

Midterm Exam No. 1
February 19, 2004

Answer all questions, on these sheets in the spaces provided (use the blank space on page 11 if you need more). In questions where it is appropriate, **show your work**, if you want a chance of partial credit for an incorrect answer. Point values for the questions are shown; there are a total of 79 points possible.

1. (10 points)

- a. For each of the following transactions and events, indicate whether or not it contributes to one or more of the U.S. macroeconomic variables, C, I, G, EX, or IM, and if so, which one or ones. Record your answer(s) by writing either “none” or $x=\pm yyy$ in the space provided, where $x=C,I,G,EX$, or IM and yyy is the dollar amount. For example, to say that a transaction contributes positively to imports (making imports larger than they would otherwise be) by \$760, write $IM=+760$ in the blank. Unless stated otherwise, everything listed happens in the same year and all persons and firms are American.

Abner earns \$500 working for the state government of Nevada.

Theresa buys 100 shares of stock in a construction firm, at a price of \$12.50 per share

The XYZ corporation produces but fails to sell 10 hyperwidgets, worth \$70 each, and adds them to inventories.

Floyd buys a piano from the Japanese company Yamaha for \$5000.

Greg, a lawyer, visits Canada to advise a client, whom he charges \$420

James and Judy pay a day-care center \$300 for taking care of their 3-year old child, Droopy, for one month.

The next month, James stays home from work and cares for Droopy himself.

Judy spends \$180 replacing the curtains destroyed by Droopy and James.

Walmart sells a desk, which it had purchased the year before for \$90 from China, to a UM college student for \$120.

Twillia buys a used 1993 Honda car, made in Japan, from Fiona for \$2200.

Hank buys travelers checks worth \$1000 from TCF Bank, paying \$1015 for them.

An elevator, purchased by U of M for \$7,000 in 1934, stops working.

U of M (a state university) pays \$1940 for a Sony Viao laptop computer, made in Japan, for use by a professor.

- b. Calculate the total contribution of the above transactions to U.S. Gross Domestic Product.

2. (10 points) The economy of Boringia produces and consumes only two goods, huhums and yawns. The following table reports the quantities and prices of these two goods in the years 2001 and 2002.

	Quantities		Prices	
	2001	2002	2001	2002
Huhums	10	25	6	8
Yawns	20	15	4	10

- a. Calculate the following, using 2001 as the base year and the quantities listed for 2001 as the consumption basket for the CPI. Use the space at the right and below, if you wish to show your calculations.

Real GDP in 2002 _____

CPI in 2002 _____

GDP Deflator in 2002 _____

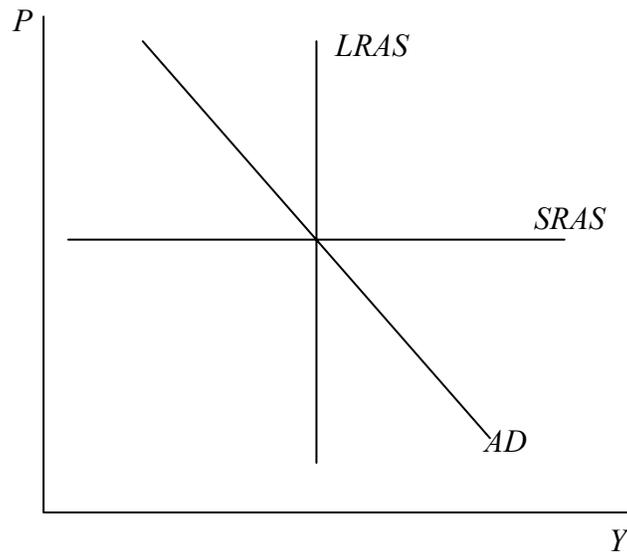
% inflation 2001-2002

- based on CPI _____

- based on deflator _____

- b. Explain why the CPI and the Deflator yield different results for the rate of inflation here.

3. (5 points) In the year 2000, it appeared to be the case that the United States was in a long-run macroeconomic equilibrium, and thus that it could be represented by the simultaneous intersection of both short- and long-run aggregate supply with aggregate demand, as shown in the diagram below. There then occurred a shock to this equilibrium due to the sudden collapse of prices in the stock market, which reduced the perceived wealth of lots of consumers. A plausible response to this event would be for consumers to reduce their consumption and increase their savings. Suppose that this did happen. Illustrate in the diagram how this would cause income and the price level to change, both in the short run and in the long run. Assume that there is no change in macroeconomic policy.



4. (16 points) There seems to be disagreement, at least among politicians, as to whether an increased government budget deficit causes a rise in interest rates and a consequent fall in investment. To find out what at least one model of the economy might say about this, use Mankiw's model of Chapter 3 (national income in the long run, closed economy) to answer the questions below. As a reminder, the model consists of the following equations, the properties of which you should know:

$Y = F(\bar{K}, \bar{L})$	Real income
$W = F_L(\bar{K}, \bar{L})$	Real wage
$C = C(Y - \bar{T})$	Consumption
$I = I(r)$	Investment
$Y = C + I + \bar{G}$	Goods market equilibrium

You may analyze this model using algebra/calculus or using diagrams (or both). Either can be correct, if done right.

- a. Find the effects on savings, S , the interest rate, r , and the level of investment, I , of an increase in government purchases, $\Delta \bar{G}$, without any change in taxes, \bar{T} .

- b. In contrast, now find the effects (on the same variables) due to an increase in \bar{G} that does *not* increase the deficit, but rather is accompanied by an equal increase in \bar{T} : $\Delta\bar{T} = \Delta\bar{G} > 0$. How does your answer compare to part (a)?
- c. The equilibrium real wage, W , in this model depends only on \bar{K} and \bar{L} , which so far we have not changed. But suppose now that we assume a change in the capital stock, $\Delta\bar{K} = \Delta I$. How then do the policies in parts (a) and (b) affect W ?

5. (8 points) Suppose that the country of Oopsland has had a history, until the start of this year, of a very stable economy. Real output has grown steadily at a constant rate, and inflation has been moderate for as long as anybody can remember. Suddenly this year, and unexpectedly, the rate of inflation increases to well over 300%. Based on the quantity theory of money as well as other things that you learned about the causes and effects of inflation, put a check mark (✓) next to each of the following statements that seems likely to be true during this year.

_____ The supply of money in this economy is growing much more rapidly than it did in prior years.

_____ Those whose income comes from producing goods and services are experiencing a rapid rise in their real incomes.

_____ The real wage of labor is falling.

_____ People spend more time and effort than they did before, managing their money in order hold less of it.

_____ The nominal interest rate in this economy is higher than it was last year.

_____ The real interest rate in this economy is higher than it was last year.

_____ Those who borrowed money in the past benefit from the new inflation.

_____ The increased inflation makes it harder for necessary changes in relative prices to occur.

6. (3 points) In the last quarter of 2003, as reported in the *Wall Street Journal*, (circle one correct option in each case below):

a. Labor costs: rose fell stayed the same

b. Real hourly wages: rose fell stayed the same

c. These changes were due largely to changes in:

 employment monetary policy productivity

 inflation the budget deficit

7. (14 Points)

- a. Show and explain how the equations and variables of the closed-economy model in question 4 need to be modified or augmented to obtain the open-economy model of Mankiw's Chapter 5.

- b. Show how a rise in the foreign interest rate, r^* , will affect the equilibrium levels of the real exchange rate and net exports in the open-economy model.

- c. Combine Mankiw's open-economy model from part (a) with his model of the natural rate of unemployment (using the latter to determine the level of employment from a given population) to answer the following: Suppose that improved communication between potential employers and employees increases the rate at which the unemployed find jobs, without changing the rate at which employed workers leave jobs. How will this affect the equilibrium level of net exports? (For this problem, you should ignore any effect that a changing employment of labor might have on the incentive to invest in capital.)

8. (3 Points) In the last quarter of the 20th century, as discussed in the assigned Policy Brief by Becky Blank, (circle one correct option in each case below):

- a. Rates of unemployment in Europe: rose fell stayed the same
b. Wage inequality in the U.S.: rose fell stayed the same
c. Which of the following explanations is offered for this difference in labor-market performance between Europe and the U.S.? (Check one.)

_____ Europe's proximity to the formerly communist countries of the Soviet Bloc exposed it to increased low-wage competition from which the U.S. was insulated by distance.

_____ Wage bargaining in the English language is more effective, from the standpoint of management, than bargaining in the diverse languages available in Europe.

_____ Like the sun, jobs arrive later in the U.S. than in Europe.

_____ In the face of global shocks that were common to both Europe and the U.S., legislation and union rules in Europe prevented wages from adjusting as they did in the more flexible labor markets of the U.S.

_____ U.S. workers work longer hours and more days per year than European workers, reflecting their more materialistic orientation.

9. (10 points) Consider an economy in the Solow growth model without technical progress which is initially in a steady state with the following properties (not all of which may be relevant):

Population growth rate =	2% per year
Capital depreciation rate =	5% per year
Marginal product of capital =	10% per year
Savings rate =	20%
Income per worker =	20,000 per year

Show graphically the effect (direction only, not size) of a small increase in the rate of savings on

- i. Capital per worker, k
- ii. Income per worker, y
- iii. Consumption per worker, c
- iv. The wage of labor, w

both initially and in the new steady state, as compared to the previous steady state.

This extra page is to use in case you run out of room on one of the questions. Label clearly which question(s) you are writing about here.