Principles of Macroeconomics (Econ 001) Signature: _____
Drake University, Fall 2012
William M. Boal Printed name: _____

FINAL EXAMINATION VERSION A

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 200.

I. Multiple choice: Circle the one best answer to each question. [1 pt each, 21 pts total]

(1) "A tax cut would increase consumer spending" is an example of
a. a positive statement.
b. a normative statement.
c. both of the above.
d. none of the above.

(2) Monetary exchange is more common today than bartering because
a. bartering requires a "double coincidence of wants."
b. bartering is often illegal whereas anything can be legally bought and sold with money.
c. bartering is a lost art.
d. monetary exchanges are subject to less tax.

(3) Efficient well-functioning markets
a. converge to a price such that consumer surplus equals producer surplus.
b. ensure that every potential buyer and seller makes a trade.
c. obey the "law of one price."
d. generate a variety prices from which buyers and sellers may choose.
e. all of the above.

(4) In autumn, the price of watermelons rises and the quantity sold decreases. This could be caused by a
a. rightward shift in the demand for watermelons.
b. rightward shift in the supply of watermelons.
c. leftward shift in the demand for watermelons.
d. leftward shift in the supply of watermelons.

(5) At a peak in the business cycle, which is larger--actual GDP or potential GDP?
a. Actual GDP.
b. Potential GDP.
c. Actual GDP is roughly equal to potential GDP.
d. Cannot be determined from information given.

(6) In recent years, Japan experienced a *negative* inflation rate of around -1%. This is an example of
a. reflation.
b. recession.
c. disinflation.
d. deflation.

(7) Investment spending in the national accounts does *not* include purchases of
a. trucks and heavy equipment.
b. new factories.
c. shares of stock in corporations.
d. new homes.
e. business software.

(8) Government purchases in the national accounts do *not* include
a. spending on highway construction.
b. salaries of public school teachers.
c. pay for members of the armed services.
d. unemployment benefits.
e. spending on national parks.

(9) Unemployment that results from normal turnover of workers and businesses, is called
a. structural unemployment.
b. frictional unemployment
c. cyclical unemployment.
d. all of the above.

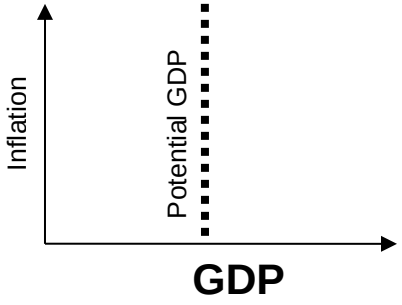
(10) If the interest rate falls in the United States and remains constant in other countries, imports will decrease and exports will increase because
a. the dollar will depreciate against other currencies.
b. consumers will decrease their total spending.
c. exporters will be more able to borrow money.
d. foreign importers will be unable to borrow money.
e. the dollar will appreciate against other currencies.

(11) Thomas Malthus believed that in the long run, output per person would
a. converge to the level of subsistence.
b. fall at a constant rate.
c. grow at a constant rate indefinitely.
d. grow at increasing rates indefinitely.

(12) Assume the required reserve ratio is 0.1 and that banks hold no excess reserves. If people like to hold $0.50 in currency for every $1.00 they hold in bank accounts, then the money multiplier equals
a. 1.6.
b. 2.0.
c. 2.5.
d. 6.667.
e. 10.0.

(13) Most economists believe that a higher rate of inflation will, in the long run, bring
a. a lower rate of unemployment.
b. a higher rate of unemployment.
c. no change in the rate of unemployment.
d. cannot be determined from information given.

(14) On a graph like that below, most economic fluctuations cause the economy to
a. move horizontally left and right.
b. move vertically up and down.
c. cycle in a clockwise direction.
d. cycle in a counterclockwise direction.



(15) According to the "permanent-income hypothesis," which is likely to cause the largest decrease in consumption spending *this year*?
a. A 10 percent tax increase for this year only.
b. A 10 percent tax cut for this year only.
c. A 10 percent tax increase lasting ten years.
d. A 10 percent tax cut lasting ten years.

(16) Suppose the interest rate in the U.S. increases but interest rates in the rest of the world remain unchanged. Then the U.S. dollar will
a. appreciate.
b. depreciate.
c. remain unchanged.
d. cannot be determined from information given.

(17) Under a monetary policy rule typical of most countries, if inflation rises, the central bank will try to
a. raise taxes.
b. reduce the rate at which the government spends money.
c. increase the real interest rate.
d. increase the money supply.

(18) If a recession occurs, which will automatically decrease without action by Congress or the President?
a. military spending.
b. income tax payments to the government.
c. spending on unemployment insurance benefits.
d. highway construction spending.
e. all of the above.
f. none of the above.

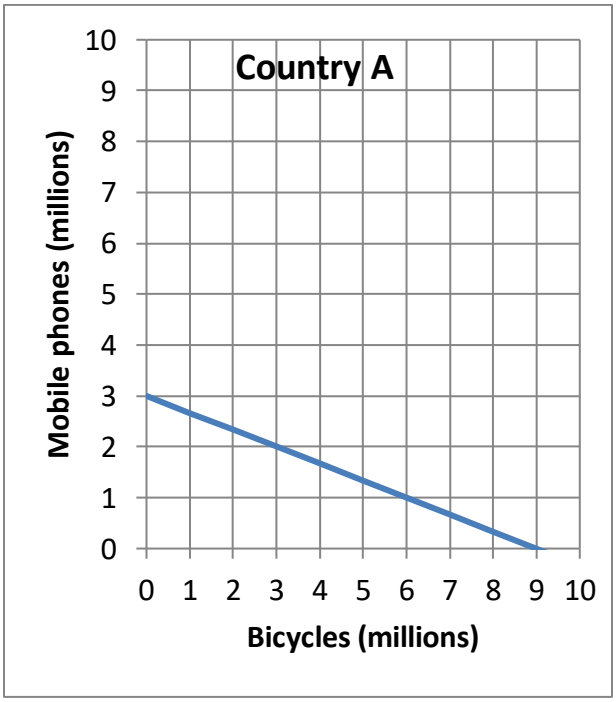
(19) Countries tend to have lower inflation rates in the long run if the heads of their central banks are
a. more independent of elected officials.
b. directly elected by the people—who after all must live with the consequences of central bank policies.
c. under the direct control of elected officials and can be fired at any time.
d. cannot be determined from information given.

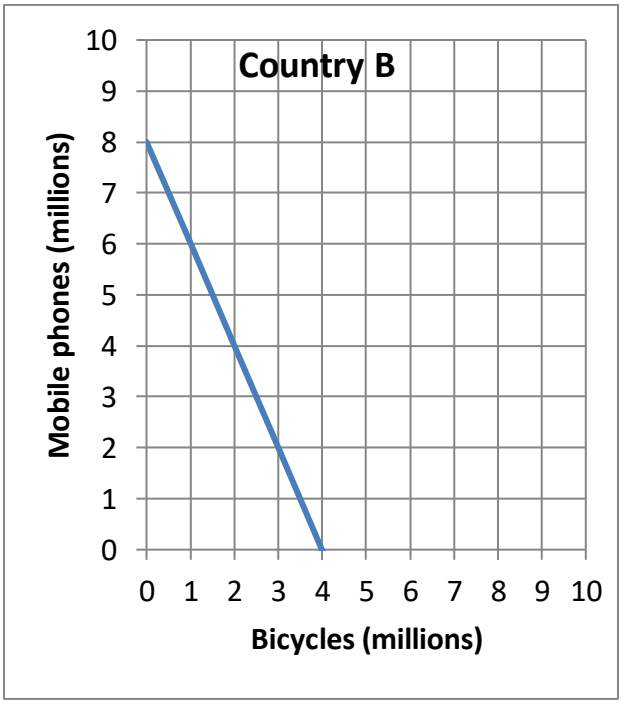
(20) The inflation rate has been higher in Mexico than in the United States. In the long run, this should cause the exchange rate (the price of the U.S. dollar in terms of Mexican pesos) to
a. rise.
b. fall.
c. remain unchanged.
d. fluctuate randomly.

(21) A country that fixes its exchange rate can no longer have an independent
a. foreign policy.
b. monetary policy.
c. fiscal policy.
d. trade policy.
e. industrial policy.

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) [Comparative advantage, gains from trade: 17 pts] Country A and Country B each produce mobile phones and bicycles. They each face a tradeoff between these two products because their workforces are limited. Their production possibility curves are shown below.





a. [2 pts] What is Country A's opportunity cost of producing a mobile phone? bicycles

b. [2 pts] What is Country B's opportunity cost of producing a mobile phone? bicycles

c. [2 pts] What is Country A's opportunity cost of producing a bicycle? mobile phones

d. [2 pts] What is Country B's opportunity cost of producing a bicycle? mobile phones

e. [2 pts] Which country has a comparative advantage in producing mobile phones?

f. [2 pts] Which country has a comparative advantage in producing bicycles?

g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of mobile phones and bicycles *outside* their individual production possibility curves if _____ produces and exports **one million** bicycles to _____, which produces and exports _____ million mobile phones in return.

h. [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each country, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(2) [Economic capital: 6 pts] Which of the following are examples of *economic capital* ? Answer YES or NO.

a. Bulldozers.		d. Factories.	
b. Cell phone towers.		e. Loans to small businesses.	
c. Corporate bonds.		f. Forklift trucks.	

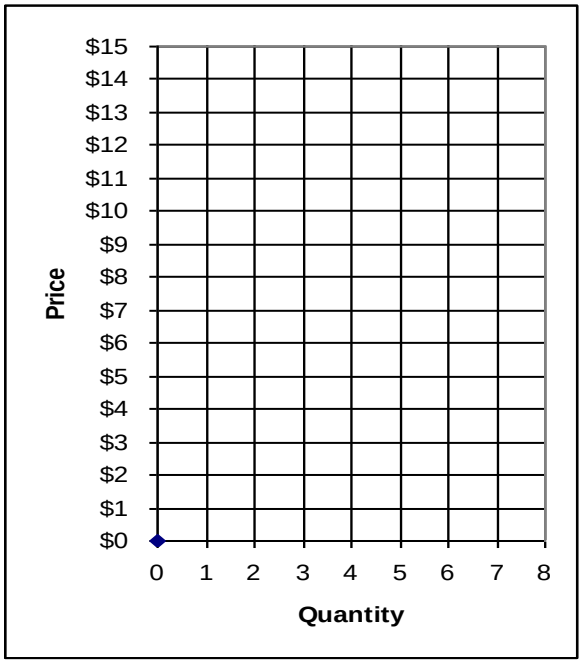
(3) [Market equilibrium: 12 pts] Suppose seven buyers and seven sellers engage in a market similar to the activity we did in class. Each buyer may buy at most one unit and each seller may sell at most one unit, but no one is forced to trade. Assume that buyers and sellers are each trying to maximize their personal earnings (or "gains from trade"). Earnings for each buyer equal the buyer's value of the good minus the price paid. Earnings for each seller equal the price received minus the seller's cost of the good. Earnings of persons who do not trade are zero. Buyers' values and sellers' costs are given in the following table.

Buyer	*Value*
Bob	\$14
Barb	\$14
Ben	\$13
Bailey	\$13
Brian	\$12
Betty	\$ 5
Bert	\$ 4

Seller	*Cost*
Sue	\$ 2
Steve	\$ 3
Sam	\$ 4
Sven	\$ 5
Sarina	\$ 6
Sean	\$ 8
Sally	\$10

Suppose with some experience, the market settles on a single price. All trades are made at that price.

Use this graph for scratch work.



a. Suppose the price were \$4. Would there be *excess demand,* or *excess supply,* or *neither*?	
b. What is the *equilibrium* price likely to be, in whole dollars?	\$
c. How many units of the good will be sold in this market?	units
d. Compute the total revenue received by sellers (which equals the total spending by buyers).	\$
e. Compute the combined total earnings (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!)	\$
f. Who enjoys higher earnings in this particular market, the *buyers* or the *sellers?* Or are buyers' total earnings *equal* to sellers' total earnings?	

(4) [Inflation: 2 pts] According the U.S. Bureau of Labor Statistics, the CPI was 211.401 in December 2008, and was 217.330 in December 2009. Compute the annual rate of inflation over this period to the nearest tenth of a percentage point.

	%

(5) [Components of GDP: 16 pts] The imaginary country of Concrete Land has just four industries: the Raw Concrete Industry, the Building Construction Industry, the Road Construction Industry, and the Birdbath Industry. There are no other goods and no foreign trade. In a recent year:

- The Road Construction Industry produced and \$80 billion of roads for the government.
- The Birdbath Industry produced and sold \$300 billion of birdbaths to consumers.
- The Building Industry produced and sold \$50 billion of buildings (a capital good) to each industry (including itself) for a total of \$200 billion in sales.
- The Raw Concrete Industry produced and sold \$10 billion of raw concrete to the Building Industry, \$10 billion to the Road Construction Industry, and \$20 billion to the Birdbath Industry for a total of \$40 billion in sales.

a. Compute the spending components of Concrete Land's GDP.

Consumption (C)	\$ billion
Investment (I)	\$ billion
Government purchases (G)	\$ billion
Total GDP (Y)	\$ billion

b. Compute value added by each industry in Concrete Land.

Raw Concrete Industry	\$ billion
Building Industry	\$ billion
Road Construction Industry	\$ billion
Birdbath Industry	\$ billion

(6) [Spending components of GDP: 8 pts] The table below shows data for the United States as reported by the Bureau of Economic Analysis. [Hint: Some of the data are extraneous and not needed for solving this problem.]

	2002
Personal current transfer receipts	\$1.2 trillion
Consumption	\$7.4 trillion
Social Security and other social insurance payments	\$1.2 trillion
Gross investment	\$1.6 trillion
Government purchases	\$2.0 trillion
Imports	\$1.4 trillion
National defense	\$0.4 trillion
Exports	\$1.0 trillion

a. Does the U.S. have a trade *surplus* or a trade *deficit* ?	
b. Compute net exports (X).	\$ trillion
c. Compute GDP.	\$ trillion
d. Compute national saving (S).	\$ trillion

(7) [Aggregate production function: 5 pts] According to the theory of the aggregate production function, *potential* GDP depends on which of the following? Answer *true* or *false*.

a. The money supply.	
b. The number of workers and the average number of hours worked by each of them.	
c. The amount of physical or economic capital available.	
d. The level of stimulus spending by the federal government.	
e. The level of technology, or "know-how," in the economy.	

(8) [Measuring the labor force: 8 pts]] The U.S. Bureau of Labor Statistics reported that in October 2012, 143.4 million people were employed, 12.3 million people were unemployed, and 88.3 million working-age people were not in the labor force.

a. Compute the working-age population to the nearest tenth of a million.	million
b. Compute the employment-to-population ratio to the nearest tenth of a percentage point.	%
c. Compute the labor force participation rate to the nearest tenth of a percentage point.	%
d. Compute the unemployment rate to the nearest tenth of a percentage point.	%

(9) [Growth of capital stock: 2 pts] The following data (in chained 2005 dollars) were reported by the U.S. Bureau of Economic Analysis.

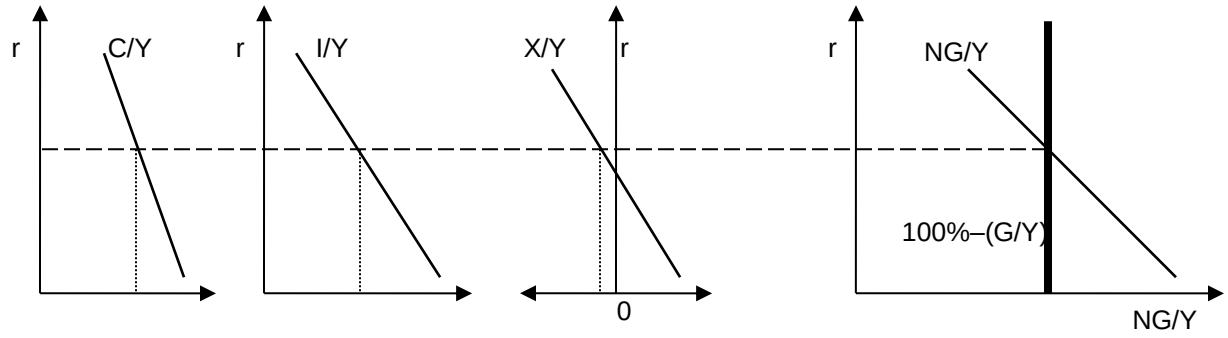
Depreciation in 2007	$1,394 billion
Government purchases in 2007	$2,434 billion
Consumption in 2007	$9,263 billion
Investment in 2007	$2,109 billion
Exports in 2007	$1,554 billion
Private capital stock at end of 2006	$30,169 billion
Imports in 2007	$2,203 billion
Labor income (compensation of employees) in 2007	$7,856 billion
Corporate profits in 2007	$1,511 billion

Compute the private capital stock at the end of 2007. [Hint: Some data are extraneous and not needed for this problem.]

$ billion

(10) [Interest rate and GDP shares: 16 pts] Suppose the government switches from an income tax to a consumption tax. That is, people are taxed on their consumption spending only, not their saving. Use the spending allocation model to answer the following questions.

a. [4 points] In the graphs below, draw the shifts in curves (if any) that would result from this change.



b. [2 pts] Does the long-run real interest rate (r) *increase*, *decrease*, or remain *constant*?

c. [2 pts] Does the share of consumption spending (C/Y) *increase*, *decrease*, or remain *constant*?

d. [2 pts] Does the share of investment spending (I/Y) *increase*, *decrease*, or remain *constant*?

e. [2 pts] Does the share of net exports (X/Y) *increase*, *decrease*, or remain *constant*?

f. [2 pts] Does the long-run growth rate of potential GDP *increase*, *decrease*, or remain *constant*?

g. [2 pts] Justify your answer to part (f).

(11) [Technical change: 4 pts] Over the period 1965 to 1990, the annual growth rate of output per worker in Hong Kong was 5.2% and the annual growth rate of capital per worker was 2.7%. Assume that the share of capital income plus depreciation in national income was about **(1/3),** as it is in the United States.

a. Compute the contribution of capital to productivity growth, to the nearest tenth of a percentage point. ____ %

b. Contribute the contribution of technology to productivity growth, also called the Solow residual, to the nearest tenth of a percentage point. ____ %

(12) [Measuring the money supply: 10 pts] The U.S. government reported the following data for July 2009. [Hint: Some of the data are extraneous and not needed for this problem.]

GDP	$13,974 billion
Federal debt held by the public	$7,166 billion
Index of industrial production	84.4
Travelers checks, demand deposits, and other checkable deposits	$807 billion
Consumer credit outstanding	$2,497 billion
Currency	$855 billion
Credit card balances	$909 billion
Bank reserves	$795 billion
Savings deposits, small time deposits, money-market mutual funds, and other deposits on which check writing is limited or not allowed	$6,793 billion

a. Compute the money supply measure "M1."	$ billion
b. Compute the money supply measure "M2."	$ billion
c. Compute the monetary base.	$ billion
d. Compute the money multiplier for "**M2**" to the nearest tenth.	
e. Compute the velocity of money ("**M2**") to the nearest tenth.	

(13) [Quantity equation: 2 pts] Growth rates for various items over the period 1975-1985 are reported below. [Hint: Some of the data are extraneous and not needed for this problem.]

Employment	2.2 %
Money supply (M2)	9.4 %
Imports (2005 dollars)	7.5 %
Real GDP (2005 dollars)	3.4 %
Exports (2005 dollars)	3.9 %

Assuming the velocity of money were constant, what should have been the average annual rate of inflation over this period, according to the quantity equation? Give an answer to the nearest tenth of a percentage point.	%

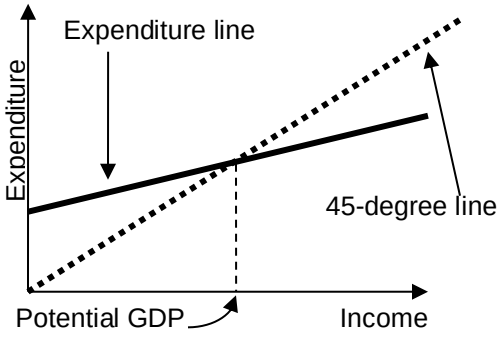
(14) [Consumption function, Keynesian cross, Keynesian multipliers: 8 pts] Suppose the marginal propensity to consume is 0.80 and the marginal propensity to import is 0.05 . Assume no other spending components of GDP are affected by aggregate income.

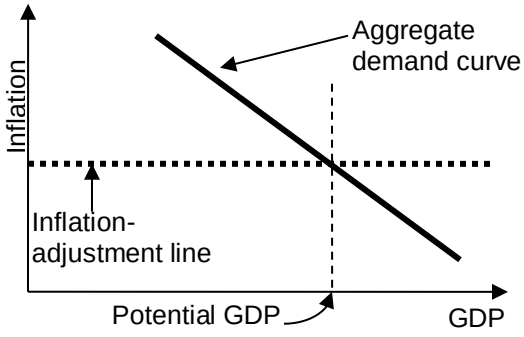
a. Compute the slope of the consumption function.	
b. Compute the slope of the expenditure line in the Keynesian cross diagram.	
c. Compute the government-purchases multiplier.	
d. By how much does GDP increase in the short run if government purchases (G) increase by $ 120 billion?	$ billion
e. How much of an increase in government purchases is required to raise GDP by $ 120 billion?	$ billion
f. Compute the tax-cut multiplier.	
g. How much of a tax cut is required to raise GDP by $ 120 billion?	$ billion
h. Suppose taxes and government purchases are to be increased simultaneously by exactly the same amount. What amount is required to raise GDP by $ 120 billion?	$ billion

(15) [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'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). **On the next page, on the graphs for each scenario, show the shifts in curves.**

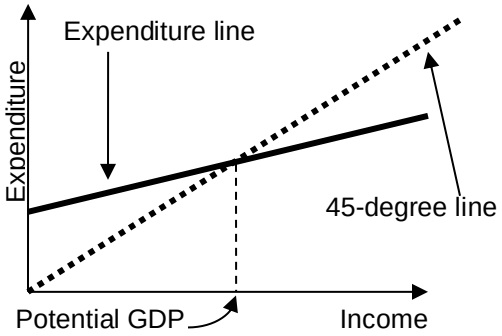
	Expenditure line shifts *up*, *down* or *unchanged?*	AD curve shifts *left*, *right*, or *unchanged?*	Causes *recession*, *boom*, or *neither?*
a. Taxes are decreased.			
b. Government purchases are decreased.			
c. Monetary policy is "relaxed."			
d. A sharp drop in the price of houses makes consumers feel poorer.			

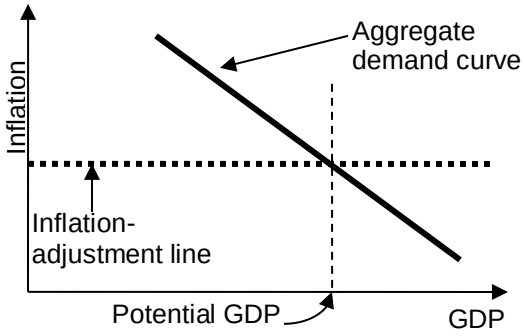
a. Taxes are decreased.



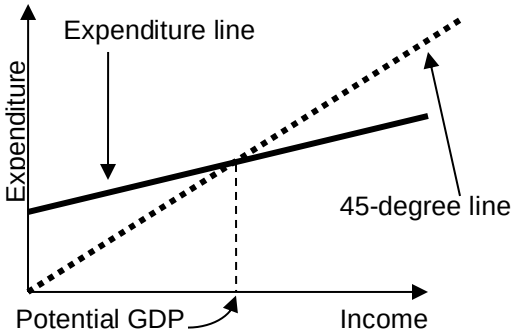


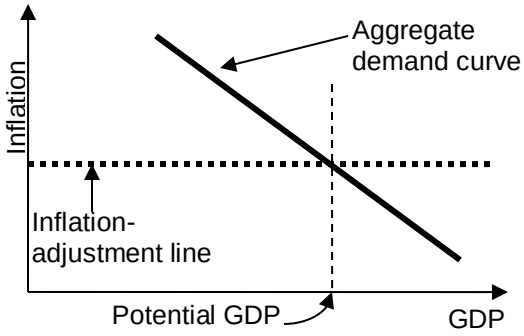
b. Government purchases are decreased.



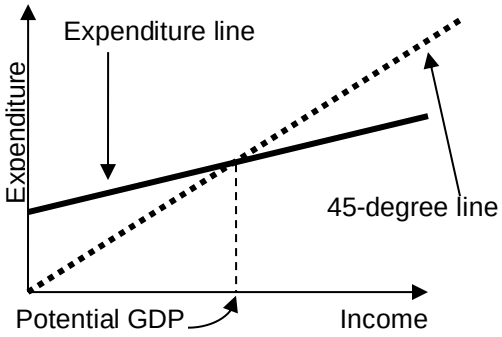


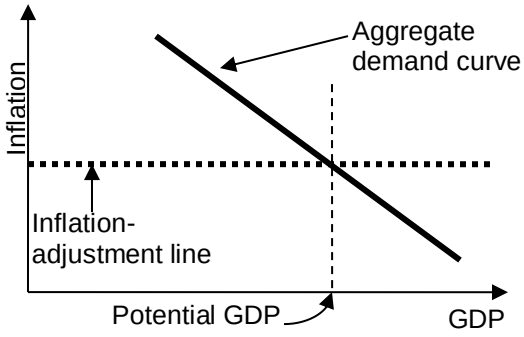
c. Monetary policy is "relaxed."



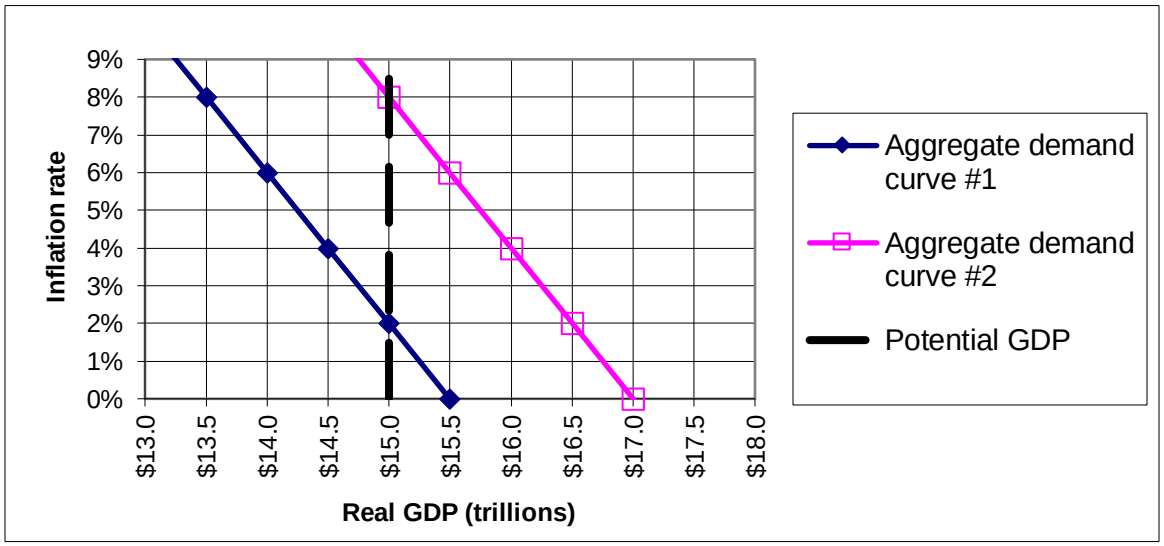


d. A sharp drop in the price of houses makes consumers feel poorer.





(16) [Inflation adjustment: 16 pts] Consider the following graph of the macroeconomy, similar to those in Taylor's textbook. 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?

Now suppose the government passes a large spending increase 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? %

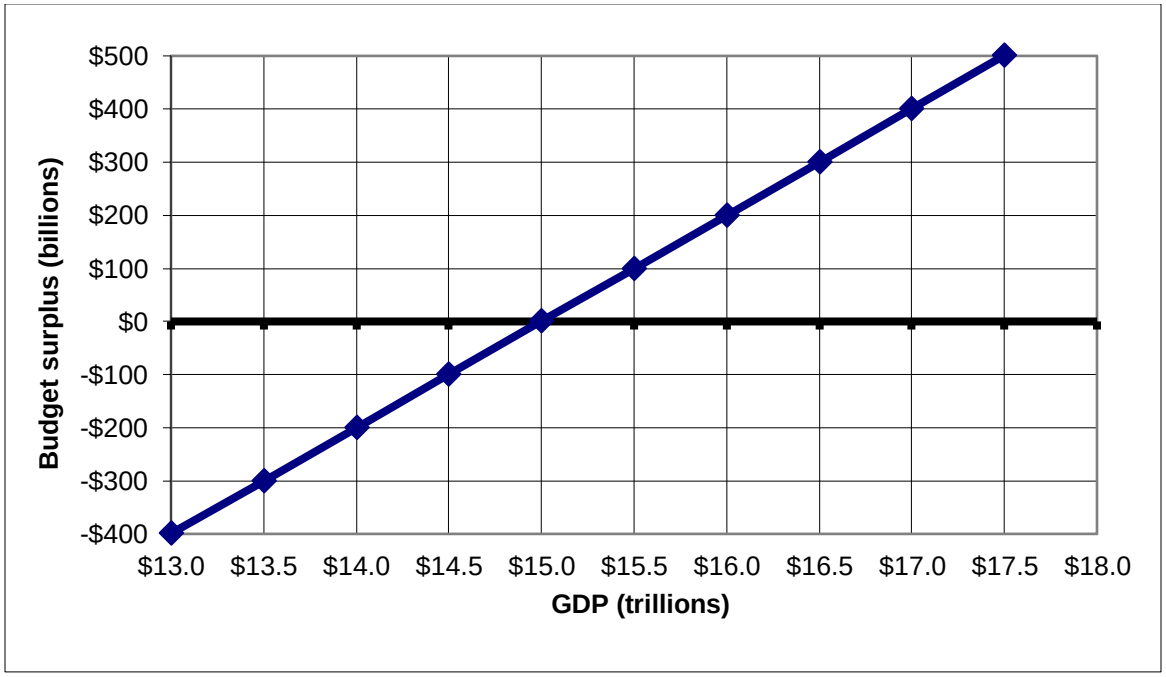
h. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the long run?

(17) [Fiscal policy, tax rates: 4 pts] Suppose a single person who has $95,000 in income owes $17,564 in taxes. If the same person had $96,000 in income, then the person would owe $17,844 in taxes.

a. Compute this person's *average tax rate* to the nearest tenth of a percentage point. %

b. Compute this person's *marginal tax rate* to the nearest tenth of a percentage point. %

(18) [Fiscal policy: 5 pts] The graph below shows the relationship between the federal budget surplus (or deficit) and the level of GDP. Suppose potential GDP is $15.5 trillion and actual level of GDP is $14.0 trillion.



a. Is the economy in a *boom*, a *recession*, or *neither*?

b. Is there an actual budget *surplus*, an actual budget *deficit*, or an actual *balanced budget*?

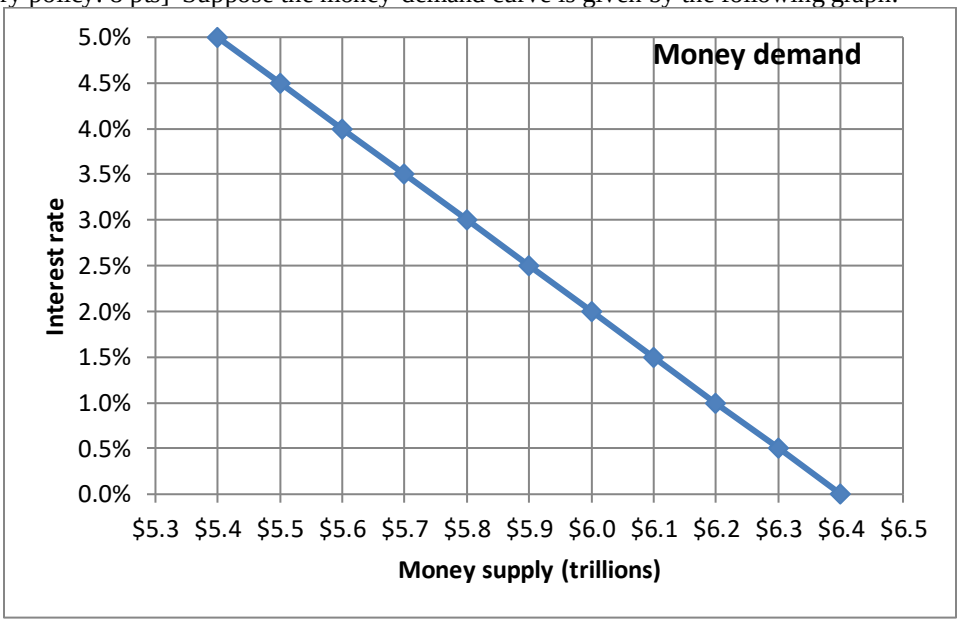
c. How much?

d. Is there a structural budget *surplus*, a structural budget *deficit*, or a structural *balanced budget*?

e. How much?

$ billion
$ billion

(19) [Monetary policy: 8 pts] Suppose the money-demand curve is given by the following graph.



First, suppose the Federal Reserve *increases* the money supply by **$ 0.3 trillion** dollars.

a. Will the interest rate *increase or decrease* in the short run?

b. By how much--that is, by how many percentage points?

percentage points

Alternatively, suppose that the Federal Reserve wants to *lower* the interest rate by **one** percentage point.

c. Must the Federal Reserve *increase* or *decrease* the money supply?

d. By how much?

$ trillion

(20) [International accounts: 6 pts] The table below shows 2010 data for the United States in billions of dollars. [Hint: Some of the data are extraneous and not needed for solving this problem.]

Exports of goods and services	1838
Current government expenditures	5262
Factor income receipts from foreigners	663
Imports of goods and services	2338
Foreign-owned assets in the United States	22786
Factor income payments to foreigners	498
Net transfers from abroad	-136
Current government tax receipts	2649
U.S.-owned assets abroad	20315

a. Compute the trade balance (also called “net exports” or “X”).

b. Compute net factor income from rest of world.

c. Compute the current account balance.

$	billion
$	billion
$	billion

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

(1) Suppose there is a recession in Europe and European GDP decreases. Will this *increase* or *decrease* GDP in the United States? Explain your reasoning.

(2) The U.S. federal government now runs large budget deficits. Put differently, government saving in the U.S. is negative. Suppose the Congress and the President succeed in reducing the *budget* deficit. Will this likely affect the *trade* deficit? If so, how? Explain your reasoning.

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]