Lecture 2

Macro Data

- GDP – Chapter 6
- Labor Force and Unemployment – Chapter 7
- Computing annual rates – not in book

GDP is the market value of all final goods and services produced within a given period of time by the factors of production located within a country.

What counts for year 2016?

Car produced in 2016 but not sold until 2017?

Purchase of apple stock on etrade?

Allowance your parents give you?

Federal government social security payments?

Train cars purchased by Amtrak from a firm in Canada?

Apps produced in the United States and sold in China?

Military salaries paid by the Federal government?

GDP is also all the income earned by the factors of production located within a country, where income includes corporate profits.

C Consumption
I Investment
G Government Spending
EX Exports
IM Imports
^{D} Domestically produced

% of GDP

2017:2 19,246.7 69.1 16.5 17.3 12.0 15.0

billions $

$$GDP \equiv C + I + G + EX - IM \quad (1)$$

$$GDP \equiv C^D + I^D + G^D + EX \quad (2)$$

$$IM \equiv C - C^D + I - I^D + G - G^D \quad (3)$$

Substituting equation (3) into (1), yields

$$GDP \equiv C+I+G+EX-(C-C^D+I-I^D+G-G^D) \quad (4)$$

which is the same as equation (2).

POP Population 16 and over
L Labor Force
E Employment
U Unemployment
UR Unemployment Rate
PR Participation Rate

August 2017
millions

255.4 160.6 94.8
$$POP \equiv L + notL$$

160.6 153.4 7.2
$$L \equiv E + U$$

0.044 $$UR \equiv \frac{U}{L}$$ 7.2 / 160.6

0.629 $$PR \equiv \frac{L}{POP}$$ 160.6 / 255.4

Report September 1, 2017

$$\overset{+206}{POP} = \overset{+77}{L} + \overset{+129}{not\ L}$$

$$\overset{+77}{L} = \overset{-74}{E} + \overset{+151}{U}$$

$$UR = \frac{U}{L} = 0.044 \quad (+.001)$$

$$PR = \frac{L}{POP} = 0.601 \quad (-.001)$$

$$J = +156$$

$$\overset{+230}{MOON} = \overset{+156}{J} - \overset{-(-74)}{E}$$

Percentage changes at annual rates:

If annual data and the increase is from 100 to 101, the percentage change at an annual rate is just 1 percent:

$$\frac{101}{100} = 1.01, \text{ so } 1\%$$

If quarterly data and the increase in one quarter is from 100 to 101, the percentage change in the quarter is 1 percent, but the percentage change at an annual rate is 4.06 percent:

$$(1.01)^4 = 1.0406, \text{ so } 4.06\%$$

If monthly data and the increase in one month is from 100 to 101, the percentage change in the month is 1 percent, but the percentage change at an annual rate is 12.68 percent:

$$(1.01)^{12} = 1.1268, \text{ so } 12.68\%$$

The level of GDP is usually quoted at an "annual rate," where this is a different use of the phrase "annual rate." It is the amount of output produced in the quarter (after seasonal adjustment) times 4.

Seasonal adjustment:

Say that averaged over many years the amount of output produced in each of the third and fourth quarters is twice that in each of the first and second quarters. Then to seasonally adjust the data, the values in the first two quarters would be multiplied by 1.50 and the values in the last two quarters would be multiplied by 0.75. So if the actual values were 10, 10, 20, and 20, the seasonally adjusted values would be 15, 15, 15, and 15, which is what we want since in this example the higher values in the last two quarters are all due to seasonal factors. The values 1.50 and 0.75 are the "seasonal factors." The seasonal factors are computed by 1) summing the four values to get 60, 2) dividing 60 by 4 to get 15, 3) dividing 15 by 10 to get 1.5 for the first and second quarters, and 4) dividing 15 by 20 to get 0.75 for the third and fourth quarters.

"I've stopped looking for work, which, I believe, helps the economic numbers."