

HOLIDAY HOMEWORK 假期作业

AP Macroeconomics

Exercise sheets and past-paper practice, topic by topic.

每个单元：练习卷 + 历年真题。

For class or self-study • no answer keys included.

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1 Scarcity, choice, and trade – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
scarcity	稀缺性	_____
opportunity cost	机会成本	_____
production possibilities curve (PPC)	生产可能性曲线	_____
comparative advantage	比较优势	_____

Recall

You already meet economics every day:

- You cannot buy everything you want – money and time are limited.
- Choosing one thing means giving up another.
- Countries trade goods with each other.

This sheet lines up the core economic ideas. Each idea has a worked example.

New ideas

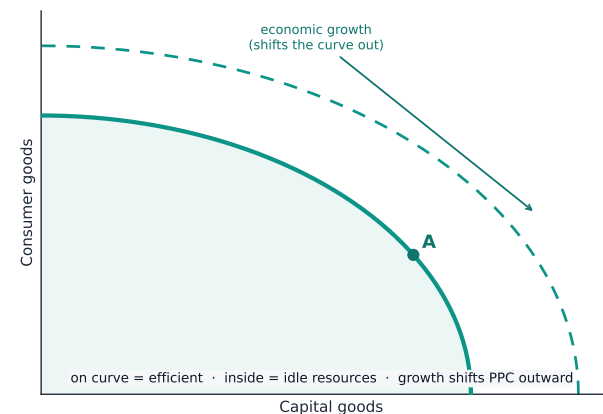
■ 1 Scarcity and choice

Economics starts with **scarcity** 稀缺性: wants are unlimited, but resources are limited. So every choice has an **opportunity cost** 机会成本 – the value of the next-best thing you gave up.

Worked example. If you spend an evening studying instead of working a \$40 shift, the opportunity cost of studying is the \$40 you did not earn.

■ 2 The production possibilities curve

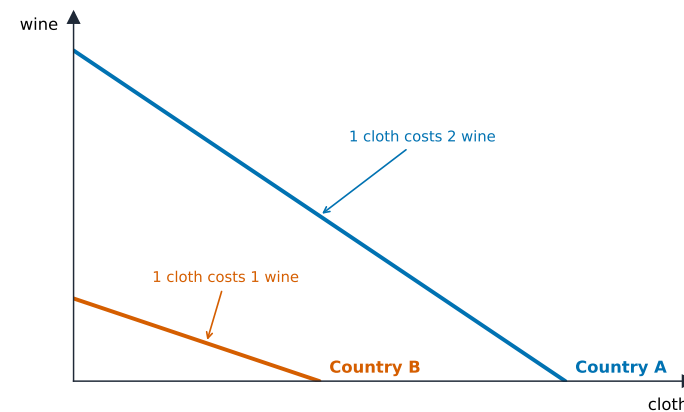
The **production possibilities curve (PPC)** 生产可能性曲线 shows the most of two goods an economy can make with its resources fully used.



- Points **on** the curve are efficient; **inside**, wasteful; **outside**, impossible.
- More resources or better technology shift the whole curve **outward** (growth).

■ 3 Comparative advantage

A producer has a **comparative advantage** 比较优势 in a good if it can make it at a **lower opportunity cost**. Countries should specialize where they have the comparative advantage, then trade.



Watch out: opportunity cost is what you **give up**, not the money you spend. Even

a free activity has an opportunity cost – the best alternative use of that time.

Practice

Try these in order. The methods are all above.

2.1 State what “scarcity” means in economics. [1]

2.2 You choose to watch a film instead of earning \$15 babysitting. State the opportunity cost. [1]

2.3 On a PPC, state what a point (a) on the curve, (b) inside the curve represents. [2]

2.4 State one thing that would shift a country’s PPC outward. [1]

2.5 Explain what it means for a country to have a comparative advantage in a good. [2]

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?

1 Demand, supply, and equilibrium – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Demand	需求	_____
Supply	供给	_____
Equilibrium	均衡	_____
surplus	过剩	_____
shortage	短缺	_____

Recall

You have seen how prices work in shops:

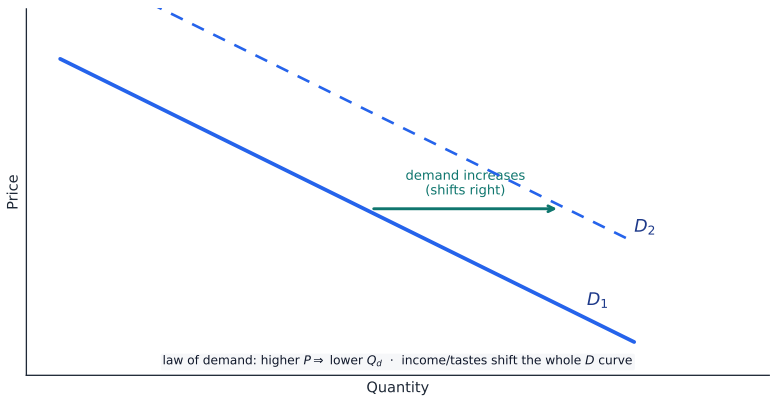
- When something is popular, its price tends to rise.
- When there is too much of something, its price tends to fall.
- Buyers and sellers meet at a market price.

This sheet lines up demand, supply, and how they set the price. Each idea has a worked example.

New ideas

■ 1 Demand

Demand 需求 shows how much buyers will buy at each price. The **law of demand**: as price rises, quantity demanded falls, so the demand curve slopes **downward**.

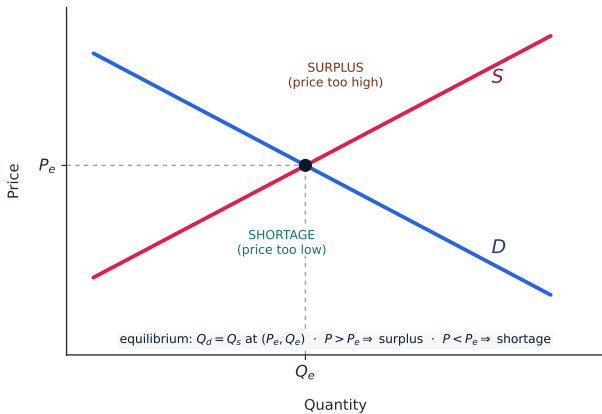


■ 2 Supply

Supply 供给 shows how much sellers will offer at each price. The **law of supply**: as price rises, quantity supplied rises, so the supply curve slopes **upward**.

■ 3 Market equilibrium

Equilibrium 均衡 is where supply meets demand – the price that clears the market.



- Above the equilibrium price there is a **surplus** 过剩 (too much), which pushes the price down.

- Below it there is a **shortage** 短缺 (too little), which pushes the price up.

■ 4 Shifts

If demand rises (a rightward shift), the price and quantity both rise. If supply rises, the price falls but quantity rises.

Watch out: a change in the good's **own price** moves you **along** a curve; a change in something else (income, tastes, costs) **shifts** the whole curve. Don't confuse a movement with a shift.

Practice

Try these in order. The methods are all above.

2.1 State the law of demand and the direction the demand curve slopes. [2]

2.2 State the law of supply and the direction the supply curve slopes. [2]

2.3 State what happens to the price when there is a surplus, and why. [2]

2.4 A new technology lowers production costs, shifting supply right. State what happens to the equilibrium price and quantity. [2]

2.5 State the difference between a movement along a demand curve and a shift of the curve. [2]

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

- Which country has an absolute advantage in producing solar panels?
- Calculate the opportunity cost of a furnace in Country Y.
- Which country has the comparative advantage in producing furnaces? Explain.
- 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?

2 Measuring the economy - GDP – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
circular flow	循环流动模型	_____
Gross domestic product (GDP)	国内生产总值	_____
consumption	消费	_____
investment	投资	_____

Recall

You have heard economic news before:

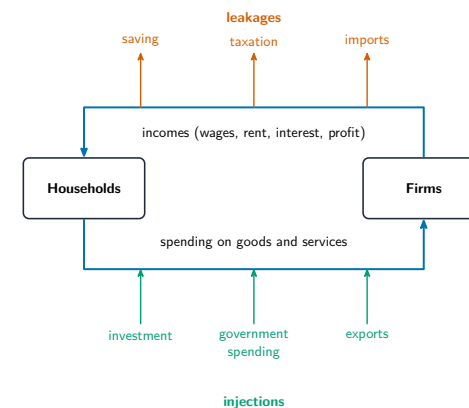
- “GDP” is used to measure how big an economy is.
- Money flows between households and businesses.
- A country’s total output is a sign of its wealth.

This sheet lines up how we measure the whole economy. Each idea has a worked example.

New ideas

■ 1 The circular flow

The **circular flow** 循环流动模型 shows money moving between **households** and **firms**: households supply labour and earn income; firms sell goods and earn revenue. Every dollar of spending is someone’s income.



■ 2 Gross domestic product

Gross domestic product (GDP) 国内生产总值 is the total market value of all **final** goods and services produced in a country in a year. By the spending method:

$$GDP = C + I + G + X_n,$$

that is **consumption** 消费 + **investment** 投资 + government purchases + net exports.

Worked example. If $C = \$70\text{b}$, $I = \$20\text{b}$, $G = \$25\text{b}$, and net exports $X_n = -\$5\text{b}$, then $GDP = 70 + 20 + 25 - 5 = \110b .

■ 3 What GDP leaves out

GDP measures market output, not well-being. It **misses** unpaid housework, the underground economy, leisure, and environmental damage.

GDP per capita shows	but it misses
✓ average income	✗ how income is distributed
✓ output of the economy	✗ unpaid and informal work
✓ growth over time	✗ pollution and resource use
✓ a rough living standard	✗ leisure, health, wellbeing

a higher GDP per capita usually means a better life - but not always

■ 4 GDP per person

GDP per capita ($\text{GDP} \div \text{population}$) is a better guide to average living standards than total GDP.

Watch out: GDP counts only **final** goods, to avoid double counting. The steel in a car is not counted separately – its value is already inside the finished car’s price.

Practice

Try these in order. The methods are all above.

2.1 State what GDP measures. [2]

2.2 Write the four parts of GDP by the spending method. [2]

2.3 Find GDP if $C = \$50\text{b}$, $I = \$15\text{b}$, $G = \$20\text{b}$, and $X_n = \$5\text{b}$. [2]

2.4 Give two things that GDP fails to measure. [2]

2.5 State why only final goods are counted in GDP. [2]

Name:

AP Macroeconomics: **2024 Set 2**

2. The table provided shows the quantity and price of food and clothing, the only two goods produced and consumed in the country of Maltrose, in year 1 and year 2. Assume that year 1 is the base year.

	Year 1 Price	Year 1 Quantity	Year 2 Price	Year 2 Quantity
Food	\$10	12	\$13	10
Clothing	\$5	16	\$4	20

- (a) Calculate the nominal GDP in year 2. Show your work.
- (b) Calculate the GDP deflator in year 2. Show your work.
- (c) What was the numerical value of the inflation rate from year 1 to year 2 ?
- (d) Assuming that the expected inflation rate between years 1 and 2 was 3%, were each of the following better off, worse off, or unaffected as a result of the economic conditions between year 1 and year 2 ?
- (i) People living on a fixed income
 - (ii) Borrowers with fixed interest-rate loans. 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 provided shows economic data for the country of Louland. The base year is year 1, and the GDP deflator in year 2 is 115.

	Year 1	Year 2
Nominal GDP	800,000	1,035,000
Population	1,000	1,200

- (a) Calculate real GDP in Louland in year 2. Show your work.
- (b) How would the change in real GDP from year 1 to year 2 affect the demand for money and the nominal interest rate in Louland?
- (c) Did the standard of living of the average citizen in Louland increase, decrease, or remain the same from year 1 to year 2 ? Explain using numbers.
- (d) What was the numerical value of the inflation rate from year 1 to year 2 ?
- (e) If nominal wages increased by 10% from year 1 to year 2, what happened to the real wages of workers in Louland during this time? 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 United States and South Africa are trading partners with flexible exchange rates, and the United States current account balance with South Africa is zero.
- (a) Assume real income in the United States increases while real income in South Africa remains the same. Will United States net exports increase, decrease, or remain unchanged? Explain.
- (b) Based on your answer to part (a), what will happen to each of the following?
- (i) The capital and financial account balance in the United States
 - (ii) Actual unemployment in South Africa in the short run. Explain.
- (c) The currency of the United States is the dollar (USD), and the currency of South Africa is the rand (ZAR). Draw a correctly labeled graph of the foreign exchange market for the rand and show the effect of the increase in real income in the United States on the international value of the rand.

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 Unemployment, inflation, and the business cycle – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
unemployment rate	失业率	_____
Inflation	通货膨胀	_____
consumer price index (CPI)	消费者价格指数	_____
business cycle	经济周期	_____

Recall

You hear these words in the news all the time:

- **Unemployment** – people who want a job but cannot find one.
- **Inflation** – prices rising over time.
- The economy has good years and bad years.

This sheet makes these measures exact. Each idea has a worked example.

New ideas

■ 1 Unemployment

The **labor force** is the employed plus the unemployed (those without work who are actively looking). The **unemployment rate** 失业率 is

$$\frac{\text{unemployed}}{\text{labor force}} \times 100\%.$$

frictional
short-term, between
jobs

structural
skills no longer
match the jobs

cyclical
low demand in
a recession

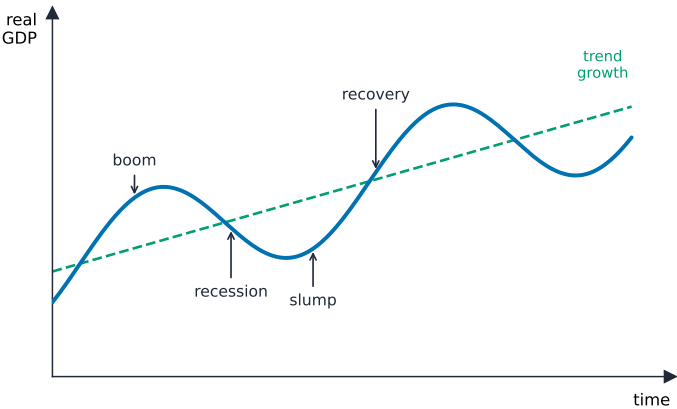
Worked example. With 9 million unemployed and a labor force of 150 million: rate
 $= \frac{9}{150} \times 100\% = 6\%$.

■ 2 Inflation and the CPI

Inflation 通货膨胀 is a sustained rise in average prices, measured by the **consumer price index (CPI)** 消费者价格指数. The inflation rate is the percent change in the CPI.

Worked example. If the CPI rises from 200 to 210, the inflation rate is $\frac{210 - 200}{200} \times 100\% = 5\%$.

■ 3 The business cycle



The **business cycle** 经济周期 is the economy's ups and downs: expansion (growth) up to a peak, then contraction (recession) down to a trough, then recovery.

■ 4 The trade-off

Unemployment and inflation tend to move in **opposite** directions over the cycle – high in a recession, low in a boom.

Watch out: someone who has **stopped looking** for work is **not** counted as unemployed – they leave the labor force. This is why the unemployment rate can understate the real problem.

Practice

Try these in order. The methods are all above.

- 2.1 State who is counted in the labor force. [2]

- 2.2 A country has 8 million unemployed and a labor force of 100 million. Find the unemployment rate. [2]

- 2.3 The CPI rises from 150 to 159. Find the inflation rate. [3]

- 2.4 Name the four stages of the business cycle in order. [2]

- 2.5 Explain why the unemployment rate can understate the true level of joblessness. [2]

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.

2. The table provided shows the quantity and price of food and clothing, the only two goods produced and consumed in the country of Maltrose, in year 1 and year 2. Assume that year 1 is the base year.

	Year 1 Price	Year 1 Quantity	Year 2 Price	Year 2 Quantity
Food	\$10	12	\$13	10
Clothing	\$5	16	\$4	20

- (a) Calculate the nominal GDP in year 2. Show your work.
- (b) Calculate the GDP deflator in year 2. Show your work.
- (c) What was the numerical value of the inflation rate from year 1 to year 2 ?
- (d) Assuming that the expected inflation rate between years 1 and 2 was 3%, were each of the following better off, worse off, or unaffected as a result of the economic conditions between year 1 and year 2 ?
- People living on a fixed income
 - Borrowers with fixed interest-rate loans. 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. Assume the expected inflation rate in a country is 3%, the current unemployment rate is 6%, and the natural rate of unemployment is 4%.
- 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.
 - Is the actual inflation rate greater than, less than, or equal to the expected inflation rate of 3%?
 - 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.
 - 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?

2. The table provided shows the quantity and price of food and clothing, the only two goods produced and consumed in the country of Maltrose, in year 1 and year 2. Assume that year 1 is the base year.

	Year 1 Price	Year 1 Quantity	Year 2 Price	Year 2 Quantity
Food	\$10	12	\$13	10
Clothing	\$5	16	\$4	20

- (a) Calculate the nominal GDP in year 2. Show your work.
- (b) Calculate the GDP deflator in year 2. Show your work.
- (c) What was the numerical value of the inflation rate from year 1 to year 2 ?
- (d) Assuming that the expected inflation rate between years 1 and 2 was 3%, were each of the following better off, worse off, or unaffected as a result of the economic conditions between year 1 and year 2 ?
- People living on a fixed income
 - Borrowers with fixed interest-rate loans. 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 in the country of Zeta, the civilian noninstitutional population aged 16 and over is 1,000,000. The labor force participation rate is 70%, the unemployment rate is 9%, and the natural rate of unemployment is 5%.

(a) Calculate the number of people in Zeta that are unemployed. Show your work.

(b) Is the economy of Zeta currently experiencing a recessionary gap, an inflationary gap, or no output gap? Explain.

(c) Consumer goods and capital goods are produced in the country of Zeta. Draw a correctly labeled graph of the production possibilities curve for Zeta. Indicate a point, labeled A, that represents the current state of Zeta's economy.

(d) If some individuals who are counted as unemployed in Zeta stop looking for work, what will happen to each of the following?

- (i) The labor force participation rate. Explain.
- (ii) The 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.

STOP

END OF EXAM

3 Aggregate demand and the multiplier – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Aggregate demand	总需求	_____
multiplier effect	乘数效应	_____
marginal propensity to consume	边际消费倾向	_____

Recall

You already know that spending drives an economy:

- When people spend more, businesses sell more and may hire more.
- Total spending in a country adds up to its output.
- One person’s spending is another person’s income.

This sheet lines up total demand and the multiplier. Each idea has a worked example.

New ideas

■ 1 Aggregate demand

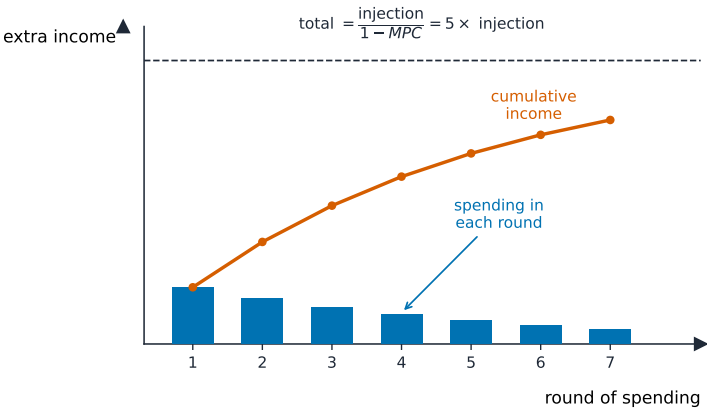
Aggregate demand 总需求 is the total spending in an economy at each price level: consumption + investment + government + net exports ($C + I + G + X_n$). It slopes **downward** against the price level.



$AD = C + I + G + (X - M)$: total spending on a country's goods and services

■ 2 The multiplier effect

A change in spending sets off further rounds of spending, so the final change in output is **larger** – the **multiplier effect** 乘数效应.



■ 3 The spending multiplier

The multiplier depends on the **marginal propensity to consume** 边际消费倾向 (MPC), the fraction of extra income that is spent:

$$\text{multiplier} = \frac{1}{1 - MPC}$$

Worked example. If $MPC = 0.8$, the multiplier is $\frac{1}{1 - 0.8} = 5$. So \$10b of extra government spending raises output by $5 \times \$10 = \50b .

■ 4 What shifts AD

Aggregate demand shifts when any of C , I , G , or net exports changes – for example, more consumer confidence or higher government spending shifts it **right**.

Watch out: the multiplier is bigger when people **spend** more of each extra dollar (a higher MPC). If they save more, the multiplier is smaller, because less is passed on in each round.

Practice

Try these in order. The methods are all above.

2.1 State the four parts of aggregate demand. [2]

2.2 Explain what the multiplier effect is. [2]

2.3 If $MPC = 0.75$, find the spending multiplier. [2]

2.4 Using that multiplier, find the change in output from a \$20b rise in government spending. [2]

2.5 State one thing that would shift aggregate demand to the right. [1]

2. Assume the economy of Jenland is in short-run equilibrium at a real output level above full-employment real output.

- A. The banking system in Jenland has ample reserves. Identify a specific monetary policy action that the central bank of Jenland would implement to return the economy to full employment in the short run.
- B. Draw a correctly labeled graph of the reserve market for Jenland, and show the effect of the central bank's action identified in part A on the policy rate.
- C. Based on the change in the interest rate shown on your graph in part B, will each of the following increase, decrease, or remain the same in Jenland in the short run?
 - i. The price of previously issued bonds
 - ii. The price level. Explain.

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.

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.

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. 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 Aggregate supply and fiscal policy – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Aggregate supply	总供给	_____
recessionary gap	衰退缺口	_____
Fiscal policy	财政政策	_____

Recall

In Part A you met aggregate demand. Now the supply side and how governments respond:

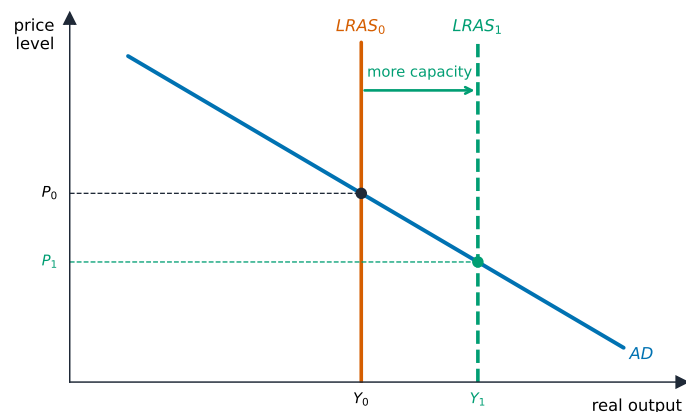
- Firms supply more output when it is profitable to do so.
- Governments can change spending and taxes to steer the economy.

Each idea has a worked example before the Practice.

New ideas

■ 1 Aggregate supply

Aggregate supply 总供给 is the total output firms produce at each price level. In the short run it slopes **upward**; in the long run it is **vertical** at the economy's full-employment output.

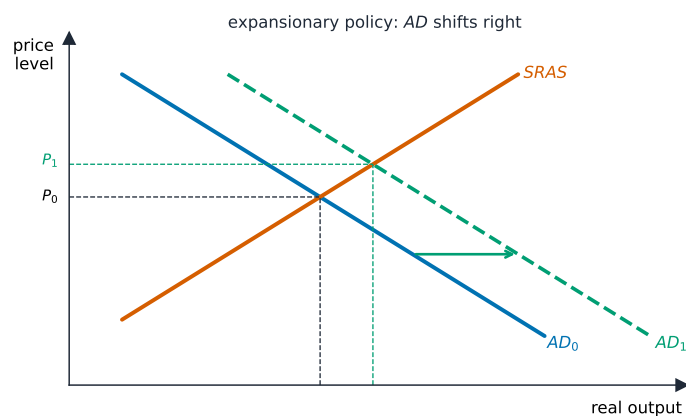


■ 2 Equilibrium and gaps

The economy settles where aggregate demand meets aggregate supply. If output is **below** full employment, there is a **recessionary gap** 衰退缺口 (unemployment); if **above**, an inflationary gap (overheating).

■ 3 Fiscal policy

Fiscal policy 财政政策 is the government's use of spending and taxes to shift aggregate demand:



- **expansionary** (more spending or lower taxes) shifts AD **right** to fight a recession,
- **contractionary** (less spending or higher taxes) shifts AD **left** to fight inflation.

■ 4 Choosing the policy

To close a recessionary gap, the government uses expansionary fiscal policy; to cool an overheating economy, it uses contractionary policy.

Watch out: a **tax cut** and a **spending increase** both boost aggregate demand, but a tax cut is **weaker** dollar-for-dollar, because people save part of the extra money instead of spending all of it.

Practice

Try these in order. The methods are all above.

2.1 State the shape of short-run and long-run aggregate supply. [2]

2.2 State what a recessionary gap is. [2]

2.3 State whether expansionary fiscal policy shifts AD left or right, and give one way to do it. [2]

2.4 A country is in a recession. State the fiscal policy it should use and why. [2]

2.5 Explain why a tax cut boosts demand less than an equal rise in government spending. [2]

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?
-

2. The economies of Country L and Country A are currently in short-run equilibrium at output levels below full employment. Both countries intend to use monetary policy to close their output gaps. Country L has a banking system with limited reserves, and Country A has a banking system with ample reserves.
- A. What open-market operation would Country L implement to move the economy toward full employment in the short run?
 - B. What specific monetary policy action would Country A implement to move the economy toward full employment in the short run?
 - C. Draw a correctly labeled graph of the reserve market in Country A, and show the effect of the monetary policy action identified in part B on the policy rate.
 - D. Assume instead that no policy actions are taken in Country A and that the economy remains in short-run equilibrium at an output level below full employment. Will short-run aggregate supply in Country A increase, decrease, or remain the same as the economy self-adjusts in the long run? Explain.
-

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.

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.

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.

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

4 Money and the money market – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Money	货币	_____
money market	货币市场	_____

Recall

You use money every day:

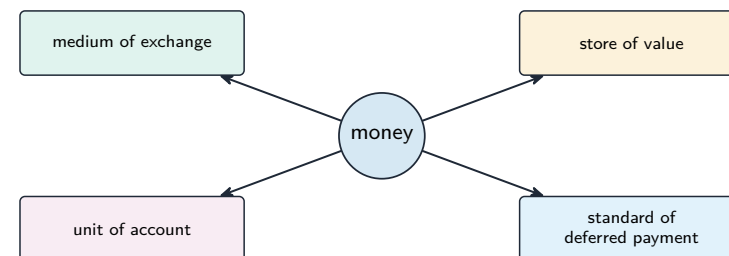
- Money lets you buy things without swapping goods directly (barter).
- Banks keep your savings and lend money to others.
- Interest is the price of borrowing money.

This sheet lines up what money is and how its price is set. Each idea has a worked example.

New ideas

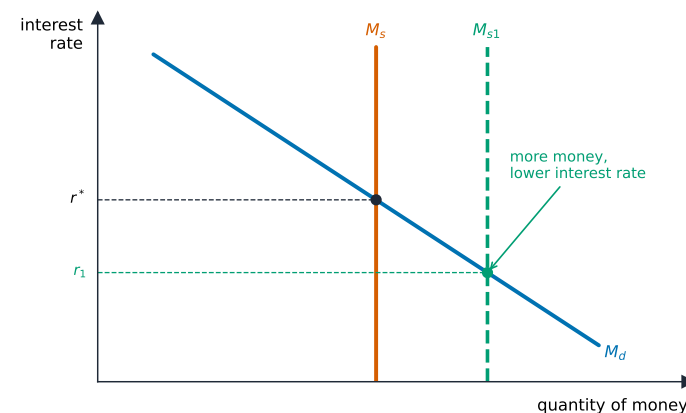
■ 1 What money does

Money 货币 has three jobs: a **medium of exchange** (buying things), a **unit of account** (measuring value), and a **store of value** (holding value over time).



■ 2 The money market

The **money market** 货币市场 sets the **interest rate** – the price of holding money. Money **demand** slopes down (a higher rate makes holding money costlier), and money **supply** is set by the central bank.



■ 3 More money, lower rates

If the central bank increases the money supply, the supply line shifts right and the interest rate **falls**. Less money supply pushes the rate **up**.

■ 4 Nominal and real interest

The **nominal interest rate** is the stated rate; the **real interest rate** subtracts inflation:

$$\text{real rate} \approx \text{nominal rate} - \text{inflation}.$$

Worked example. A loan at 6% with inflation of 2% has a real rate of $6\% - 2\% = 4\%$.

Watch out: what matters for borrowers and savers is the **real** interest rate (after

inflation), not the nominal rate. A 6% nominal rate is barely positive if inflation is also near 6%.

Practice

Try these in order. The methods are all above.

2.1 State the three functions of money. [3]

2.2 State what happens to the interest rate when the central bank increases the money supply. [2]

2.3 A loan has a nominal rate of 8% and inflation is 3%. Find the real interest rate. [2]

2.4 A savings account pays 5% but inflation is 5%. Find the real interest rate and state what it means. [2]

2.5 State why the real interest rate matters more than the nominal rate. [1]

2. Assume the economy of Jenland is in short-run equilibrium at a real output level above full-employment real output.

- A. The banking system in Jenland has ample reserves. Identify a specific monetary policy action that the central bank of Jenland would implement to return the economy to full employment in the short run.
- B. Draw a correctly labeled graph of the reserve market for Jenland, and show the effect of the central bank's action identified in part A on the policy rate.
- C. Based on the change in the interest rate shown on your graph in part B, will each of the following increase, decrease, or remain the same in Jenland in the short run?
 - i. The price of previously issued bonds
 - ii. The price level. Explain.

2. The Federal Reserve can influence the supply of money.

- (a) Assume that the Federal Reserve targets a lower federal funds rate.
 - (i) What open market operation can the Federal Reserve use to achieve the lower target?
 - (ii) Given your answer to part (a)(i), what will happen to the price of government bonds?
- (b) Using a correctly labeled graph of the money market, show the effect of the open market operation from part (a)(i) on the nominal interest rate.
- (c) Assume that the Federal Reserve buys government bonds from commercial banks. Based only on this transaction, will the level of required reserves in the commercial banks increase, decrease, or remain the same?
- (d) Another monetary policy action involves changing the discount rate. Define the discount rate.

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?
-

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.

2. The Federal Reserve can influence the supply of money.
- (a) Assume that the Federal Reserve targets a lower federal funds rate.
 - (i) What open market operation can the Federal Reserve use to achieve the lower target?
 - (ii) Given your answer to part (a)(i), what will happen to the price of government bonds?
 - (b) Using a correctly labeled graph of the money market, show the effect of the open market operation from part (a)(i) on the nominal interest rate.
 - (c) Assume that the Federal Reserve buys government bonds from commercial banks. Based only on this transaction, will the level of required reserves in the commercial banks increase, decrease, or remain the same?
 - (d) Another monetary policy action involves changing the discount rate. Define the discount rate.
-

4 Banks and monetary policy – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
fractional reserve	部分准备金	_____
Monetary policy	货币政策	_____

Recall

In Part A you met money and interest rates. Now banks and the central bank:

- Banks lend out most of the money you deposit.
- The central bank can change the money supply to steer the economy.

Each idea has a worked example before the Practice.

New ideas

■ 1 How banks create money

Banks keep only a **fraction** of deposits as reserves and lend the rest – a **fractional reserve** 部分准备金 system. The loans get re-deposited and re-lent, expanding the money supply by the **money multiplier**:

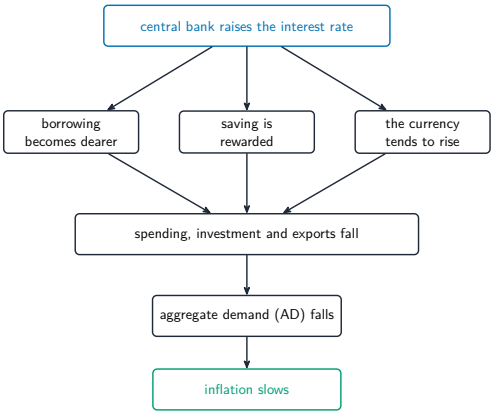
$$\text{money multiplier} = \frac{1}{rr},$$

where rr is the required reserve ratio.

Worked example. With $rr = 0.10$, a new \$1000 deposit can expand the money supply by up to $1000 \times \frac{1}{0.10} = \$10,000$.

■ 2 Monetary policy

Monetary policy 货币政策 is the central bank's use of the money supply to steer the economy, working through the interest rate.



- **expansionary** (more money → lower rates → more borrowing and spending) fights recession,
- **contractionary** (less money → higher rates) fights inflation.

■ 3 The chain of effects

More money supply → lower interest rate → more investment and consumption → aggregate demand shifts right → higher output.

Watch out: the money multiplier is **largest when banks keep the smallest reserves** (a low reserve ratio). A higher reserve requirement means banks lend less, so the money supply expands by a smaller factor.

Practice

Try these in order. The methods are all above.

2.1 Explain how banks create money in a fractional reserve system. [2]

2.2 With a required reserve ratio of 0.20, find the money multiplier. [2]

2.3 A \$500 deposit is made with $rr = 0.20$. Find the maximum expansion of the money supply. [3]

2.4 State whether expansionary monetary policy raises or lowers interest rates, and what it is used to fight. [2]

2.5 Trace the chain from a rise in the money supply to a rise in output. [2]

2. The economies of Country L and Country A are currently in short-run equilibrium at output levels below full employment. Both countries intend to use monetary policy to close their output gaps. Country L has a banking system with limited reserves, and Country A has a banking system with ample reserves.

- A. What open-market operation would Country L implement to move the economy toward full employment in the short run?
- B. What specific monetary policy action would Country A implement to move the economy toward full employment in the short run?
- C. Draw a correctly labeled graph of the reserve market in Country A, and show the effect of the monetary policy action identified in part B on the policy rate.
- D. Assume instead that no policy actions are taken in Country A and that the economy remains in short-run equilibrium at an output level below full employment. Will short-run aggregate supply in Country A increase, decrease, or remain the same as the economy self-adjusts in the long run? Explain.

2. The Federal Reserve can influence the supply of money.

- (a) Assume that the Federal Reserve targets a lower federal funds rate.
 - (i) What open market operation can the Federal Reserve use to achieve the lower target?
 - (ii) Given your answer to part (a)(i), what will happen to the price of government bonds?
- (b) Using a correctly labeled graph of the money market, show the effect of the open market operation from part (a)(i) on the nominal interest rate.
- (c) Assume that the Federal Reserve buys government bonds from commercial banks. Based only on this transaction, will the level of required reserves in the commercial banks increase, decrease, or remain the same?
- (d) Another monetary policy action involves changing the discount rate. Define the discount rate.

2. Assume the economy of Jenland is in short-run equilibrium at a real output level above full-employment real output.
- A. The banking system in Jenland has ample reserves. Identify a specific monetary policy action that the central bank of Jenland would implement to return the economy to full employment in the short run.
- B. Draw a correctly labeled graph of the reserve market for Jenland, and show the effect of the central bank's action identified in part A on the policy rate.
- C. Based on the change in the interest rate shown on your graph in part B, will each of the following increase, decrease, or remain the same in Jenland in the short run?
- The price of previously issued bonds
 - The price level. Explain.

AP Macroeconomics: **2014**

2. The Federal Reserve can influence the supply of money.
- (a) Assume that the Federal Reserve targets a lower federal funds rate.
- What open market operation can the Federal Reserve use to achieve the lower target?
 - Given your answer to part (a)(i), what will happen to the price of government bonds?
- (b) Using a correctly labeled graph of the money market, show the effect of the open market operation from part (a)(i) on the nominal interest rate.
- (c) Assume that the Federal Reserve buys government bonds from commercial banks. Based only on this transaction, will the level of required reserves in the commercial banks increase, decrease, or remain the same?
- (d) Another monetary policy action involves changing the discount rate. Define the discount rate.

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?
- Net exports. Explain.
 - 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.

AP Macroeconomics: **2018**

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.
- What is the short-run effect on aggregate demand? Explain.
 - What is the long-run effect on potential real gross domestic product in Ucheland? Explain.

5 The Phillips curve and inflation – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Phillips curve	菲利普斯曲线	_____
natural rate of unemployment	自然失业率	_____

Recall

You have seen that unemployment and inflation are the two big economic worries:

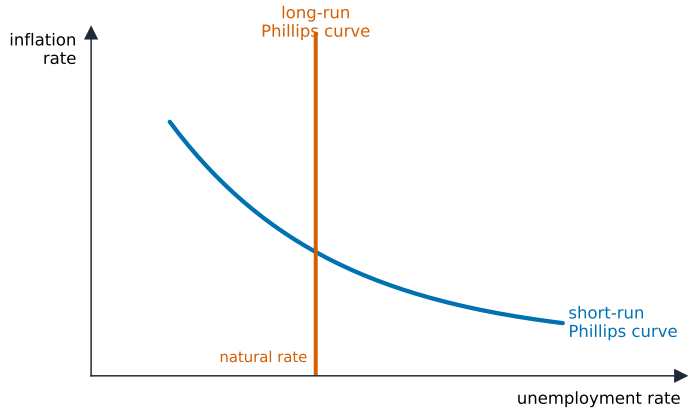
- In a boom, jobs are plentiful but prices tend to rise.
- In a slump, prices are stable but jobs are scarce.
- Printing too much money makes prices rise.

This sheet lines up the link between them. Each idea has a worked example.

New ideas

■ 1 The Phillips curve

The **Phillips curve** 菲利普斯曲线 shows a short-run trade-off: lower unemployment usually comes with higher inflation, and vice versa.



So policy that lowers unemployment tends to raise inflation in the short run.

■ 2 The long run

In the long run there is **no** trade-off: the economy returns to its **natural rate of unemployment** 自然失业率, and policy changes only inflation, not unemployment. The long-run Phillips curve is vertical.

■ 3 Money and inflation

In the long run, **inflation is a monetary phenomenon**: if the money supply grows faster than output, the extra money simply raises prices.

Worked example. If the money supply grows 8% while output grows 3%, inflation is about $8\% - 3\% = 5\%$.

■ 4 Supply shocks

A **supply shock** (like a jump in oil prices) can raise inflation **and** unemployment at once – the hard case called stagflation.

Watch out: the inflation–unemployment trade-off is only a **short-run** effect. In the long run, trying to hold unemployment below its natural rate just produces higher and higher inflation.

Practice

Try these in order. The methods are all above.

2.1 State the short-run trade-off shown by the Phillips curve. [2]

2.2 State what the long-run Phillips curve looks like and what it means. [2]

2.3 The money supply grows 10% while output grows 4%. Estimate the inflation rate.[2]

2.4 State what a supply shock does to inflation and unemployment together. [2]

2.5 Explain why there is no long-run trade-off between inflation and unemployment. [2]

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. 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.

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?

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.

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?

5 Crowding out and economic growth – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
crowding out	挤出效应	_____
Economic growth	经济增长	_____

Recall

In Part A you met inflation and unemployment. Now the long-run costs of government borrowing, and what drives growth:

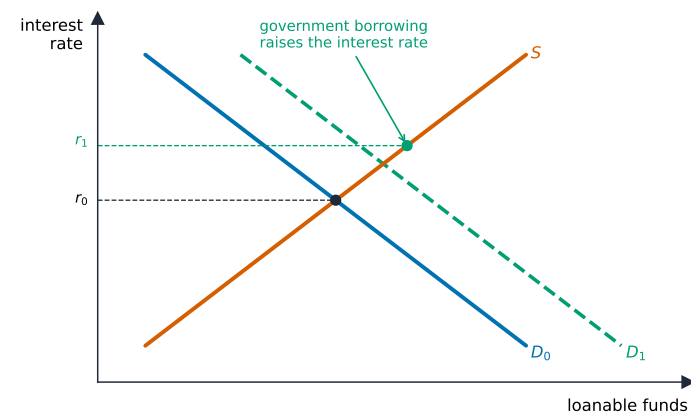
- When the government borrows heavily, it competes with businesses for funds.
- An economy grows when it can produce more over time.

Each idea has a worked example before the Practice.

New ideas

■ 1 Crowding out

When the government borrows a lot, it raises the demand for loans, pushing up the interest rate. Higher rates **reduce private investment** – this is **crowding out** 挤出效应.

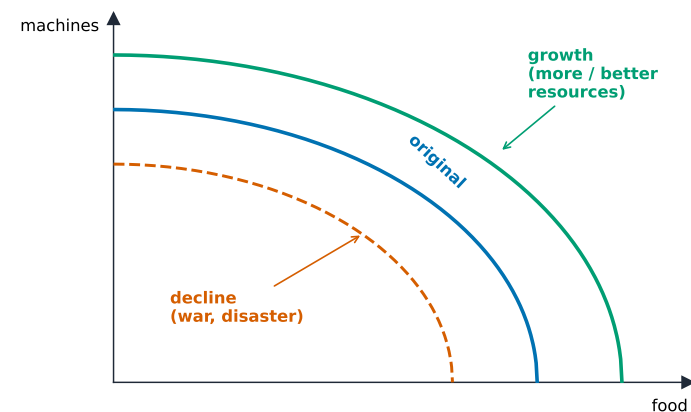


■ 2 Why crowding out matters

Because it reduces investment, crowding out partly cancels the boost from government spending, and less investment today means slower growth tomorrow.

■ 3 Economic growth

Economic growth 经济增长 is a sustained rise in real output per person – the true source of higher living standards. It shifts the production possibilities curve **outward**.



■ 4 What drives growth

Growth comes from more and better resources: more **physical capital** (tools and machines), more **human capital** (education and skills), and better **technology**.

Watch out: crowding out is why deficit spending has a long-run cost – the higher interest rates it causes reduce the private investment that the economy needs to grow.

Practice

Try these in order. The methods are all above.

2.1 Explain what crowding out is. [2]

2.2 State why crowding out weakens the effect of government spending. [2]

2.3 State what economic growth does to the production possibilities curve. [1]

2.4 Name three things that drive long-run economic growth. [3]

2.5 Explain why heavy government borrowing can slow long-run growth. [2]

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 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.

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 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.

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.

6 Balance of payments and exchange rates – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
balance of pay-ments	国际收支	_____
current account	经常账户	_____
exchange rate	汇率	_____
appreciates	升值	_____
depreciates	贬值	_____

Recall

Countries trade and exchange currencies:

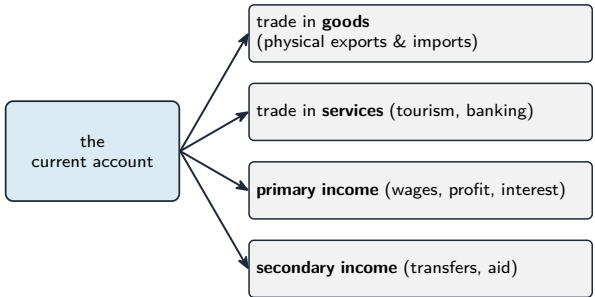
- A country buys imports and sells exports.
- To buy foreign goods you need foreign money.
- Exchange rates change – sometimes a currency is “strong”, sometimes “weak”.

This sheet lines up trade balances and exchange rates. Each idea has a worked example.

New ideas

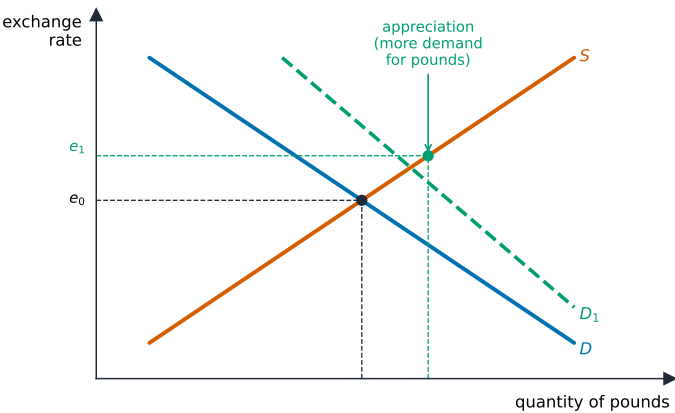
■ 1 The balance of payments

The **balance of payments** 国际收支 records a country’s transactions with the rest of the world. Its **current account** 经常账户 tracks trade in goods and services (exports minus imports).



■ 2 Exchange rates

An **exchange rate** 汇率 is the price of one currency in terms of another. A currency **appreciates** 升值 when it gains value and **depreciates** 贬值 when it loses value.



■ 3 Two sides of one change

Every exchange-rate change has two sides.

Worked example. If \$1 = €0.90, then $\text{€}1 = \frac{1}{0.90} \approx \1.11 . If the dollar then rises to \$1 = €1.00, the dollar has **appreciated** and the euro has **depreciated** – the same event seen from each side.

■ 4 What moves exchange rates

A currency **appreciates** when demand for it rises – for example, higher domestic interest rates attract foreign investment, raising demand for the currency.

Watch out: an appreciation of one currency is always a depreciation of the other. Always track **which** currency you are describing.

Practice

Try these in order. The methods are all above.

2.1 State what the current account records. [2]

2.2 State the difference between a currency appreciating and depreciating. [2]

2.3 If $\$1 = \text{€}0.80$, how many dollars is $\text{€}1$ worth? [2]

2.4 The dollar changes from $\$1 = \text{€}0.80$ to $\$1 = \text{€}0.90$. State whether the dollar has appreciated or depreciated. [2]

2.5 State one reason a currency might appreciate. [1]

2. The United States and South Africa are trading partners with flexible exchange rates, and the United States current account balance with South Africa is zero.

(a) Assume real income in the United States increases while real income in South Africa remains the same. Will United States net exports increase, decrease, or remain unchanged? Explain.

(b) Based on your answer to part (a), what will happen to each of the following?

- (i) The capital and financial account balance in the United States
- (ii) Actual unemployment in South Africa in the short run. Explain.

(c) The currency of the United States is the dollar (USD), and the currency of South Africa is the rand (ZAR). Draw a correctly labeled graph of the foreign exchange market for the rand and show the effect of the increase in real income in the United States on the international value of the rand.

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 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. Italy and Japan are trading partners and have flexible exchange rates. The Italian currency is the euro and the Japanese currency is the yen.
- (a) Suppose that the exchange rate between the euro and the yen is 1 euro = 100 yen. What is the price of an Italian coat in yen if the coat costs 120 euros in Italy?
- (b) Assume that real interest rates increase in Japan. Identify what will happen to net financial capital flows between Italy and Japan.
- (c) Draw a correctly labeled graph of the foreign exchange market for the yen and show the effect of the increase in real interest rates in Japan on the value of the yen.
- (d) Based solely on the change in the exchange rate identified in part (c), what will happen to Italy's exports to Japan? 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. The United States and South Africa are trading partners with flexible exchange rates, and the United States current account balance with South Africa is zero.
- (a) Assume real income in the United States increases while real income in South Africa remains the same. Will United States net exports increase, decrease, or remain unchanged? Explain.
- (b) Based on your answer to part (a), what will happen to each of the following?
- The capital and financial account balance in the United States
 - Actual unemployment in South Africa in the short run. Explain.
- (c) The currency of the United States is the dollar (USD), and the currency of South Africa is the rand (ZAR). Draw a correctly labeled graph of the foreign exchange market for the rand and show the effect of the increase in real income in the United States on the international value of the rand.

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- (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.
- What is the effect of the increase in interest rates in the European Union on the demand for the United States dollar? Explain.
 - Based on your answer to part (c)(i), what is the effect on the value of the United States dollar relative to the euro?

6 Exchange rates and trade – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
net exports	净出口	_____

Recall

In Part A you met exchange rates. Now see how they affect trade:

- A weak currency makes a country’s exports cheaper for foreigners.
- A strong currency makes imports cheaper to buy.

Each idea has a worked example before the Practice.

New ideas

■ **1 Exchange rates and net exports**

A change in the exchange rate changes **net exports** 净出口 (exports minus imports):

Appreciation

(currency rises in value)

exports dearer,
imports cheaper →
exports fall, imports rise

Depreciation

(currency falls in value)

exports cheaper,
imports dearer →
exports rise, imports fall

- a **depreciation** makes exports cheaper for foreigners and imports dearer, so net exports **rise**,
- an **appreciation** makes exports dearer and imports cheaper, so net exports **fall**.

■ **2 A worked example**

Worked example. A US car costs \$30,000. To a European buyer at \$1 = €0.90, that is €27,000. If the dollar **depreciates** to \$1 = €0.80, the same car costs only €24,000 – cheaper for foreigners, so US exports rise.

■ **3 The link to aggregate demand**

Because net exports are part of aggregate demand, a currency change feeds through to output: a depreciation (more net exports) shifts AD **right**.

■ **4 Interest rates and currencies**

A higher domestic interest rate attracts foreign money, raising demand for the currency and causing it to **appreciate** – which then reduces net exports.

Watch out: a **weaker** (depreciated) currency is actually **good** for a country’s exporters – it makes their goods cheaper abroad. A “strong” currency is not always better for the whole economy.

Practice

Try these in order. The methods are all above.

2.1 State what happens to net exports when a currency depreciates, and why. [2]

2.2 State what happens to net exports when a currency appreciates. [2]

2.3 A €-priced good costs a US buyer more after the dollar depreciates. Explain why.[2]

2.4 State which way aggregate demand shifts when a currency depreciates. [1]

2.5 Explain why a higher domestic interest rate tends to strengthen (appreciate) the currency. [2]

2. The United States and South Africa are trading partners with flexible exchange rates, and the United States current account balance with South Africa is zero.
- (a) Assume real income in the United States increases while real income in South Africa remains the same. Will United States net exports increase, decrease, or remain unchanged? Explain.
- (b) Based on your answer to part (a), what will happen to each of the following?
- (i) The capital and financial account balance in the United States
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