draw a correctly labeled graph of the foreign exchange market for the Japanese yen, showing the effect of the change in demand identified in part (f) on the value of the Japanese yen relative to the United States dollar.

AP MACROECONOMICS • EXERCISE SHEET

5.3 Money Growth and Inflation

Name: _____ Class: _____ Date: _____ **Total: 8 marks**

KEY WORDS neutrality of money 货币中性 • quantity theory of money 货币数量论 • productivity 生产率

Objective

Build the skills to answer exam questions on **money growth and inflation**.

You must be able to:

- state the **quantity theory of money** 货币数量论, $MV = PQ$
- explain how excessive **money-supply growth** causes inflation in the long run
- describe the long-run **neutrality of money** 货币中性

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ **The quantity theory**

$$MV = PQ,$$

money supply × velocity = price level × real output.

■ **Money growth and inflation**

If V and Q are roughly stable, then raising M mainly raises P — persistent excessive money growth causes **inflation**.

■ **Neutrality of money**

In the **long run**, money growth changes only **prices**, not real output or employment.

2 Practice

2.1 State the equation of the quantity theory of money. [1]

2.2 State the long-run effect of rapid money-supply growth. [1]

2.3 Explain what is meant by the neutrality of money. [2]

3 Exam-style questions

3.1 The quantity theory of money is [1]

- **A** $MV = PQ$
- **B** $GDP = C + I + G$
- **C** $V = IR$
- **D** $MPC + MPS = 1$

3.2 In the long run, an increase in the money supply mainly raises [1]

- **A** real output
- **B** the price level
- **C** employment
- **D** productivity

3.3 A country doubles its money supply over a few years, while velocity and real output stay roughly constant.

(a) State the effect on the price level. [1]

(b) Name the principle that money affects only prices, not real output, in the long run. [1]

Solutions

2.1 $MV = PQ$.

2.2 it causes inflation (a rise in the price level).

2.3 in the long run a change in the money supply changes the price level but not real output or employment.

3.1 A.

3.2 B.

3.3 (a) it roughly doubles (the price level rises). (b) the neutrality of money.

2. Assume that commercial banks must hold a minimum of 20% of their deposits as reserves. Now suppose that the central bank of the country sells $100,000 of government bonds to commercial banks.

   (a) Calculate the maximum change and state the direction of change in the money supply as a result of the central bank bond sale. Show your work.

   (b) Draw a correctly labeled graph of the money market and show the effect of the change in the money supply identified in part (a) on the nominal interest rate.

   (c) Given the change in the money supply in part (a), if the velocity of money is constant, what will happen to the nominal gross domestic product? Explain.

   (d) Based on the change in the nominal gross domestic product in part (c), what happens to the price level if the real gross domestic product is constant?

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

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2. Assume that an economy is in long-run equilibrium. Assume that consumers wish to hold less money because they use credit cards more frequently to purchase goods and services than cash.
   (a) Draw a correctly labeled graph of the money market and show the effect of the reduced holdings of money on the equilibrium nominal interest rate in the short run.
   (b) Based on the change in the interest rate in part (a), what will happen to each of the following in the short run?
      (i) Prices of previously issued bonds
      (ii) The price level and real income. Explain.
   (c) With a constant money supply, based on your answer to part b(ii), will the velocity of money increase, decrease, or remain the same, or is the change indeterminate?
   (d) If the central bank wishes to reverse the change in the interest rate identified in part (a), what open market operation would it use?

AP MACROECONOMICS • EXERCISE SHEET

5.4 Government Deficits and the National Debt

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS national debt 国债 • budget deficit 预算赤字 • surplus 盈余

Objective

Build the skills to answer exam questions on **government deficits and the national debt**.

You must be able to:

- distinguish a **budget deficit** 预算赤字 (a yearly shortfall) from the **national debt** 国债 (accumulated deficits)
- explain how persistent deficits add to the national debt
- discuss the long-run concerns of a rising debt

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Deficit vs debt

A **budget deficit** is a single year's shortfall (spending > tax revenue). The **national debt** is the total of all past deficits, minus any surpluses.

■ Deficits build the debt

Each year's deficit is **added** to the national debt; running surpluses reduces it.

■ Long-run concerns

Rising debt means higher **interest costs** and a **burden on future taxpayers**, and can push up interest rates.

2 Practice

2.1 State the difference between a budget deficit and the national debt. [2]

2.2 State how persistent deficits affect the national debt. [1]

2.3 State one long-run concern of a large national debt. [1]

3 Exam-style questions

3.1 The national debt is [1]

- **A** one year's shortfall
- **B** the accumulated total of past deficits
- **C** a budget surplus
- **D** total exports

3.2 A budget deficit occurs when [1]

- **A** spending is less than tax revenue
- **B** spending is greater than tax revenue
- **C** the debt is zero
- **D** exports exceed imports

3.3 A government spends \$500 billion and collects \$420 billion in taxes this year.

(a) Find the budget deficit. [2]

(b) State its effect on the national debt. [1]

Solutions

2.1 a deficit is a single year's shortfall; the national debt is the accumulated total of all past deficits.

2.2 they add to it (increase it).

2.3 higher interest costs, or a burden on future taxpayers (any one).

3.1 B.

3.2 B.

3.3 (a) $500 - 420 = \$80$ billion. (b) it adds \$80 billion to the national debt.

1. Assume that the economy of Barrikos is in short-run equilibrium, with its economic data summarized in the table provided. The government budget is balanced, and the capital and financial account (CFA) balance is zero.

Cyclical unemployment rate	6%
Natural unemployment rate	4%
Structural unemployment rate	1%
Actual inflation rate	3%
Expected inflation rate	5%

A. What is the numerical value of the actual unemployment rate in Barrikos?

B. Using the relevant numerical values, draw a correctly labeled graph of the short-run and long-run Phillips curves for Barrikos. Indicate the current short-run equilibrium with a point labeled X. Plot the relevant numerical values on the graph.

C. Based on your graph in part B, identify one specific fiscal policy action that the government of Barrikos would take to move the economy toward long-run equilibrium.

D. Assume that the fiscal policy action identified in part C is implemented.

i. Will the government budget in Barrikos move into surplus, move into deficit, or remain balanced? Explain.

ii. Assume there is no change in inflationary expectations. On your graph in part B, show a possible new short-run equilibrium point, labeled Z, that would result from the fiscal policy action identified in part C.

iii. Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part C on the real interest rate.

E. Barrikos has an open economy and a flexible exchange rate. Based solely on the change in the real interest rate in Barrikos shown on your graph in part D (iii), will Barrikos' capital and financial account (CFA) balance move into surplus, move into deficit, or remain the same? Explain.

F. Based on the change in Barrikos' capital and financial account (CFA) balance identified in part E, what will happen to the international value of Barrikos' currency? Explain.

3. The economy of Country Zeta is in long-run equilibrium; however, the government is concerned about the size of the national debt.

   (a) Identify one specific fiscal policy action the government could take to reduce the national debt.

   (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part (a) on the real interest rate.

   (c) Based on the change in the real interest rate identified in part (b), what will happen to each of the following?

   (i) Aggregate demand in the short run. Explain.
   (ii) Potential real output. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

3. The government budget of the country of Geeland is currently balanced. The government budget is composed of tax revenues (T), transfer payments (TR), and government spending (G).

   (a) Assume the economy moves into a recession and there is no discretionary policy action.

   (i) Will the government budget move into a deficit or a surplus in the short run? Explain using the appropriate components of the government budget identified above.
   (ii) Based on your answer to part (a)(i), what will happen to the government debt?

   (b) Based on your answer to part (a)(i), identify one specific fiscal policy action that will balance the budget.

   (c) How will the fiscal policy action from part (b) affect the actual unemployment rate in the short run? Explain.

   (d) Did the government efforts to maintain a balanced budget make Geeland's recession more severe or less severe in the short run? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

2. Country X and Country Y are trading partners, and both produce furnaces and solar panels. The countries can produce the following amounts using equal amounts of resources.

   Country X: 6 furnaces or 8 solar panels

   Country Y: 6 furnaces or 12 solar panels

   (a) Which country has an absolute advantage in producing solar panels?

   (b) Calculate the opportunity cost of a furnace in Country Y.

   (c) Which country has the comparative advantage in producing furnaces? Explain.

   (d) If the terms of trade were that 2 furnaces are exchanged for 1 solar panel, should Country X produce solar panels domestically or import solar panels from Country Y?

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3. Exchange rates and interest rates are important for macroeconomic decision making.

   (a) How does an increase in Japan's government budget deficit affect each of the following?

      (i) The real interest rate in the short run in Japan. Explain.

      (ii) Private domestic investment in plant and equipment in Japan

   (b) Draw a correctly labeled graph of the foreign exchange market for the euro, and show the effect of the change in the real interest rate in Japan from part (a)(i) on each of the following.

      (i) Supply of euros. Explain.

      (ii) Yen price of the euro

   (c) To reverse the change in the yen price of the euro identified in part (b)(ii), should the European Central Bank buy or sell euros in the foreign exchange market?

STOP

END OF EXAM

AP MACROECONOMICS • EXERCISE SHEET

5.5 Crowding Out

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS crowding out 挤出效应 • fiscal policy 财政政策

Objective

Build the skills to answer exam questions on **crowding out**.

You must be able to:

- define **crowding out** 挤出效应 as reduced private investment caused by government borrowing
- use the **loanable funds market** to show how deficit spending raises the real interest rate
- explain how crowding out can weaken the long-run growth effect of fiscal policy

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Crowding out

When the government borrows heavily to fund a deficit, it competes for loanable funds and **raises the real interest rate**, which discourages **private investment**.

■ In the loanable funds market

Government borrowing shifts the **demand** for funds right → the real interest rate rises → private investment falls.

■ Effect on growth

Less private investment means a smaller capital stock over time, weakening the long-run growth benefit of the spending.

2 Practice

2.1 Define crowding out. [1]

2.2 State how heavy government borrowing affects the real interest rate. [1]

2.3 Explain how crowding out can weaken fiscal policy. [2]

3 Exam-style questions

3.1 Crowding out is a fall in [1]

- **A** government spending
- **B** private investment
- **C** taxes
- **D** the money supply

3.2 Deficit spending raises the real interest rate in the [1]

- **A** money market
- **B** loanable funds market
- **C** foreign exchange market
- **D** goods market

3.3 A government borrows heavily to fund new spending.

(a) State the effect on the real interest rate. [1]

(b) State the effect on private investment. [1]

(c) Name this effect. [1]

Solutions

2.1 the fall in private investment caused by government borrowing.

2.2 it raises it.

2.3 the higher real interest rate reduces private investment, so the total effect on AD and future growth is smaller than intended.

3.1 B.

3.2 B.

3.3 (a) it rises. (b) it falls. (c) crowding out.

1. Assume that the economy of Barrikos is in short-run equilibrium, with its economic data summarized in the table provided. The government budget is balanced, and the capital and financial account (CFA) balance is zero.

Cyclical unemployment rate	6%
Natural unemployment rate	4%
Structural unemployment rate	1%
Actual inflation rate	3%
Expected inflation rate	5%

A. What is the numerical value of the actual unemployment rate in Barrikos?

B. Using the relevant numerical values, draw a correctly labeled graph of the short-run and long-run Phillips curves for Barrikos. Indicate the current short-run equilibrium with a point labeled X. Plot the relevant numerical values on the graph.

C. Based on your graph in part B, identify one specific fiscal policy action that the government of Barrikos would take to move the economy toward long-run equilibrium.

D. Assume that the fiscal policy action identified in part C is implemented.

i. Will the government budget in Barrikos move into surplus, move into deficit, or remain balanced? Explain.

ii. Assume there is no change in inflationary expectations. On your graph in part B, show a possible new short-run equilibrium point, labeled Z, that would result from the fiscal policy action identified in part C.

iii. Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part C on the real interest rate.

E. Barrikos has an open economy and a flexible exchange rate. Based solely on the change in the real interest rate in Barrikos shown on your graph in part D (iii), will Barrikos' capital and financial account (CFA) balance move into surplus, move into deficit, or remain the same? Explain.

F. Based on the change in Barrikos' capital and financial account (CFA) balance identified in part E, what will happen to the international value of Barrikos' currency? Explain.

3. Assume Malaysia's economy is in a recession and its government currently has a balanced budget.

(a) Identify a specific fiscal policy action that the government of Malaysia would implement to address the recession.

(b) How will the fiscal policy action identified in part (a) affect the real interest rate in Malaysia? Explain.

(c) Malaysia and Japan are trading partners with flexible exchange rates. Malaysia's currency is the ringgit (MYR), and Japan's currency is the yen (JPY). Draw a correctly labeled graph of the foreign exchange market for the ringgit relative to the yen. Show the effect of the change in the real interest rate identified in part (b) on the international value of the ringgit.

(d) As a result of the change in the value of the ringgit shown in part (c), will Malaysia's imports increase, decrease, or remain the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

1. Assume the economy of Vanderlandia is in short-run equilibrium with a real GDP of \$500 million. The full-employment level of real GDP is \$550 million.

(a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.

(i) The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively
(ii) The full-employment output, labeled Y_F

(b) Assume no policy action is taken to restore full employment.

(i) Explain how the economy will adjust in the long run.
(ii) Following the long-run adjustment process, will the price level in Vanderlandia be greater than, less than, or equal to PL_1 shown on your graph in part (a)?

(c) Assume instead that policymakers in Vanderlandia are considering changing government spending to restore full employment in the short run and that the marginal propensity to save is 0.2.

(i) Calculate the minimum change and state the direction of change in government spending required to completely close the output gap in the short run. Show your work.
(ii) On your graph in part (a), show the short-run effect of the change in government spending in part (c)(i), labeling the new equilibrium price level PL_2.

(d) Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in government spending in part (c)(i) on the equilibrium real interest rate.

(e) Based on the change in the real interest rate shown on your graph in part (d), what will happen to each of the following?

(i) The price of previously issued bonds
(ii) The rate of economic growth in the long run. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. The economy of Country Zeta is in long-run equilibrium; however, the government is concerned about the size of the national debt.

   (a) Identify one specific fiscal policy action the government could take to reduce the national debt.

   (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part (a) on the real interest rate.

   (c) Based on the change in the real interest rate identified in part (b), what will happen to each of the following?

   (i) Aggregate demand in the short run. Explain.
   (ii) Potential real output. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

2. Assume a country's economy is currently operating below full employment.

   (a) Identify a fiscal policy action the country's government could implement to restore full employment.

   (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part (a) on the equilibrium real interest rate.

   (c) Based solely on the real interest rate change shown in part (b), what will happen to each of the following?

   (i) Net exports. Explain.
   (ii) The stock of physical capital. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

MACROECONOMICS
Section II
Total Time—1 hour
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume the economy of Artland is currently operating above full employment.
   (a) Draw a correctly labeled graph of the short-run aggregate supply, long-run aggregate supply, and aggregate demand curves, and show each of the following.
      (i) The current equilibrium real output and price level, labeled as Y_1 and PL_1, respectively
      (ii) The full-employment output, labeled as Y_f
   (b) Assume the central bank and the government do not take any policy actions to close the output gap.
      (i) On your graph in part (a), show how the economy automatically adjusts in the long run and label the new equilibrium price level PL_2.
      (ii) Explain the cause of the adjustment shown in part (b)(i).
   (c) Alternatively, suppose the government wants to close the output gap using fiscal policy.
      (i) Identify a fiscal policy action the government could implement to close the output gap.
      (ii) How will the fiscal policy action identified in part (c)(i) affect the following?
         - The unemployment rate
         - The natural rate of unemployment
      (iii) In closing the output gap, will the automatic adjustment identified in part (b)(i) produce a higher, a lower, or the same price level compared to the fiscal policy identified in part (c)(i) ?
   (d) Draw a correctly labeled graph of the market for loanable funds. Show the effect of the fiscal policy action identified in part (c)(i) on the equilibrium real interest rate.
   (e) Given the interest rate change identified in part (d), will the long-run aggregate supply curve shift to the right, shift to the left, or remain the same in the long run? Explain.

MACROECONOMICS
Section II
Total Time—1 hour
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume the United States economy is in recession.
   (a) Draw a correctly labeled graph of the long-run aggregate supply, short-run aggregate supply, and aggregate demand curves, and show each of the following.
      (i) Current price level, labeled PL_1
      (ii) Current output, labeled Y_1
   (b) Now assume the euro zone, a major trading partner of the United States, enters into a recession.
      (i) What will be the effect on United States exports to the euro zone? Explain.
      (ii) On your graph in part (a), show the effect of the change identified in part (b)(i) on real output in the United States.
      (iii) What will be the effect of the change identified in part (b)(ii) on unemployment in the United States?
   (c) Assume the euro zone recession causes a decrease in the demand for United States dollars in the foreign exchange market.
      (i) Will the euro appreciate, depreciate, or remain unchanged against the dollar? Explain.
      (ii) Draw a correctly labeled graph of the foreign exchange market for dollars, and show the effect of the decrease in the demand for dollars on the exchange rate for dollars.
   (d) Assume the United States implements a combination of expansionary fiscal and monetary policies. In the absence of complete crowding out, what will be the effect of these policies on each of the following?
      (i) Aggregate demand in the United States
      (ii) The price level in the United States
      (iii) Interest rates in the United States. Explain.

2. Country X and Country Y are trading partners, and both produce furnaces and solar panels. The countries can produce the following amounts using equal amounts of resources.

   Country X: 6 furnaces or 8 solar panels

   Country Y: 6 furnaces or 12 solar panels

   (a) Which country has an absolute advantage in producing solar panels?

   (b) Calculate the opportunity cost of a furnace in Country Y.

   (c) Which country has the comparative advantage in producing furnaces? Explain.

   (d) If the terms of trade were that 2 furnaces are exchanged for 1 solar panel, should Country X produce solar panels domestically or import solar panels from Country Y?

---

3. Exchange rates and interest rates are important for macroeconomic decision making.

   (a) How does an increase in Japan's government budget deficit affect each of the following?

      (i) The real interest rate in the short run in Japan. Explain.

      (ii) Private domestic investment in plant and equipment in Japan

   (b) Draw a correctly labeled graph of the foreign exchange market for the euro, and show the effect of the change in the real interest rate in Japan from part (a)(i) on each of the following.

      (i) Supply of euros. Explain.

      (ii) Yen price of the euro

   (c) To reverse the change in the yen price of the euro identified in part (b)(ii), should the European Central Bank buy or sell euros in the foreign exchange market?

STOP

END OF EXAM

MACROECONOMICS
Section II
Planning Time—10 minutes
Writing Time—50 minutes

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume that the United States economy is currently operating below the full-employment level of real gross domestic product with a balanced budget.

   (a) Draw a correctly labeled graph of aggregate demand, short-run aggregate supply, and long-run aggregate supply, and show each of the following in the United States.

      (i) Current output and price level, labeled as Y_1 and PL_1, respectively

      (ii) Full-employment output, labeled as Y_f

   (b) The United States government increases spending on goods and services by $100 billion, which is financed by borrowing. How will the increase in government spending affect each of the following?

      (i) Cyclical unemployment

      (ii) The natural rate of unemployment

   (c) If the marginal propensity to consume is equal to 0.75, calculate the maximum possible change in real gross domestic product that could result from the $100 billion increase in government spending.

   (d) Using a correctly labeled graph of the loanable funds market, show the effect of the $100 billion increase in government spending on the real interest rate.

   (e) Based on the real interest rate change in part (d), what is the effect on the long-run economic growth rate? Explain.

   (f) Now assume that instead of financing the $100 billion increase in government spending by borrowing, the United States government increases taxes by $100 billion. With this equal increase in government spending and taxes, will the real gross domestic product increase, decrease, or remain the same? Explain.

AP MACROECONOMICS • EXERCISE SHEET

5.6 Economic Growth

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS economic growth 经济增长 • productivity 生产率 • technology 技术

Objective

Build the skills to answer exam questions on **economic growth**.

You must be able to:

- define **economic growth** 经济增长 as an increase in real GDP or real GDP per capita over time
- relate growth to the quantity and quality of resources and to **productivity** 生产率
- represent growth as an outward shift of the PPC or the LRAS curve

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Economic growth

A sustained increase in **real GDP** (or real GDP per capita) over time.

■ Sources

More or better **resources** (labour, capital), and higher **productivity** through technology and skills.

■ On the diagrams

Growth is shown as an **outward** shift of the PPC, or a **rightward** shift of the LRAS curve.

2 Practice

2.1 Define economic growth. [1]

2.2 State two sources of economic growth. [2]

2.3 State how growth is shown on a PPC. [1]

3 Exam-style questions

3.1 Economic growth is an increase in [1]

- **A** the price level
- **B** real GDP
- **C** unemployment
- **D** the money supply

3.2 On a PPC, economic growth is shown as [1]

- **A** an inward shift
- **B** an outward shift
- **C** a movement along the curve
- **D** no change

3.3 A country improves its education system and builds more factories.

(a) State the effect on productivity. [1]

(b) State the effect on the LRAS curve. [1]

(c) Name the process. [1]

Solutions

2.1 a sustained increase in real GDP (or real GDP per capita) over time.

2.2 any two of: more/better resources, more capital, higher productivity/technology.

2.3 an outward shift of the curve.

3.1 B.

3.2 B.

3.3 (a) it rises. (b) it shifts to the right. (c) economic growth.

1. Assume the economy of Vanderlandia is in short-run equilibrium with a real GDP of \$500 million. The full-employment level of real GDP is \$550 million.

(a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.

(i) The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively
(ii) The full-employment output, labeled Y_F

(b) Assume no policy action is taken to restore full employment.

(i) Explain how the economy will adjust in the long run.
(ii) Following the long-run adjustment process, will the price level in Vanderlandia be greater than, less than, or equal to PL_1 shown on your graph in part (a)?

(c) Assume instead that policymakers in Vanderlandia are considering changing government spending to restore full employment in the short run and that the marginal propensity to save is 0.2.

(i) Calculate the minimum change and state the direction of change in government spending required to completely close the output gap in the short run. Show your work.
(ii) On your graph in part (a), show the short-run effect of the change in government spending in part (c)(i), labeling the new equilibrium price level PL_2.

(d) Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in government spending in part (c)(i) on the equilibrium real interest rate.

(e) Based on the change in the real interest rate shown on your graph in part (d), what will happen to each of the following?

(i) The price of previously issued bonds
(ii) The rate of economic growth in the long run. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. The table below shows macroeconomic data for Country A.

Year	Nominal GDP	GDP Deflator	Population
2020	40,000	100	100
2021	88,000	200	110

(a) Calculate each of the following for Country A in year 2021. Show your work.

(i) Real GDP
(ii) Real GDP per capita

(b) Based solely on the data provided, has the standard of living for the average person in Country A increased, decreased, or stayed the same between 2020 and 2021 ? Explain.

(c) How would an increase in government spending on education affect economic growth in Country A? Explain.

(d) Assume that Country A produces consumer goods and capital goods. Draw a correctly labeled production possibilities curve for Country A, and show the effect of the increase in government spending on education on your graph.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. The economy of Country Zeta is in long-run equilibrium; however, the government is concerned about the size of the national debt.

(a) Identify one specific fiscal policy action the government could take to reduce the national debt.

(b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part (a) on the real interest rate.

(c) Based on the change in the real interest rate identified in part (b), what will happen to each of the following?

(i) Aggregate demand in the short run. Explain.
(ii) Potential real output. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

MACROECONOMICS
Section II
Total Time—1 hour
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume the economy of Artland is currently operating above full employment.
   (a) Draw a correctly labeled graph of the short-run aggregate supply, long-run aggregate supply, and aggregate demand curves, and show each of the following.
      (i) The current equilibrium real output and price level, labeled as Y_1 and PL_1, respectively
      (ii) The full-employment output, labeled as Y_f
   (b) Assume the central bank and the government do not take any policy actions to close the output gap.
      (i) On your graph in part (a), show how the economy automatically adjusts in the long run and label the new equilibrium price level PL_2.
      (ii) Explain the cause of the adjustment shown in part (b)(i).
   (c) Alternatively, suppose the government wants to close the output gap using fiscal policy.
      (i) Identify a fiscal policy action the government could implement to close the output gap.
      (ii) How will the fiscal policy action identified in part (c)(i) affect the following?
         - The unemployment rate
         - The natural rate of unemployment
      (iii) In closing the output gap, will the automatic adjustment identified in part (b)(i) produce a higher, a lower, or the same price level compared to the fiscal policy identified in part (c)(i) ?
   (d) Draw a correctly labeled graph of the market for loanable funds. Show the effect of the fiscal policy action identified in part (c)(i) on the equilibrium real interest rate.
   (e) Given the interest rate change identified in part (d), will the long-run aggregate supply curve shift to the right, shift to the left, or remain the same in the long run? Explain.

2. The European Union and the United States are trading partners.

   (a) If the current account balance is zero, will an increase in United States real income result in a current account surplus, deficit, or no change? Explain.

   (b) Draw a correctly labeled graph of the foreign exchange market for the euro. On your graph, show the effect of the increase in United States real income on the value of the euro relative to the United States dollar.

   (c) Now assume interest rates increase in the European Union.

      (i) What is the effect of the increase in interest rates in the European Union on the demand for the United States dollar? Explain.

      (ii) Based on your answer to part (c)(i), what is the effect on the value of the United States dollar relative to the euro?

---

3. Sweden and Norway use equal quantities of resources to produce food and capital goods. The table below shows the maximum possible production of food OR capital goods for each country.

Country	Food	Capital Goods
Sweden	50	100
Norway	30	120

   (a) Draw a correctly labeled graph of the production possibilities curve for Sweden. Place food on the horizontal axis and capital goods on the vertical axis. Plot the relevant numerical values on the graph.

   (b) On your graph in part (a), indicate the following.

      (i) A point that represents an efficient level of production, labeled E

      (ii) A point that represents an inefficient level of production, labeled I

      (iii) A point that represents an unattainable level of production, labeled U

   (c) Assume Sweden moves from producing 20 units of food and 60 units of capital goods to producing 30 units of food and 40 units of capital goods. What will happen to economic growth in Sweden in the future?

   (d) Which country has the comparative advantage in the production of capital goods? Explain.

   (e) Based on the table above, identify a specific number of units of capital goods that could be traded for 10 units of food and be mutually beneficial.

STOP

END OF EXAM

2. Assume the economy of Ucheland is currently at full employment. The government of Ucheland reduces the tax rate on household interest earnings.
   (a) What will happen to private savings in Ucheland?
   (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in private savings identified in part (a) on the equilibrium real interest rate.
   (c) Given the real interest rate change identified in part (b), answer the following questions.
      (i) What is the short-run effect on aggregate demand? Explain.
      (ii) What is the long-run effect on potential real gross domestic product in Ucheland? Explain.

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2. Assume that an economy is in long-run equilibrium. Assume that consumers wish to hold less money because they use credit cards more frequently to purchase goods and services than cash.
   (a) Draw a correctly labeled graph of the money market and show the effect of the reduced holdings of money on the equilibrium nominal interest rate in the short run.
   (b) Based on the change in the interest rate in part (a), what will happen to each of the following in the short run?
      (i) Prices of previously issued bonds
      (ii) The price level and real income. Explain.
   (c) With a constant money supply, based on your answer to part b(ii), will the velocity of money increase, decrease, or remain the same, or is the change indeterminate?
   (d) If the central bank wishes to reverse the change in the interest rate identified in part (a), what open market operation would it use?

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3. A country is at full employment and produces two types of goods: consumer goods and capital goods.
   (a) Draw a correctly labeled graph of the production possibilities curve, with consumer goods on the horizontal axis and capital goods on the vertical axis. Indicate a point on your graph, labeled X, that represents full employment and a possible combination in which both goods are being produced.
   (b) Assume there is an increase in the country's national savings. Draw a correctly labeled graph of the loanable funds market, showing the change in the real interest rate from the increase in savings.
   (c) On the same graph from part (a), show another point, labeled Z, that represents full employment and a new combination of consumer goods and capital goods consistent with the increase in the country's national savings.
   (d) Referring to your answer to part (c), will the long-run aggregate supply curve shift to the right, shift to the left, or remain the same? Explain.

STOP

END OF EXAM

MACROECONOMICS
Section II
Planning Time—10 minutes
Writing Time—50 minutes

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume that the United States economy is currently operating below the full-employment level of real gross domestic product with a balanced budget.

   (a) Draw a correctly labeled graph of aggregate demand, short-run aggregate supply, and long-run aggregate supply, and show each of the following in the United States.

      (i) Current output and price level, labeled as Y_1 and PL_1, respectively

      (ii) Full-employment output, labeled as Y_f

   (b) The United States government increases spending on goods and services by $100 billion, which is financed by borrowing. How will the increase in government spending affect each of the following?

      (i) Cyclical unemployment

      (ii) The natural rate of unemployment

   (c) If the marginal propensity to consume is equal to 0.75, calculate the maximum possible change in real gross domestic product that could result from the $100 billion increase in government spending.

   (d) Using a correctly labeled graph of the loanable funds market, show the effect of the $100 billion increase in government spending on the real interest rate.

   (e) Based on the real interest rate change in part (d), what is the effect on the long-run economic growth rate? Explain.

   (f) Now assume that instead of financing the $100 billion increase in government spending by borrowing, the United States government increases taxes by $100 billion. With this equal increase in government spending and taxes, will the real gross domestic product increase, decrease, or remain the same? Explain.

AP MACROECONOMICS • EXERCISE SHEET

5.7 Public Policy and Economic Growth

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS property rights 产权 • human capital 人力资本 • physical 实物资本 • economic growth 经济增长 • productivity 生产率

Objective

Build the skills to answer exam questions on **public policy and economic growth**.

You must be able to:

- describe policies that promote growth, such as investment in **physical** 实物资本 and **human capital** 人力资本
- explain how **research and development** and technology raise productivity
- discuss the role of institutions, **property rights** 产权, and incentives

1 Worked examples

Study these first. Each one shows the method for a question type used later.

Investing in capital

- **Physical capital** — infrastructure, machines, factories.
- **Human capital** — education, training, health.

Technology

Spending on **research and development** raises **productivity**, letting the economy produce more from the same resources.

Institutions

Secure **property rights**, the rule of law, and good incentives encourage investment and innovation — essential for long-run growth.

2 Practice

2.1 State two policies that promote economic growth. [2]

2.2 State how research and development raises growth. [1]

2.3 State one institutional factor important for long-run growth. [1]

3 Exam-style questions

3.1 Investment in human capital means spending on [1]

- **A** machines and factories
- **B** education and training
- **C** government bonds
- **D** imports

3.2 Which of these promotes long-run growth? [1]

- **A** weak property rights
- **B** research and development
- **C** high inflation
- **D** trade barriers

3.3 A government wants to raise the economy's long-run growth rate.

(a) Name one policy involving **physical** capital. [1]

(b) Name one policy involving **human** capital. [1]

(c) State why secure property rights matter for growth. [1]

Solutions

2.1 any two of: investment in physical capital (infrastructure), investment in human capital (education), support for R&D/technology.

2.2 it raises productivity, so more can be produced from the same resources.

2.3 secure property rights, the rule of law, or good incentives (any one).

3.1 B.

3.2 B.

3.3 (a) build infrastructure or invest in machines/factories. (b) fund education or training. (c) they give people the confidence to invest and innovate, knowing they keep the rewards.

2. The table below shows macroeconomic data for Country A.

Year	Nominal GDP	GDP Deflator	Population
2020	40,000	100	100
2021	88,000	200	110

(a) Calculate each of the following for Country A in year 2021. Show your work.

(i) Real GDP
(ii) Real GDP per capita

(b) Based solely on the data provided, has the standard of living for the average person in Country A increased, decreased, or stayed the same between 2020 and 2021 ? Explain.

(c) How would an increase in government spending on education affect economic growth in Country A? Explain.

(d) Assume that Country A produces consumer goods and capital goods. Draw a correctly labeled production possibilities curve for Country A, and show the effect of the increase in government spending on education on your graph.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

MACROECONOMICS
Section II
Planning Time—10 minutes
Writing Time—50 minutes

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1. Assume that the United States economy is operating below full employment.
   (a) Draw a correctly labeled graph of long-run aggregate supply, short-run aggregate supply, and aggregate demand, and show each of the following.
      (i) Current equilibrium output and price level, labeled as Y_1 and PL_1
      (ii) Full-employment output, labeled as Y_f
   (b) Assume that the Federal Reserve targets a new federal funds rate to reach full employment. Should the Federal Reserve target a higher or lower federal funds rate?
   (c) Given the Federal Reserve action you identified in part (b), draw a correctly labeled graph of the money market and show the effect on the nominal interest rate.
   (d) The policy makers pursue a fiscal policy rather than the monetary policy in part (b). Assume that the marginal propensity to consume is 0.8 and the value of the recessionary gap is $300 billion.
      (i) If the government changes its spending without changing taxes to eliminate the recessionary gap, calculate the minimum required change in government spending.
      (ii) If the government changes taxes without changing government spending to eliminate the recessionary gap, will the minimum required change in taxes be greater than, smaller than, or equal to the minimum required change in government spending in part (d)(i) ? Explain.
   (e) Assume the government lowers income tax rates to eliminate the recessionary gap. Will each of the following increase, decrease, or stay the same?
      (i) Aggregate demand. Explain.
      (ii) Long-run aggregate supply. Explain.