

Econ 308: Intermediate Macroeconomics  
Whitman College  
Fall 2008

Denise Hazlett  
Office: Maxey 212  
Phone: 527-5155  
email: hazlett  
homepage: <http://people.whitman.edu/~hazlett/>  
Cleo email address for the course: econ\_308\_a\_f08@cleo.whitman.edu

Office hours are the following, or by appointment.  
Monday, Tuesday, Wednesday and Thursday 2:30-3:30  
Wednesday and Friday 11:00-11:45

Macroeconomics is the study of economic activity at the aggregate level. The topics we will cover include national income, employment, growth, business cycles, exchange rates, inflation, and interest rates. The course textbook is Macroeconomics, Sixth Edition by Gregory Mankiw. Each day's reading assignment is marked on the attached reading list. Note that some readings are from the World Wide Web. You are also required to read the *Wall St. Journal* and to keep a collection of articles that you will summarize and hand in periodically. You will use your collection of articles to write a paper. The paper assignment and the requirements for the WSJ articles are attached. There will be three midterm exams (100pts each), a comprehensive final exam (200pts), and eight problem sets (10pts each). The collection of articles from the WSJ counts 50 points, and the paper counts 50 points. You may work with others on the problem sets, but you must write them up individually.

Unless otherwise indicated, all assignments must be turned in at the beginning of class on the day they are due. Assignment due dates and exam dates are marked on the attached reading list. I will not accept late or illegible assignments. Nor will I offer exams at times other than those scheduled. Please arrange your schedule now so that you do not have conflicts with exam dates and assignment due dates. Because unforeseen conflicts do arise, I will drop your lowest problem set score. If you have a registered disability that requires special accommodation for exams, please see me a week before each exam so that we can make arrangements.

To help you study, old exams are available from my homepage. The grading scale for the course is as follows. Note that there is no disadvantage to studying with others, as your grade does not depend on anyone else's performance.

Total Points	(% of 670)	Grade	Total Points	(% of 670)	Grade
657	98	A+	496	74	C+
630	94	A	469	70	C
603	90	A-	442	66	C-
576	86	B+	415	62	D+
549	82	B	389	58	D
523	78	B-	362	54	D-

## READING LIST

### September

- W 3 Measuring gross domestic product and the unemployment rate, pp. 16-30, 34-9  
Read also “U.S. Revises GDP Growth Higher; Exports Help Drive Expansion, but Pace Is Expected to Slow” by Evans in Aug 29, 2008 WSJ p. A.2
- F 5 Inflation and the Consumer Price Index pp. 30-34, and “A Better CPI”  
in the Federal Reserve Bank of San Francisco’s *Economic Letter* 2/5/99 at  
<http://www.frbsf.org/econsrch/wklyltr/wklyltr99/el99-05.html>  
Discuss the article “Inflation is Stinging U.S. Workers Harder” by Perry and Reddy  
in August 22, 2008 WSJ, p. A1.
- M 8 Chain-weighted real GDP and the deflator, Okun’s Law pp. 4-5, 23-4 and 256-7
- W 10 Distributing national income pp. 44-55
- M 15 The Cobb-Douglas production function, output in the Solow Growth Model  
pp. 55-9, 186-189 PROBLEM SET 1 DUE
- W 17 The Solow Growth Model: consumption, investment and depreciation  
pp. 59-65, 189-192
- M 22 Steady state and savings in the SGM pp. 192-8
- W 24 The golden rule steady state pp. 198-206 PROBLEM SET 2 DUE
- M 29 No class

### October

- W 1 EXAM 1
- F 3 SGM with population growth pp. 206-13, p. 25 “FYI: Percentage Changes”  
  
WSJ ARTICLES (15) DUE in Professor Hazlett’s office by 3pm Friday, October 3
- M 6 Technological progress in SGM, world economic growth, accounting for sources  
of economic growth pp. 216-20, 230-4, 239-41, 244-9
- W 8 National savings and social security pp. 224-30 PROBLEM SET 3 DUE  
read also “What Fiscal Surplus?” by Gokhale, in the Federal Reserve Bank of Cleveland’s  
*Economic Commentary* 9/15/98 (handed out in class) and  
“Can the Stock Market Save Social Security?” by Lansing in the FRB of San Francisco  
*Economic Letter* 12/11/98 <http://www.frbsf.org/econsrch/wklyltr/wklyltr98/el98-37.html>
- W 15 The natural rate of unemployment, job search, and wage rigidity pp. 159-83
- F 17 Money and inflation, the quantity theory of money pp. 76-91  
PROBLEM SET 4 (Part A) DUE

- M 20 EXAM 2  
 W 22 Inflation, interest rates, and the classical dichotomy pp. 91-110  
 F 24 The costs of inflation PROBLEM SET 4 (Part B) DUE
- M 27 The Federal Reserve, interest rates, and the money supply  
 pp. 510-17, 524-6, and “Currency and the Underground Economy “ on pp. 519-20  
 read also chps. 1-3 of the Fed’s Purposes and Functions, at  
<http://www.federalreserve.gov/pf/pf.htm>  
 (Skip the section of chapter 3 on the discount rate, pp. 45-50.)  
 W 29 Federal funds market

#### November

- M 3 Open economy: savings and investment, inflation and nominal exchange rates  
 pp. 115-21, 127-32, 140-6 PROBLEM SET 5 DUE  
 W 5 Keynesian Cross Model, government tax and expenditure policy in Keynesian Cross  
 pp. 252-61, 278-87
- M 10 IS-LM Model: the IS curve pp. 288-92  
 W 12 The LM curve and short run equilibrium, fiscal and monetary policy in IS-LM  
 pp. 292-301, 303-13, 317-27 PROBLEM SET 6 DUE
- M 17 Keynesian sticky wage AS-AD model pp. 313-5, 265-6, 373-4, 377-80  
 W 19 EXAM 3

WSJ ARTICLES (30) DUE in Professor Hazlett’s office by 3pm Thursday, November 20

#### December

- M 1 Imperfect information and the Lucas Aggregate Supply curve,  
 the Phillips curve, the sacrifice ratio and the Lucas critique pp. 380-98, 411-2  
 W 3 Stabilization policy, chp 14
- M 8 Real Business Cycle models pp. 528-37, reread p. 247 PROBLEM SET 7 DUE  
 W 10 New Keynesian economics, government debt and the budget chp.15 and pp. 537-45  
 PROBLEM SET 8 DUE

WSJ PAPER AND (10) ARTICLES DUE by 4pm Friday, December 12

The final exam is the morning of Wednesday, December 17.

## Wall Street Journal Assignment

Following the macroeconomic news reported in the *Wall Street Journal* (WSJ) will help you understand the theoretical and policy issues we cover in this course. During the semester you are required to collect and summarize a total of 50 WSJ articles on the macro economy. You will use these articles to write a paper. The summaries you turn in must be your own work, designed to help you write the paper described in this assignment.

Because the WSJ does not check its op-ed pieces for accuracy, *you will not hand in articles labeled “opinion”, “commentary” or “insight”*. The opinion pieces are located towards the end of Section A on pages labeled as opinion pages. In the online addition, the opinion pieces have the word “opinion” above the title.

The first **15** articles are due Friday, October 3, the next **25** articles are due Thursday, November 20, and the final **10** articles are due Friday, December 12. You must turn in at least this number of new articles on each date, but you may turn in more. Maintain your collection in a three-ring binder with a divider separating the articles into the following two categories:

(1) **Data Tracking** These articles discuss newly released macroeconomic data. Examples include articles on the current unemployment rate, changes in gross domestic product, the Consumer Price Index, savings rates, labor productivity measures, survey results for consumer and business confidence, balance of payments, and leading economic indicators. (For a definition of leading economics indicators see page 258 of the textbook.) Please do not collect the article on the U.S. dollar exchange rate that the WSJ publishes daily in its Money and Investing section. Data on what happened to the value of the dollar over a 24-hour period would not help you write a paper that covers three months of macroeconomic activity.

Note that macroeconomic data describe the economy in the aggregate. So, do not collect articles on the performance of individual firms or particular industries. For instance, you would collect an article describing how much the Consumer Price Index has risen over the past 12 months, due in part to increased gasoline prices. However, you would not collect an article describing what has happened to the profits of steel companies due to increased oil prices.

(2) **United States Economic Policy** These articles discuss U.S. fiscal or monetary policy and include, for example, articles on federal government spending and taxation, the federal government budget deficit, social security and Medicare reform and other federal government budget proposals, the money supply, interest rates and Federal Reserve actions. Do not collect

any article that merely states how much debt the Treasury has issued or paid off over the past few days, as they articles do not describe economic policy, but simply cover the technical details of how the Treasury finances deficit spending.

For each category, add your articles to your binder in chronological order, indicating the date on each article. Put your typed summaries of the articles at the front of your binder, with the date, article title and WSJ page number listed above each summary. When collecting articles and writing the summaries you should keep in mind the following paper assignment. In particular, **you should be careful to collect information on all of the macroeconomic policy proposals discussed at the federal level over the course of the semester.**

In the paper, due December 12, you will

- (i) summarize U.S. macroeconomic performance over the course of the semester, based on the information from your data-tracking articles,
- (ii) summarize current and proposed U.S. monetary and fiscal policies, based on the information from your policy articles
- (iii) use economic theories from the course to explain the rationale for current and proposed policies, and
- (iv) use economic theories from the course to analyze the likely macroeconomic effects of these fiscal and monetary policies.

In other words, you will use economic models from the course to analyze the performance of the U.S. economy, to explain how this economic performance has influenced policy proposals, and to predict how these policies will in turn affect economic performance. You will need to use multiple economic models in your analysis because some models are better suited to analyzing short-term economic performance, some are better suited for long-term analysis, and some are better suited for very-long-term analysis. Your paper should treat all three time frames. Note that in order to apply the economic models from the course, you will have to draw the graphs from these models to support your explanations. Thus, your paper will include several graphs, each of which you explain in the body of the paper. Your paper should be about 8-10 double-spaced pages, not including the graphs. For information on how to write an economics paper, see [The Writing of Economics](#) by Donald McCloskey, on library reserve.

As you write your summaries, you should consider them a resource for when you write the paper, so that you do not have to go back and reread the entire WSJ article. You will find

that some articles require only one or two sentences in summary, whereas other articles merit longer summaries.

You can subscribe to the WSJ (which gives you both print and electronic access to the WSJ's Western Edition), read the library's print subscription to the Western Edition, or use the following steps to access the library's e-WSJ subscription to the Eastern Edition. From the library's home page, click on the "Journals at Penrose" link. Type "Wall Street Journal" in the search box, then click on the link for "ProQuest National Newspapers Core".

PROBLEM SET 1

For Problem Set 1, answer Questions 1 and 2. Note that Question 2 is continued on the next page.

1. Consider the following information about the goods produced within the borders of a hypothetical country. Answer the following questions, showing all of your work.

Good	Price in 1992	Price in 1993	Amount produced in 1992	Amount produced in 1993
Carrots	\$10	\$12	100,000	110,000
Ambulances	10,000	9,800	10	10
Jeans	20	19	10,000	10,500
Bicycles	200	220	1,000	1,020

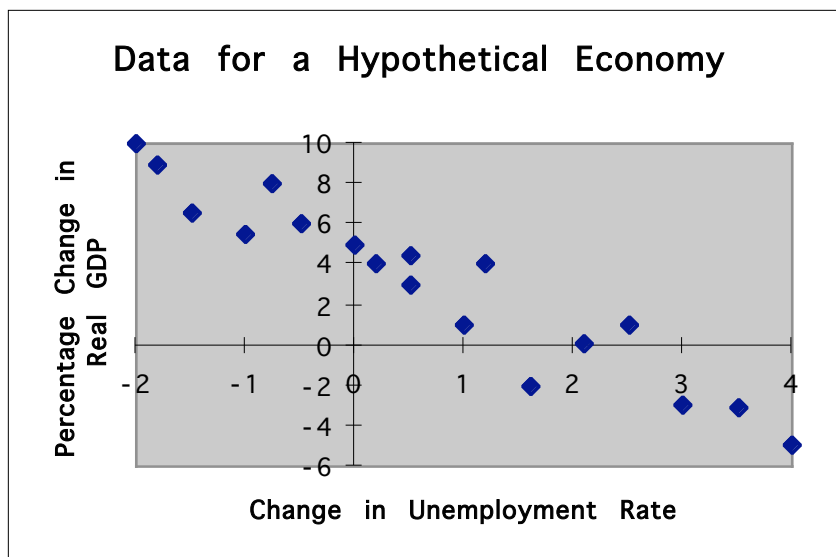
(a) (1pt) In 1992, the typical urban family bought 30 carrots, 8 jeans and 1 bicycle. With 1992 as the base year, calculate the Consumer Price Index for 1993.

(b) (1pt) Use the CPI calculated in part (a) to determine the inflation rate between 1992 and 1993. Suppose the CPI is 120.0 in 1994. What is the inflation rate between 1993 and 1994?

(c) (3pts) What is the Gross Domestic Product deflator for 1993, if 1992 is the base year? Use the geometric mean (chain-weighted) calculation.

(d) (1pt) Use the GDP deflator in part (c) to determine the inflation rate between 1992 and 1993.

2. Consider the following graph of annual data relating the change in the unemployment rate to the percentage change in real aggregate output in a hypothetical economy.



- (a) (2pts) Estimate Okun's Law for this hypothetical economy.
- (b) (1pt) Using your version of Okun's Law, estimate the effect on aggregate output if the unemployment rate in this economy were to fall from 6.5% to 6.0%.
- (c) (1pt) Using your version of Okun's Law, estimate the effect on aggregate output if the unemployment rate in this economy were to rise from 8.25% to 9.0%.

## PROBLEM SET 2

1. Consider the Cobb-Douglas production function where real aggregate output  $Y$  is given by  $Y = A K^\alpha L^{1-\alpha}$ , in which  $A=2$  is a parameter measuring the productivity of the available technology,  $K$  is the amount of capital employed,  $L$  is the amount of labor employed, and  $\alpha=0.4$  is the share of national income paid as compensation to capital. The depreciation rate in this economy is 0.05, the savings rate is 0.25, and the population is constant.

- (a) (2pts) Find the steady-state level of capital per worker.
- (b) (2pts) Find the steady-state level of national output per worker.
- (c) (2pts) Find the steady-state level of consumption per worker.
- (d) (2pts) Suppose the savings rate changes to 0.20. Find the new steady-state levels of capital per worker, national output per worker, and consumption per worker.

2. (2pts) Find a World Wide Web site that you think provides interesting information about macroeconomics. Describe the information the site provides, who authored the site, and why you find it interesting. Email your description to the Cleo email address for the course: [econ\\_308\\_a\\_f08@cleo.whitman.edu](mailto:econ_308_a_f08@cleo.whitman.edu). Send the email from your Whitman email address.

### PROBLEM SET 3

1. (1pt) Find the golden rule level of capital per person for the economy described in Question 1 on Problem Set 2.

2. Consider the three countries described below. Each country has the Cobb-Douglas production function  $Y=AK^\alpha L^{(1-\alpha)}$ , where  $Y$  is the amount of real aggregate output produced,  $K$  is the amount of capital employed,  $L$  is the amount of labor employed,  $A$  is a parameter measuring the productivity of the available technology, and  $\alpha$  is the fraction of national income paid as compensation to capital. There is no labor-enhancing growth in technology in any of the countries. For each country, determine whether the country is producing at, above, or below the golden rule level of capital accumulation.

(a) (3pts) Country A.  $K=100, L=200, A=2, \alpha=0.3$

Depreciation of the capital stock  $\delta = 0.05$ . The labor force grows at the rate  $n = 0.2$ .

(b) (3pts) Country B.  $K=50, L=50, A=1.5, \alpha=0.2$

Depreciation of the capital stock  $\delta = 0.1$ . The labor force grows at the rate  $n = 0.2$ .

(c) (3pts) Country C.  $K=200, L=50, A=1, \alpha=0.4$

Depreciation of the capital stock  $\delta = 0.05$ . The labor force grows at the rate  $n = 0.15$ .

### PROBLEM SET 4 Part A

1. Suppose that the labor force is fixed at 100,000 people, of which 10,000 are currently unemployed and 90,000 employed. Suppose that the monthly rate of job separation  $s=0.013$ , and the monthly rate of job finding  $f=0.165$ .

(a) (1pt) What is the natural rate of unemployment for this economy?

(b) (1pt) What is the current unemployment rate?

(c) (0.5pt) How many people will lose jobs over the coming month?

(d) (0.5pt) How many unemployed will find jobs over the coming month?

(e) (1pt) What will the unemployment rate be at the end of the month?

## PROBLEM SET 4 Part B

2. Suppose Lisa lends to Brad at an annual nominal interest rate ( $i$ ) of 7%.
- (a) (1pt) If both people expect the inflation rate to be 3% over the coming year (that is,  $\pi^e=3\%$ ), what real interest rate ( $r^e$ ) do they expect on the loan?
  - (b) (1pt) If the actual inflation rate turns out to be 1% (that is,  $\pi=1\%$ ), what is the actual real interest rate ( $r$ ) on the loan?
  - (c) (1pt) Who is harmed and who is benefited by inflation that is lower than anticipated? Explain.
3. Assume that the classical quantity theory of money holds. Suppose that over a 20-year period, aggregate output grows on average 2.9% per year.
- (a) (2pts) If, during this 20-year period, the money supply grows on average 3.2% per year, what will the average annual inflation rate be?
  - (b) (1pt) Suppose that during this 20-year period, lenders require an annual real interest rate of 3.1%. Assume that everyone knows that the money supply will grow on average 3.2% per year and that output will grow on average 2.9% per year. Use the Fisher equation to predict the annual nominal interest rate.

## PROBLEM SET 5

1. Consider the following model. The banking industry holds one kind of deposit, a checking deposit. The money supply is defined to be currency in the hands of the public ( $C$ ) plus deposits ( $D$ ). The monetary base is currency in the hands of the public plus reserves ( $R$ ) in the banking industry. Assume that the public holds some currency and that banks hold some excess reserves ( $ER$ ). Let  $r_D$  be the required reserve ratio on deposits. Suppose the currency to deposit ratio is 0.2, the excess reserves to deposit ratio is 0.05, and the required reserve ratio is 0.15.
- (a) (1pt) What is the money multiplier for this economy?
  - (b) (2pt) Describe an open market operation that would cause the money supply to ultimately rise by 60 million dollars.
  - (c) (2pt) If the Fed were to sell 10 million dollars of government Treasury bills, what would ultimately happen to the money supply? Explain.
2. (5pts) With reference to a graph of the interest rate versus quantity of overnight bank loans in the Federal Funds Market, describe what happens to the Federal Funds Rate when the Fed makes an open market sale of U.S. Treasury debt. In your explanation, describe what happens to the amount of reserves in the banking system when the Fed makes its open market sale, and how this change in reserves affects bank supply and demand for excess reserves.

## PROBLEM SET 6

1. (3pts) Assume that purchasing power parity holds. Suppose that the U.S. runs a 2.30% annual inflation rate over the next year, and the European Union runs a 1.20% inflation rate. If the current exchange rate were 0.820 euros to the dollar, what would the exchange rate be after one year?
2. Consider the Keynesian cross model in which planned consumption expenditures,  $C$ , equal  $100 + 0.75(Y-T)$ , where  $Y$  is real Gross Domestic Product, and  $T=120$  is taxes. Planned investment expenditures,  $I$ , equal 300, and planned government expenditures,  $G$ , equal 200.
  - (a) (1pt) Calculate the equilibrium aggregate output  $Y$ .
  - (b) (1pt) What is the expenditure multiplier in this economy?
  - (c) (1.5pts) If the natural rate of output is 1900, then what change in planned government expenditures would return the economy to the natural rate of output? Be specific.
  - (d) (1.5pts) If the natural rate of output is instead 2100, then what change in taxes would return the economy to the natural rate of output? Be specific.
  - (e) (2pt) If the savings rate on disposable income changed from 0.25 to 0.30, what exactly would happen to output? Explain why output changes. Would the higher savings rate be good for this economy? Explain your reasoning.

## PROBLEM SET 7

(10pts) Suppose that you are the economic adviser to a government policy-maker who has access to recent Phillips curve data for the US, and to Okun's law. Your boss interprets the Phillips curve to say that a 1.0% reduction in the annual inflation rate will cause an extra 2.5% unemployment. From Okun's law, your boss concludes that the extra 2.5% unemployment will result in real GDP being 5.0% less than it otherwise would have been. Your boss does not feel that reducing inflation from the current 2.0% per year to 1.0% would be worth sacrificing 5.0% of real GDP. However, he has heard that something called the Lucas critique suggests that we might not have to sacrifice output when we reduce inflation. He asks you to define the Lucas critique and explain the connection between the Lucas critique and the idea that inflation-fighting policies might not reduce real GDP.

## PROBLEM SET 8

(10pts) If the US economy were to grow at a 0.5% annual rate in real terms over the coming year, what would be the appropriate policy reaction according to the real business cycle (RBC) school of thought? If the US economy were to grow at a 6.5% annual rate in real terms over the coming year, what would be the appropriate policy reaction according to the RBC school of thought? **Thoroughly** explain why these policies are the appropriate reactions in the RBC model.