

## LECTURE 09: GDP I

- I. Definition of GDP
  - a. *Gross Domestic Product* (GDP) is the total (gross) market value of all final goods and services produced within a country's borders in a year.
    - i. This is useful in estimating the size of a country's economy and, by comparing it to the previous year's GDP, if and how much the economy is growing.
- II. GDP dissected
  - a. GDP focuses on *goods and services*: objects people buy and tasks people perform for others (like going to the doctor). It does not include charitable giving and favors done for others.
  - b. GDP adds together the *market value* of all goods and services, or all the prices of all goods and services sold.
    - i. This allows us to capture the value of the good, including its component parts. The wheat used to make \$3 worth of bread cannot be worth more than \$3...unless the baker is a very poor businessperson. But they won't be around for very long.
  - c. GDP only considers *final* goods or service, or items that are not usually transformed into other items. Microchips aren't counted but computers are. If microchips were counted, its value would be counted twice (once for leaving the microchip factory, and once as part of the computer).
    - i. Goods like microchips are considered *intermediary goods (and services)*, as opposed to final goods (and services). Think of these as ingredients—their costs are reflected in the final good. A baker's flour, rent, electric bill, and insurance are all intermediary goods and thus not directly counted in GDP.
  - d. GDP only considers when the good or service is *produced*.
    - i. Objects sold in the secondary market (e.g. a used car, an old house, the Pokémon cards you found in your closet) are not included in GDP. Claims to a financial asset, such as a stock or a bond, are similarly not included. One person sells their share of Company A to another person; the amount and value of Company A's assets didn't change.

- ii. It also doesn't include transfers, for example when you give a nonprofit a donation, because nothing was produced.
- e. GDP is *confined to a country* and includes the economic activity within that country's borders. If an immigrant works temporarily in the United States, their work increases the U.S.'s GDP. If an American travels to another country to work, their work *does not* increase the U.S.'s GDP.
  - i. This is the one time we'd explicitly count intermediary goods and services because we have to know when one country helps another country. Tires built in China and then shipped over to a U.S. car factory are explicitly counted as part of China's GDP (as exports) and explicitly counted as part of the U.S.'s GDP (as imports).
- f. GDP is also *confined to a year*, like an annual salary. The Bureau of Economic Analysis also calculates it on a per-quarter basis but the yearly GDP is the most common measure.
  - i. One of the nice things about GDP on a yearly basis rather than a quarter is that we get a big picture for the whole year. Quarterly GDP tends to be high in the winter and summer and tends to be lower in the fall and spring.
  - ii. This, in turn, makes it easy to calculate growth rates:

$$\text{Growth rate (\%)} = \left( \frac{GDP_{\text{now}} - GDP_{\text{before}}}{GDP_{\text{before}}} \right) (100)$$

For example, if GDP was \$13.67 trillion in 2012 and 13.44 in 2011<sup>1</sup>, then the growth rate was  $(13.67 - 13.44) / (13.44) (100) = (0.23) / (13.44) (100) = \text{about } 1.71\%$ .

- III. What are the biggest economies?
  - a. Naturally, more people mean more production. Simply comparing GDPs without adjusted for population is misleading.
  - b. *GDP per capita* is GDP divided by the number of people in the economy ("per capita" is Latin for "for each head")
    - i. This is useful to determine how wealthy an average person is in a country, or the average income.
- IV. Two equations
  - a. There are two ways to break down GDP to help us understand what it includes. If you're really interested in what's included and what isn't

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<sup>1</sup> <http://www.multpl.com/us-gdp-inflation-adjusted/table>

check out the NIPA (National Income and Production Accounts) guidelines. ([The document is over 400 pages.](#))

- b. The first is the *spending* approach. What did people spend their money on?

$$Y = C + I + G + NX$$

- i. Where Y is GDP;
- ii. C is consumption (like when you buy an ice cream bar);
- iii. I is investment (like when you buy an ice cream maker);
- iv. G is government spending (like when the government buys some ice cream);
  1. This does not include transfers, because nothing is produced. Including them would result in double-counting.
  2. Any production the government contributes is counted by cost because a lot production is given away for free (e.g. K-12 education). The same, by the way, is true for non-profits.
- v. NX is exports – imports: exporting ice cream increases GDP and importing ice cream decreases it (because it wasn't produced in the U.S.).

- c. Another way to think about GDP is the *income* approach. How did people get their money?

$$Y = \textit{wages} + \textit{rent} + \textit{interest} + \textit{profit}$$

- i. Where Y is still GDP;
- ii. Wages are all the salaries of everyone in a country;
- iii. Rent includes all the money people get from physical assets;
- iv. Interest is everyone's income from keeping money in a bank;
- v. Profit is the money business owners keep after they receive revenue and pay their costs.