Name:
Section No.:
UM ID No.:
GSI:

Economics 102
Introduction to Macroeconomics
Prof. Alan Deardorff
Midterm Exam 1
October 16, 2000

INSTRUCTIONS: READ CAREFULLY!!!

1. Please do not open the exam book until you are told to do so.

2. **PLACE YOUR NAME, STUDENT UM ID NO. (ON THE FRONT OF YOUR MCARD, ALL EIGHT DIGITS, DO NOT WRITE SSN), SECTION NUMBER AND FORM NUMBER ON THE EXAM AND ON THE SCANTRON SHEET.** ***THIS IS WORTH TWO POINTS ON THE EXAM***.

3. This exam has 100 points and is designed to take about 60 minutes to complete. However, you have approximately 80 minutes to complete the test. Check that you have all 11 pages of the exam.

4. **Section A** consists of 25 multiple choice questions worth 3 points each, followed by 5 true-false questions. Answers to all of the questions in Section A should be marked on the scantron sheet using a #2 pencil. There are no penalties for guessing.

5. **Section B** consists of 2 parts for which you must provide written answers on these sheets. Point values for questions in Section B are indicated in parentheses. Please try to fit your answer into the space provided.

6. Good luck!

GSI	Sections	
Tom Bishop	112, Thu 10-11:30	113, Thu 8:30-10
Brahima Coulibaly	102, Wed 1-2:30	103, Wed 2:30-4
Herman Kamil	101, Thu 4-5:30	109, Thu 1-2:30
Yener Kandogan	111, Thu 2:30-4	
George Li	105, Thu 4-5:30	115, Wed 1-2:30
Byung-ho Suh	107, Thu 10:11:30	108, Thu 1-2:30
Hui-chen Wang	110, Thu 2:30-4	114, Thu 10:11:30
Yingbin Xiao	104, Wed 2:30-4	116, Thu 4-5:30

PART A:

Multiple Choice (3 points each; 75 points total)
Select the one best answer and mark it on the SCANTRON sheet.

A1. Which of the following policies will lead to an INCREASE in the equilibrium real interest rate in the market for loanable funds?

I. A decrease in investment tax credit
II. An increase in tax rate on savings
III. An increase in government spending

(a) Only I
(b) Only II
(c) I and II
(d) II and III
(e) I, II and III

Answer: D

A.2. Which of the following policies could the Federal Reserve use to INCREASE the money supply?

I. Selling bonds
II. Increasing the minimum reserve requirement
III. Decreasing the discount rate

(a) I and II
(b) I and III
(c) II and III
(d) Only III
(e) None of I, II or III

Answer: D

A.3. Assume that the minimum reserve ratio is 10%, that banks do not hold excess reserves, and that the public does not hold cash. The amount of loans made by banks totals to $900 million. What will be the money supply if the Federal Reserve now buys bonds amounting to $5 million?

(a) $1,100 million
(b) $1,050 million
(c) $995 million
(d) $950 million
(e) $905 million

Answer: B

A.4. Fill in the blanks.
" _____ represent indebtedness, whereas _____ represent ownership. _____ is a type of bond that never matures. _____ are offered by shaky corporations."

(a) Bonds, stocks, Default, Perpetuities
(b) Stocks, bonds, Perpetuity, Mutual funds
(c) Bonds, stocks, Junk bonds, Defaults
(d) Stocks, bonds, Default, Junk bonds
(e) Bonds, stocks, Perpetuity, Junk bonds

Answer: E

A.5. In measuring GDP, which of the following is classified as investment?

(a) purchase of a US government bond
(b) purchase of newly constructed housing by individuals
(c) purchase of a public company's stock
(d) (b) and (c)
(e) (a), (b) and (c)

Answer: B

A.6. Which of the following are reasons why the CPI tends to overstate the increase in the cost of living:

(a) people are able to substitute goods and services when their relative prices change.
(b) improvements in quality are under-estimated by government agencies.
(c) the introduction of new goods gives people less purchasing power because they have to buy more to maintain the same standard of living.
(d) (a) and (b)
(e) (a) and (c)

Answer: D

A.7. Which of the following is TRUE?

(a) Desired national savings is the total amount of savings deposits in national banks.
(b) Desired national savings is equal to private savings minus investment.
(c) Desired national savings is equal to desired investment at the equilibrium interest rate.
(d) National savings is equal to private savings minus public savings.
(e) National savings reflects the national output that remains after government purchases have been paid for.

Answer: C

A.8. Which of the following DOES change US GDP in the year that it occurs?

(a) Mary buys an old car from a dealer in New York.
(b) An American company buys stock in a Tennessee company.
(c) A Japanese company builds a factory in the US.
(d) An American firm imports a capital good produced at its subsidiary in Japan.
(e) An American tourist buys a Ford car produced in Mexico.

Answer: C

A.9. A change in the tax laws encouraging Americans to save will lead to which of the following?

(a) There will be a shift of the supply curve of loanable funds to the left.
(b) The equilibrium interest rate will increase, because investment now has a higher return.
(c) Investment will be lower, given that savings has increased, and investors expect the law of diminishing returns to operate.
(d) The supply of loanable funds will shift to the right and the demand for loanable funds will shift to the left.
(e) The equilibrium level of savings and the equilibrium level of investment will increase by the same amount.

Answer: E

A.10. Suppose we have the following data for five countries, giving their levels and growth rates of GDP per capita. Assume that the growth rates given are constant for all time.

Country	GDP per capita in Year 2000	Annual growth rate of GDP per capita
W	$2,000	1.8%
X	$3,000	1%
Y	$2,000	2%
Z	$1,000	5%

All of the following are FALSE EXCEPT**,**

(a) Without more information, we cannot say whether country Z will ever catch up to country Y.
(b) Country Z will catch up country Y after approximately 70 years.
(c) The ratio of GDP per capita of country Z to that of country Y (that is, Z/Y) will never double, but will instead decrease over time.

(d) It will take longer for country Y than for country W, to catch up country X.
(e) Country Y's GDP per capita will be $4000 in approximately the year 2035.

Answer: E

A.11. This question has to do with the "Law" of Diminishing (Marginal) Returns (LDR). All the following are CORRECT, EXCEPT:

(a) The actual time needed for a poor country to double its per capita income is likely to be higher than the one calculated using its current growth rate of GDP per capita.
(b) As the stock of capital rises relative to other factors, the extra output produced from an additional unit of capital falls.
(c) The LDR on a factor of production refers to what happens when we increase that factor, holding the quantities of the other factors fixed.
(d) Poor countries tend to grow faster than rich countries, and as they become richer, their growth rates tend to increase because they have a higher GDP per capita.
(e) A production function with constant returns to scale can also obey the LDR.

Answer: D

A.12. Which of the following items adds the indicated value to US GDP in year 2000?

(a) The value of wheat flour that was produced in year 1999 and is used to make pasta in year 2000.
(b) The spending of US travelers in Italy.
(c) The cost of a new branch that Citi-Group, a U.S. bank, opens in Tokyo, Japan.
(d) The value of a pair of US-made shoes that are produced this year but not sold by the end of the year.
(e) The amount you would have paid in a store for a pitcher of home-squeezed orange juice you make from oranges grown in your own backyard.

Answer: D

A.13. Last year, you lent your friend Michael $1000 with the agreement that he will pay you back $1100 on the same day this year. The year flew by, and the inflation rate turned out to be higher than was expected. As a result, looking at the gains and losses from just this transaction,

(a) You gain and Michael loses.
(b) You lose and Michael gains.
(c) Both you and Michael gain.
(d) Both you and Michael lose.
(e) The inflation has no effect on either person, since the nominal interest rate was predetermined

Answer: B

A.14. It is observed that country A's per-capita GDP is growing faster than country B's. Which of the following CANNOT be the main reason for this observation?

(a) Country A's population is growing faster than country B's.
(b) Country A is politically more stable than country B.
(c) Both countries are accumulating inputs and technology at about the same rate, but country A has a lower capital stock than B does.
(d) Country A's taxation system is more favorable toward investors than B's.
(e) Country A has greater college enrollment than B does.

Answer: A

A.15. Assume that the Fed sets the minimum reserve requirement at 20%. Banks choose to hold an extra 5% excess reserves. What will be the money multiplier?

(a) 20
(b) 25
(c) 4
(d) 5
(e) 2

Answer: C

A.16. Which of the following is NOT included in a country's GDP?

(a) Consumption
(b) Investment
(c) Government purchases
(d) Government tax revenues
(e) Exports

Answer: D

A.17. Chris's annual nominal income is listed below for each of five years, together with the CPI in each year. When did he enjoy the highest real income?

Year	Income ($)	CPI
1995	10,000	100
1996	10,500	110
1997	11,000	120
1998	11,500	130
1999	13,500	140

(a) 1995
(b) 1996
(c) 1997
(d) 1998
(e) 1999

Answer: A

A.18. Which of the following is the LEAST likely to increase the growth of GDP per capita for a country?

(a) Attracting investment from foreign countries
(b) Reducing the tuition for college education
(c) Improving the protection of property rights
(d) Increasing population growth
(e) Expanding free trade with foreign countries

Answer: D

A.19. Fill in the blanks:
" A tax increase on the interest income from savings will cause ____ in the real interest rate and ____ in investment."

(a) no change; no change
(b) an increase; a decrease
(c) a decrease; an increase
(d) a decrease; a decrease
(e) an increase; an increase

Answer: B

A.20. To function well as a commodity money, the commodity should

(a) have a high ratio of value to weight
(b) be durable
(c) be widely accepted
(d) all of the above
(e) none of the above

Answer: D

A.21. Suppose that Prof. Deardorff buys a used ladder from his neighbor for $120. At the same time, both the Ann Arbor city government and a private painting firm in Ann Arbor also buy *new* ladders for $120 each. What is the effect on GDP?

(a) GDP will increase by $240 due to equal increases in consumption and investment.

(b) GDP will increase by $240 due to equal increases in consumption and government purchases.
(c) GDP will increase by $240 due to equal increases in investment and government purchases.
(d) GDP will increase by $360 due to equal increases in consumption, investment and government purchases.
(e) GDP will remain unchanged.

Answer: C

A.22. Which of the following will INCREASE the growth rate of GDP in the US?

(a) Reduction of number of years that patents are granted for
(b) Decreasing the scholarships available to the graduate students
(c) Place a tax on foreign investment from abroad
(d) Increase of the investment tax credit
(e) Increase the tax rate on the interest earned from savings

Answer: D

A.23. Based on the information in the following table, in which year does the country have the highest real GDP?

	1996	1997	1998	1999	2000
Nominal GDP	20,000	25,000	29,000	33,000	35,000
CPI index	100	100	130	170	200
GDP deflator	100	110	120	130	140

(a) 1996
(b) 1997
(c) 1998
(d) 1999
(e) 2000

Answer: D

A.24. In his report on the U.S. Economic Outlook as of August 2000, Hymans noted that U.S. GDP

(a) Was at an all-time low
(b) Has been falling during the last year and a half due to rising oil prices
(c) Has remained essentially constant for the last year

(d) Was still growing, but more slowly than a year ago
(e) Was still growing at the booming annual rate of 5%

Answer: E

A.25. According to the Wall Street Journal, manufacturing inventories for the month of September 2000

(a) Rose in the service sector but fell in agriculture
(b) Fueled the rapid growth of the US economy in the third quarter
(c) Signaled that third-quarter growth of GDP was slowing down
(d) Indicated that GDP is likely to grow even faster during the rest of the year than it has until now
(e) Showed the effects of falling interest rates

Answer: C

True or False? ***(5 points)***
Answer questions 26 through 30 on the SCANTRON:
A *for* ***True***
B *for* ***False***

A.26. _____ Owning bonds of a company is riskier than owning stocks in the same company.

A.27. _____ Bonds issued by the state or local governments pay lower interest than the bonds issued by corporations.

A.28. _____ Long-term bonds usually offer higher interest rates than short-term bonds.

A.29. _____ Diversification increases risk.

A.30. _____ Companies issuing junk bonds have in general high rates of default.

Answers:
26.B (False)
27.A (True)
28.A (True)
29.B (False)
30.A (True)

PART B: Written Answers
(18 points total)

In the calculations, you must SHOW YOUR WORK to receive credit.

B.1. (12 points) For each of parts (a), (b), and (c) below,

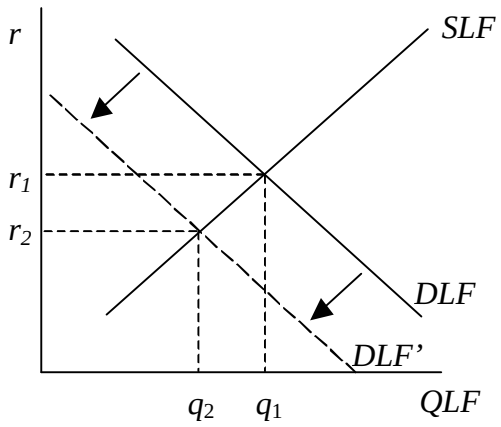
i. draw a diagram showing an initial equilibrium in the loanable funds market, with initial real interest rate labeled r_1 and initial quantity of loanable funds q_1;

ii. explain in words which of the curves shifts in response to the indicated change, *and why* it shifts;

iii. show the shift of the curve in the diagram, and label the new equilibrium r_2, q_2;

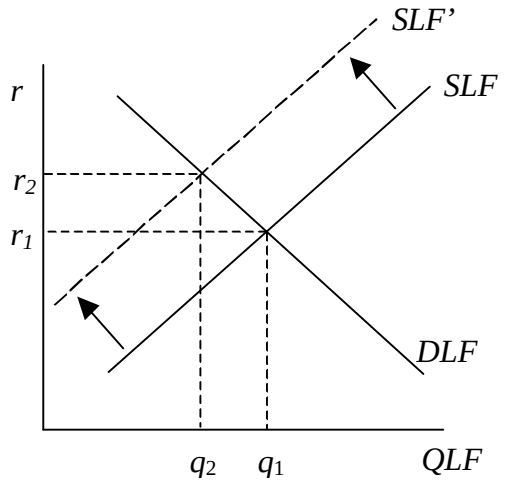
iv. state the direction of change in the real interest rate r, the level of investment I, and the level of savings S.

(a) The government reduces the size of the investment tax credit.



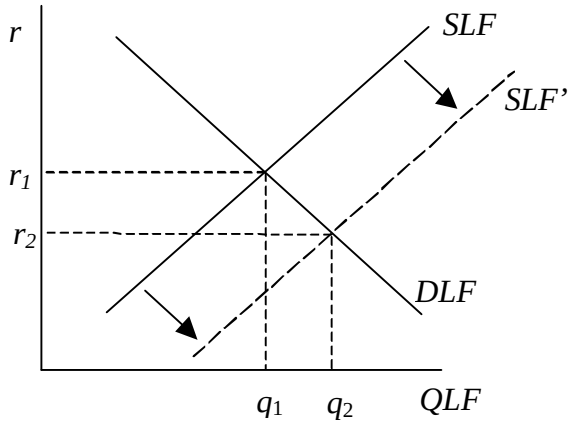
Reducing the size of the investment tax credit reduces the incentive to invest and therefore reduces the desire to borrow to finance investment at any given interest rate, shifting the demand for loanable funds curve, DLF, to the left. As a result, the real interest rate falls, which reduces savings and leaves investment also below what it was initially.

(b) The government increases its spending on goods and services without changing taxes.



When the government increases spending without increasing taxes, its government surplus, or government savings, is reduced. This reduces national savings for any given interest rate, shifting the supply curve for loanable funds, SLF, to the left. This causes the equilibrium interest rate to rise, reducing investment. Private savings rises as a result, partially offsetting the drop in government savings, so that national savings remains below what it was initially.

(c) The government increases taxes, causing taxpayers to reduce their saving (for a given interest rate) by a fraction of what they pay in taxes.



As stated, private savings goes down, but only by a fraction of the increase in taxes which is an increase in government savings. So national savings must rise with this tax increase for any given interest rate, and this shifts the supply curve for loanable funds to the right. This causes the interest rate to fall, stimulating investment. National savings also ends up rising, even though the drop in the interest rate causes a further fall in private saving.

B.2. *(6 points)* Consider the following closed economy:

GDP	Y = 10,000
Income Tax	T = (0.2)Y
Government Purchases	G = 2500
Private Saving	S_{pr} = 1200 + (0.1)(Y – T) + 50,000r
Investment Function	I = 3900 - 30,000r

where

r = the real interest rate (100r is the interest rate as a percentage)

(a) Define national savings, S, and write an equation for national savings as it is determined by the interest rate.

$S = S_{pr} + (T - G)$
$T = (0.2)10{,}000 = 2000$
$T - G = 2000 - 2500 = -500$
$S = [\ 1200 + (0.1)(10{,}000 - 2000) + 50{,}000r\ ] - 500$
$= 1500 + 50{,}000r$

(b) Solve for the equilibrium interest rate.

$S = I$
$1500 + 50{,}000r = 3900 - 30{,}000r$
$80{,}000r = 2400$
$r = 2400/80{,}000 = 0.03 = 3\%$

(c) In this equilibrium, what are the levels of investment and consumption?

$I = 3900 - 30{,}000(0.03) = 3900 - 900 = 3000$
$C = Y - G - I = 10{,}000 - 2500 - 3000 = 4500$
Or
$C = Y - T - S_{pr} = 10{,}000 - 2000 - [1200 + (0.1)8000 + 50{,}000(0.03)]$
$= 8000 - [1200 + 800 + 1500] = 4500$