

**EXAMINATION 4 VERSION A**  
**"Short-Run Business Cycles"**  
**April 30, 2026**

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Points will be subtracted for illegible writing or incorrect rounding. Maximum total points are 100.

**I. Multiple choice:** Circle the one best answer to each question. [1 pts each, 22 pts total]

(1) Most economists believe that business cycles are usually caused by fluctuations in

- a. the labor force.
- b. the capital stock.
- c. aggregate demand.
- d. the population.
- e. aggregate supply (that is, potential GDP).

(2) When the unemployment rate is greater than the natural rate of unemployment,<sup>1</sup> GDP is usually

- a. less than potential GDP.
- b. equal to potential GDP.
- c. more than potential GDP.
- d. equal to the unemployment rate.

(3) Which is said to have “momentum” in the short run?

- a. GDP.
- b. the rate of unemployment.
- c. the rate of inflation.
- d. the money supply.
- e. the interest rate.

(4) The slope of Keynes’s consumption function is called the

- a. marginal propensity to consume.
- b. multiplier.
- c. savings rate.
- d. participation rate.

(5) Keynes argued that in a recession, the government should

- a. cut spending.
- b. increase spending.
- c. raise taxes to eliminate any government deficits.
- d. make no changes to spending or taxes so as to stabilize the economy.

(6) According to Keynes, an increase in government purchases causes a further increase in

- a. consumption.
- b. investment.
- c. net exports.
- d. the money supply.
- e. the inflation rate.

(7) The “paradox of thrift” in Keynes’s model is that if consumers suddenly begin saving more, then in the short run,

- a. consumption spending will rise.
- b. GDP will fall.
- c. imports will rise.
- d. the money supply will decrease.

(8) According to Keynes’s model, the bigger the marginal propensity to consume,

- a. the bigger the government-purchases multiplier.
- b. the smaller the government-purchases multiplier.
- c. The marginal propensity to consume is unrelated to the multiplier.

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<sup>1</sup> Also called the “noncyclical rate of unemployment.”

(9) The “permanent income hypothesis” implies that a temporary tax cut is \_\_\_\_\_ a permanent tax cut for increasing consumption spending.

- a. more effective than.
- b. less effective than.
- c. just as effective as.
- d. Cannot be determined from information given.

(10) An increase in U.S. GDP will tend to increase Japan’s

- a. imports.
- b. exports.
- c. investment.
- d. government purchases.

(11) Suppose the interest rate in the U.S. decreases but interest rates in the rest of the world remain unchanged. Then the exchange rate (the price of a dollar in terms of foreign currency) will

- a. decrease.
- b. increase.
- c. remain unchanged.
- d. cannot be determined from information given.

(12) The spending category most sensitive to the interest rate is

- a. residential investment.
- b. consumption of services.
- c. consumption of nondurables.
- d. government purchases.

(13) If the dollar appreciates against other currencies, then foreigners will

- a. find U.S. exports cheaper and buy more of them.
- b. find U.S. exports more expensive and buy less of them.
- c. neither of the above.

(14) Under a monetary policy rule typical of most countries, if inflation rises, the central bank will

- a. increase the real interest rate.
- b. increase the money supply.
- c. raise taxes.
- d. reduce government spending.

(15) According to the standard model of economic fluctuations, the inflation rate eventually rises if

- a. exports exceed imports.
- b. population growth exceeds output growth.
- c. actual GDP is greater than potential GDP.
- d. the actual unemployment rate is greater than the natural rate of unemployment.<sup>2</sup>
- e. taxes exceed government spending.

(16) Suppose GDP initially equals potential GDP. Then government purchases are increased sharply. What happens *first*, according to the standard model of economic fluctuations?

- a. the inflation rate increases.
- b. the interest rate increases.
- c. GDP increases.
- d. the unemployment rate increases.
- e. exports increase.

(17) According to the standard model, a boom caused by relaxed monetary policy eventually results in

- a. lower inflation.
- b. higher inflation.
- c. the same inflation rate as before.

(18) If the central bank first relaxes monetary policy and then tightens it, the economy will experience

- a. a complete boom-bust cycle.
- b. a price shock.
- c. a tax cut.
- d. an increase in the long-run rate of economic growth.

(19) A “price shock” is a rise in inflation

- a. that voters disapprove of.
- b. that is unrelated to the output gap.
- c. that is deliberately intended to get the economy moving again.
- d. that is invisible to consumers.

(20) “Countercyclical monetary policy” means

- a. taking actions that move the economy in a counterclockwise circle.
- b. policy that discourages the use of bicycles.
- c. raising interest rates in recessions and lowering them in booms.
- d. lowering interest rates in recessions and raising them in booms.

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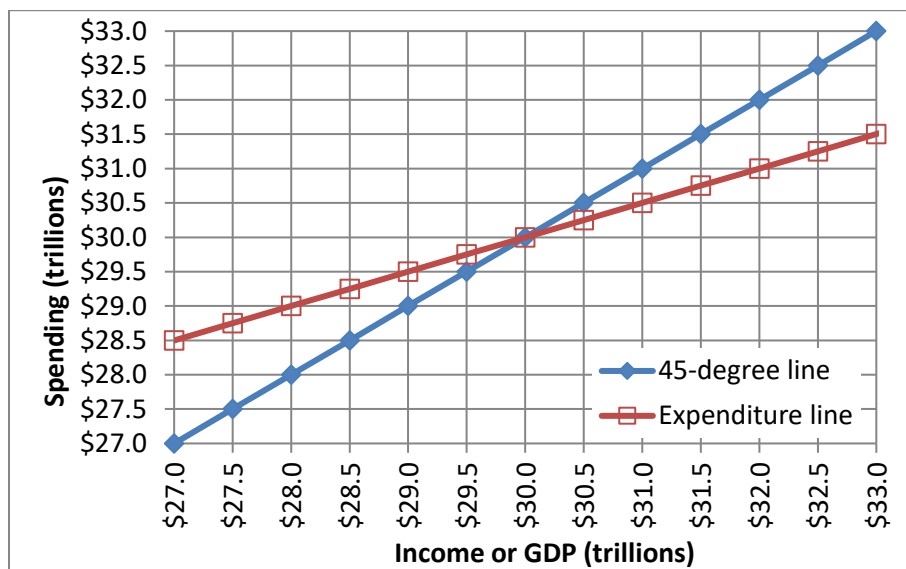
<sup>2</sup> Also called the “noncyclical rate of unemployment.”

- (21) "Quantitative easing" means
- adjusting numbers to fit the problem at hand.
  - massive purchases of bonds by the central bank.
  - gradual implementation of fiscal policy so as not to disturb markets.
  - lowering interest rates.

- (22) Some people thought that the rise in inflation in 2022 was caused by fiscal policy, responding to the COVID recession, that was too strong. However, it now seems more likely that the rise in inflation was caused by
- quantitative easing at the Fed.
  - a temporary price shock to global supply chains.
  - tightened government budgets.
  - a collapse of international trade.

**II. Problems:** Insert your answer to each question in the box provided. Use graphs and margins for scratch work. Only the answers in the boxes will be graded. Work carefully: partial credit is not normally given for questions in this section.

- (1) [Keynesian cross, Keynesian multipliers: 12 pts] The following is a Keynesian cross diagram, including a 45-degree line and an expenditure line.



- a. What is the current level of real GDP—that is, the point of "spending balance"?

|    |          |
|----|----------|
| \$ | trillion |
|----|----------|

Suppose government purchases for defense spending *increase* by **\$ 0.5 trillion**.

- b. Does the expenditure line shift *up* or *down* in the short run?

|  |
|--|
|  |
|--|

- c. By how much (measured vertically)?

|    |          |
|----|----------|
| \$ | trillion |
|----|----------|

- d. Does GDP *increase* or *decrease* in the short run?

|  |
|--|
|  |
|--|

- e. By how much?

|    |          |
|----|----------|
| \$ | trillion |
|----|----------|

- f. Compute the government-purchases multiplier from your previous answers to this problem.

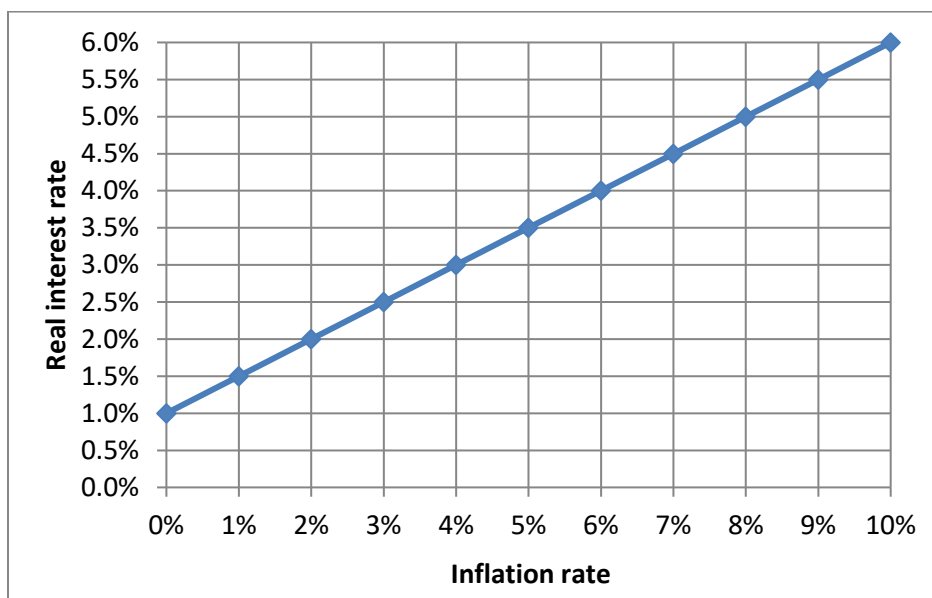
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(2) [Consumption function, Keynesian cross, Keynesian multipliers: 16 pts] Suppose the marginal propensity to consume is 0.9 and the marginal propensity to import is 0.1 . Assume no other spending components of GDP are affected by aggregate income.

- Compute the slope of the consumption function.
- Compute the slope of the expenditure line in the Keynesian cross diagram.
- Compute the government-purchases multiplier.
- By how much does GDP increase in the short run if government purchases (G) increase by \$ 300 billion?
- How much of an increase in government purchases is required to raise GDP by \$ 300 billion?
- Compute the tax-cut multiplier.
- How much of a tax cut is required to raise GDP by \$ 300 billion?
- Suppose taxes and government purchases are to be increased simultaneously by exactly the same amount. What amount is required to raise GDP by \$ 300 billion?

|    |         |
|----|---------|
|    |         |
|    |         |
|    |         |
| \$ | billion |
| \$ | billion |
|    |         |
| \$ | billion |
| \$ | billion |

(3) [Monetary policy rule: 10 pts] Suppose the central bank follows the monetary policy rule depicted below.



Assume GDP equals potential GDP and suppose the inflation rate is now 2 %.

- What level of the *real* interest rate will the central bank set?
- What level of the *nominal* interest rate does this imply?
- Suppose monetary policy is “tightened.” Does that mean that the policy rule curve shifts *up*, shifts *down*, or remains *unchanged*?
- In the *short run*, will GDP *increase*, *decrease*, or remain *unchanged*?
- In the *short run*, will the inflation rate *increase*, *decrease*, or remain *unchanged*?

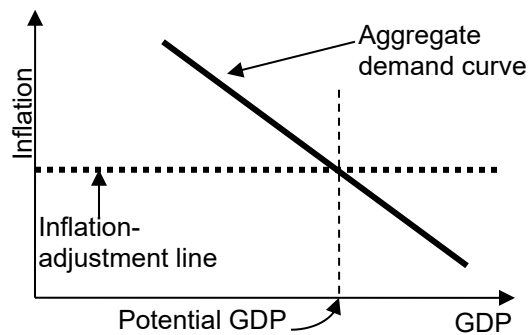
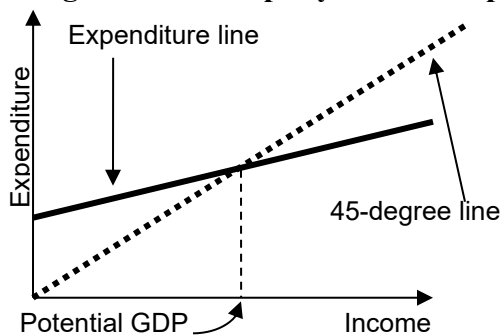
|  |   |
|--|---|
|  | % |
|  | % |
|  |   |
|  |   |
|  |   |

(4) [How business cycles begin: 20 pts] Assume GDP initially equals potential GDP and consider the *short-run* consequences of each scenario in the left column. Indicate whether and how the scenario shifts the expenditure line in the Keynesian cross diagram. Then indicate whether and how it shifts the “aggregate demand” (AD) curve in the diagram used in Taylor and Weerapana’s textbook in the *short run*. Indicate whether the scenario is likely to cause a recession, a boom or neither (assuming GDP was initially equal to potential GDP).

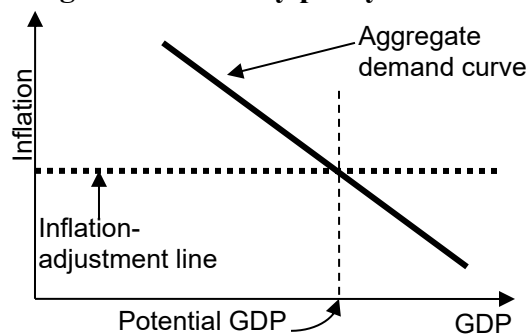
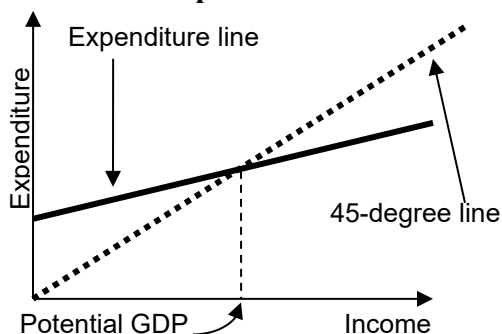
|                                                                                           | Expenditure line shifts<br><i>up, down or unchanged?</i> | AD curve shifts <i>left, right, or unchanged?</i> | Causes <i>recession, boom, or neither?</i> |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------|--------------------------------------------|
| a. The government rapidly increases spending on defense.                                  |                                                          |                                                   |                                            |
| b. New leadership at the Federal Reserve decides to “tighten” monetary policy.            |                                                          |                                                   |                                            |
| c. Congress decides to cut taxes to fulfill a campaign promise.                           |                                                          |                                                   |                                            |
| d. Business owners feel more confident about the future and increase investment spending. |                                                          |                                                   |                                            |

**For each of these four scenarios, draw the shifts in curves on the next page.**

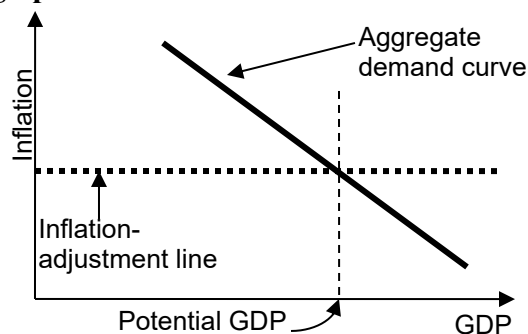
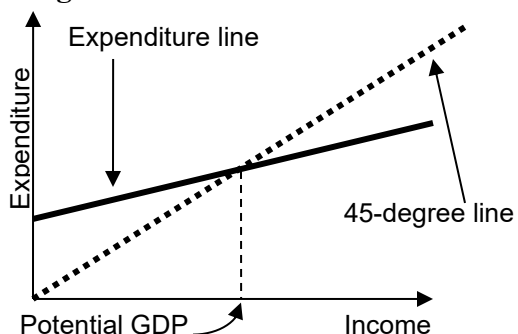
**a. The government rapidly increases spending on defense.**



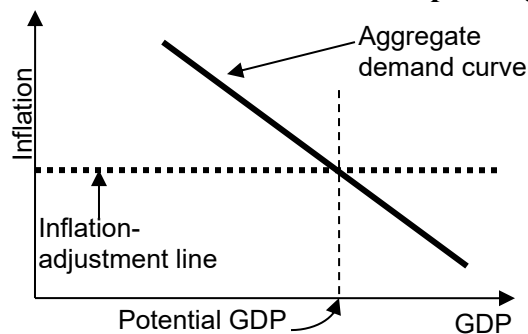
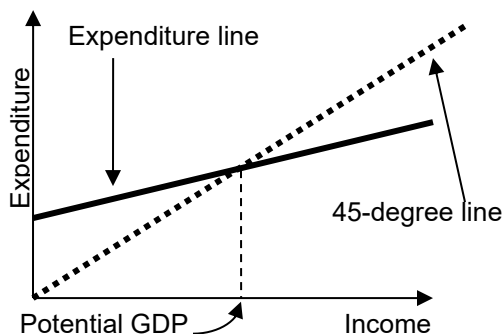
**b. New leadership at the Federal Reserve decides to “tighten” monetary policy.**



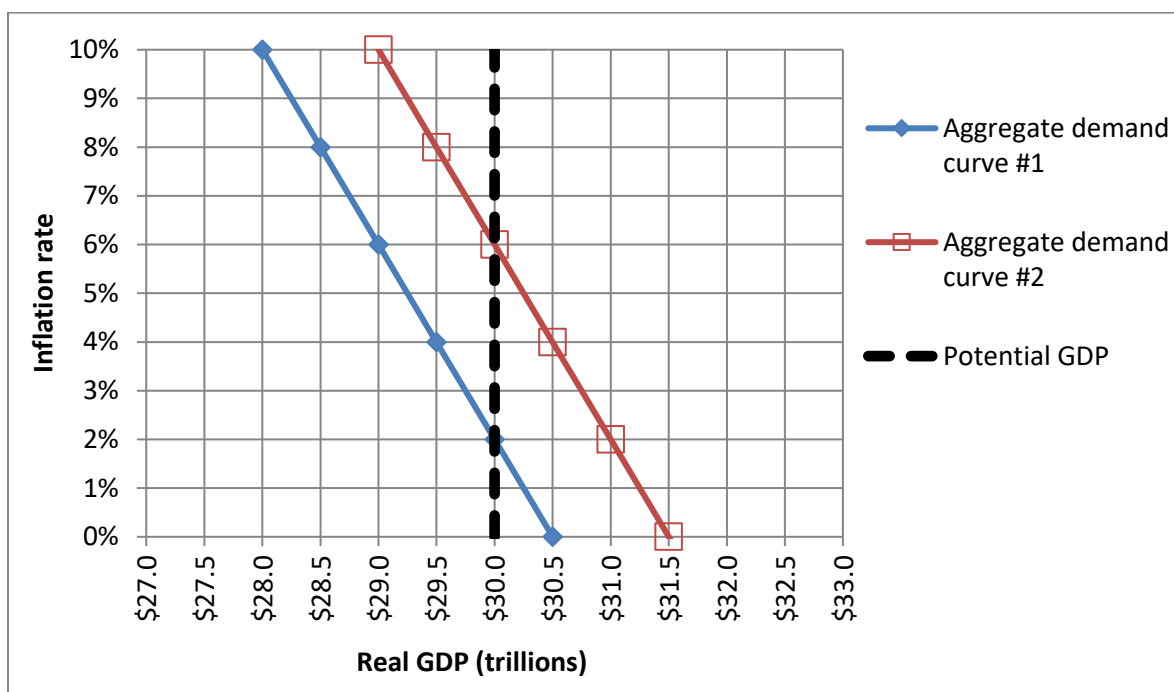
**c. Congress decides to cut taxes to fulfill a campaign promise.**



**d. Business owners feel more confident about the future and increase investment spending.**



(5) [Inflation adjustment: 16 pts] Consider the following graph of the macroeconomy, similar to those in the textbook by Taylor and Weerapana. Suppose that the aggregate demand curve is currently at "aggregate demand curve #1" and the inflation rate is currently **2%**. [Hint: Begin by drawing the "inflation adjustment" line.]



a. What is the current level of real GDP?

|    |          |
|----|----------|
| \$ | trillion |
|    |          |

b. Is the unemployment rate currently *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment<sup>3</sup>?

Now suppose the government passes a large tax cut and the aggregate demand curve shifts to "aggregate demand curve #2."

c. What is the level of real GDP in the short run?

|    |          |
|----|----------|
| \$ | trillion |
|    |          |

d. What is the inflation rate in the short run?

|   |  |
|---|--|
| % |  |
|   |  |

e. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the short run?

f. What will be the level of real GDP in the long run?

|    |          |
|----|----------|
| \$ | trillion |
|    |          |

g. What will be the inflation rate in the long run?

|   |  |
|---|--|
| % |  |
|   |  |

h. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the long run?

<sup>3</sup> Also called the "noncyclical rate of unemployment."

**III. Critical thinking:** Write a one-paragraph essay answering *one* question below (your choice). [4 pts]

- (1) Consider the following statement. “Everyone deserves a chance to work. The goal of the Federal Reserve should be to reduce unemployment to zero.” Do you agree or disagree? Why?
- (2) Suppose the U.S. Constitution were amended to require that the federal budget be balanced every year. Would this make it *easier* or *more difficult* to prevent recessions and booms? Why?

Please circle the question you are answering and write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]