

Problem Set 1

The Data of Macroeconomics

1. Suppose that Nucor Steel sells \$2,000 worth of steel to Ford, other producers sell \$5,000 worth of other inputs to Ford; Ford then uses the steel and other inputs to make a Taurus station wagon which it sells to the car dealership for \$15,000. The car dealership then sells the station wagon to an economics professor for \$18,000. What is the total contribution to GDP made by this entire series of transactions? What if the professor bargains and pushes the price down to \$15,500? What is the total contribution to GDP then? Be sure to distinguish between real and nominal GDP.

2. What justification can be advanced for including the value of leisure time in GDP? How could it be measured? If it were included, would economic growth seem higher or lower since 1900? Would GDP fall more or less in recessions?

3. Fill in the gaps in the following table:

Year	Nominal GDP (Billions of current dollars)	Real GDP (Billions of 1998 dollars)	Inflation Rate (percentage)
1998	5,000		3
1999		5,250	6
2000	5,994	5,460	
2001		6,006	10
2002		6,306.3	5
2003	8465.9		7

4. **Media quote:** "A closer look at the numbers shows little to cheer about. The unemployment rate fell, but not because more jobs were created, as implied by the press release, which called it 'good news' and a 'good trend'". How could the unemployment rate fall if more jobs weren't created, and why might this be bad news?

5. The price of a typical desktop computer in 1995 was \$1,500, and the price of a typical desktop computer in 2000 was \$2,000. You have been asked to calculate the inflation rate of desktops after adjusting for quality. Data are available on the average chip speed of computers, which rose from 400 MHz to 1,000MHz between 1995 and 2000. Using chip speed as a measure of quality, calculate the implicit rate of inflation for a computer of constant quality. How satisfactory a measure of quality do you think chip speed is? What alternatives do you think might be as good, or better?

6. Flushed with your success in adjusting for computer quality, you have now been assigned to calculate quality adjustments in the medical field. Your first task is to calculate quality-adjusted

inflation in the provision of ultra-scans to expectant mothers. Between 1999 and 2000, the price of an ultrascan rose by 20%, but a new machine had also been introduced and adopted by every doctor. How would you go about attempting to measure any improvement in quality? What sort of information do you think would be relevant, and how might you attempt to measure it?