

### 1. Working with Raw Macroeconomic Data

*Please type your answers to this question.* Obtain the following seasonally adjusted (SA or SAAR) data series from the Federal Reserve Economic Database (FRED):

- Consumer Price Index for All Urban Consumers: All Items
  - Real Gross Domestic Product, 1 Decimal
  - M1 Money Stock
  - Civilian Unemployment Rate
  - Effective Federal Funds Rate
- a) Which of these variables are trending upward over time? Which appear to return to a constant mean value?
- b) For these series (the ones that are trending), transform the data into annual (12-month) growth rates on FRED. Create time series graphs for each of the transformed data series and paste these into a Word document. From this point forward, use the transformed series rather than the raw data you obtained above.
- c) From your graphs, describe how each of these six variables behaved during each of the following recessions:
- 1973-75
  - 1981-82
  - 2001
- d) Based on your analysis above, which variables are procyclical? Which are countercyclical? Which do not appear to have a systematic relationship with business cycles?
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### 2. Review of National Income Accounting

For each of the transactions listed below, state whether or not it would affect U.S. GDP. Also, state which of the following national income accounting categories it would enter: consumption (C), investment (I), government expenditures (G), or net exports (NX).

- a) You buy a new Mercedes.
- b) NBC sells 90 thirty-second commercials to Super bowl sponsors.
- c) The CIA (a government agency) purchases a fleet of cars from Ford Motor Company.
- d) The San Antonio Spurs' franchise builds a new arena.
- e) Jeff Bezos sells \$5 billion in "amazon.com" stock, which he bought initially for \$1 million.
- f) Bezos buys Bill Gates' old house near Seattle.
- g) Boeing (a U.S. company) sells an airplane to American Airlines.
- h) Boeing sells an airplane to the U.S. Navy.
- i) Boeing sells an airplane to Singapore Airlines.
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### 3. Labor Force and Unemployment

Given the situations described below, is the individual in the labor force? If so, is this individual unemployed or employed?

- a) An individual leaves his job to return to school as a full-time student.
- b) An individual quits looking for a job after six months of trying.
- c) An individual is working 20 hours per week as part of a work study program.
- d) An individual takes maternity leave from her job for one year.
- e) An individual moves to a new location and is looking for a job.
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**4. Real vs. Nominal GDP**

Consider an economy that produces and consumes three goods and services: cappuccinos (non-durable good), leather briefcases (durable good), and taxicab rides (service). Use the information below.

	Cappuccinos	Briefcases	Taxicab rides
2000			
Price	\$3	\$200	\$10
Quantity	200	30	40
2007			
Price	\$4	\$250	\$30
Quantity	300	25	0

- a) Using 2000 as the base year, compute the following for 2007:
  - i. Nominal GDP
  - ii. Real GDP
  - iii. GDP deflator
  - iv. CPI
- b) Using 2000 as the base year, calculate inflation using each of the following: GDP deflator and CPI.
- c) Why do the price indices in part b) give different values for inflation? What are benefits and problems with each of these indices?

**5. Output and Marginal Products**

Use the following information:  $Y = 10K^{0.25}L^{0.75}$        $MPK = 2.5K^{-0.75}L^{0.75}$        $MPL = 7.5 K^{0.25}L^{-0.25}$

- a) Show that the production function has constant returns to scale.
- b) Do workers (labor) or owners of capital get paid a larger share of total output? What fraction of output gets paid to the workers?
- c) Suppose that there is a mass immigration into the U.S. from abroad, increasing the U.S. labor force. What is the effect on the real wage and rental price of capital? Are workers better off as a result of the immigration? Explain.

**6. Fiscal Policy**

Congress is currently considering a tax cut for the U.S. economy. Using the information for the U.S.:

$$\begin{array}{lll}
 Y = 1650 & C = 200 + 0.6(Y - T) & \text{Consumption function} \\
 G = 250 & I = 400 - 2000r & \text{Investment function} \\
 T_1 = 150 & & 
 \end{array}$$

- a) To begin, find the equilibrium interest rate ( $r$ ), investment ( $I$ ), and consumption ( $C$ ). You need to use the condition  $Y = C + I + G$
- b) Find public savings ( $S_g$ ), private savings ( $S_p$ ), and total savings ( $S$ ) in the example above.
- c) Suppose that taxes are cut by 10%, so that the new level of taxes is  $T_2 = 135$ . Find the new equilibrium  $r$ ,  $I$ , and  $C$ . How much investment is crowded out by the tax cut?
- d) Compute the new  $S_g$ ,  $S_p$ , and  $S$  after the tax cut.
- e) Illustrate the effects of the tax cut on a savings-investment diagram, assuming that savings does not respond to the interest rate.

