Lecture 1: Gross Domestic Product

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Structure of the Course

- **First Part of the Class:**
  - The macroeconomy in the long run
  - Why are countries rich and poor?
  - What can government policy do about it?

- **Second Part of the Class:**
  - The macroeconomy in the short run
  - What are “business cycles”? 
  - How should governments react to them?
“Rich” and “Poor”

- Spend the next several lectures looking at the variation in income (production) across time and across countries
- Our study will be based on economic observables rather than, for instance, culture
- Particular question: what government/institutional policies might help/harm development?
- But first, we need to be able to know how we’re measuring income, and how to make it comparable across time/countries
Gross Domestic Product (GDP) Is...

...the market value of all final goods & services produced within a country in a given period of time.

Goods are valued at their market prices, so:

- All goods measured in the same units (e.g., dollars in the U.S.)
- Things that don’t have a market value are excluded.
**Gross Domestic Product (GDP) Is...**

…the market value of all final goods & services produced within a country in a given period of time.

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**Final goods**: intended for the end user

**Intermediate goods**: used as components or ingredients in the production of other goods

GDP only includes final goods – they already embody the value of the intermediate goods used in their production.
Gross Domestic Product (GDP) Is...

...the market value of all final goods & services produced within a country in a given period of time.

GDP includes tangible goods (beer, wine, brats, ketchup…)
and intangible services (dry cleaning, concerts, cell phone service).
Gross Domestic Product (GDP) Is...

…the market value of all final goods & services produced within a country in a given period of time.

GDP includes currently produced goods, not goods produced in the past.
Gross Domestic Product (GDP) Is...

…the market value of all final goods & services produced within a country in a given period of time.

GDP measures the value of production that occurs within a country’s borders, whether done by its own citizens or by foreigners located there.
Gross Domestic Product (GDP) Is...

…the market value of all final goods & services produced within a country in a given period of time.

Usually a year or a quarter (3 months)
Understanding GDP

- The following three things are always equal:
  1) Total market value of all final goods and services
  2) Total income of all households, firms and governments
  3) Total “value added” across all market activities

- Value added is the difference between the sale price and the cost of production of a good or service
The Components of GDP

- Recall: GDP is total spending.

- Total spending is classified into four components:
  - Consumption (C)
  - Investment (I)
  - Government Purchases (G)
  - Net Exports (NX)

- These components add up to GDP (denoted Y):

\[ Y = C + I + G + NX \]
Consumption (C)

- is total spending by households on goods & services.

- Note on housing costs:
  - For renters, consumption includes rent payments.
  - For homeowners, consumption includes the imputed rental value of the house, but not the purchase price or mortgage payments.
Investment (I)

- is total spending on goods that will be used in the future to produce more goods.

- includes spending on
  - capital equipment (e.g., machines, tools)
  - structures (factories, office buildings, houses)
  - inventories (goods produced but not yet sold)

Note: “Investment” does not mean the purchase of financial assets like stocks and bonds.
Government Purchases (G)

- is all spending on the goods & services purchased by government at the federal, state, and local levels.

- G excludes transfer payments, such as Social Security or unemployment insurance benefits. They are not purchases of goods & services.
Net Exports (NX)

- \( NX = X - M \)
- Exports represent foreign spending on the economy’s goods & services.
- Imports are the portions of \( C, I, \) and \( G \) that are spent on goods & services produced abroad.
- Adding up all the components of GDP gives:

\[
Y = C + I + G + X - M \\
\text{or} \quad Y = C + I + G + NX
\]
Examples: C, I, G, M or X?

- The salary of a US soldier
- The purchase of a new house
- The cost of a US company’s telephone technical support service from India
- The consulting fee a New York investment bank charges when advising a merger between a Canadian retailer and a French shoe company
- The services of a father staying at home to care for his child
- The services of a daycare taking care of someone else’s child
Examples: C, I, G, M or X?

- The cost of lemonade sold by children at a roadside stand
- The cost of a ticket to an NBA game between the Chicago Bulls and the Toronto Raptors in Chicago
- Unemployment benefits paid to a US citizen by the US government
- The cost of a Ford truck produced in Ohio and sold in Mexico
- The cost of a ton of asparagus produced in Peru and sold to consumers in the US
- The cost that Walmart pays to a Chinese manufacturer for toys that are sitting in their US warehouse and are not yet sold to consumers
GDP and Economic Well-Being

- *Real GDP per capita is the main indicator of the average person’s standard of living.*

- But GDP is not a great measure of well-being.
GDP Does Not Value:

- the quality of the environment
- leisure time
- non-market activity, such as the child care a parent provides his or her child at home
- an equitable distribution of income
GDP Maximization Strategies:

- Require everyone to work 100 hours per week
- Allow for (or encourage) child labor
- Minimize consumption to maximize investment
- Run perpetual trade surpluses (produce lots of stuff, and send it abroad for nothing in exchange)

Clearly these outcomes are not good!
GDP and Welfare

- Pete Klenow and Chad Jones (both from Stanford University) measure welfare across countries in a paper from 2011. They take into account:
  - Life expectancy at birth
  - Consumption of goods & services (instead of income)
  - Leisure
  - Income inequality
GDP and Welfare

Jones & Klenow (2010), Figure 3, p. 17: Welfare and Income across Countries, 2000
GDP and Welfare: Digression on Correlations

![Scatter plots showing correlation coefficients]

- Correlation Coefficient = 0
- Correlation Coefficient = 1
GDP and Welfare

Correlation coefficient: .97

Jones & Klenow (2010), Figure 3, p. 17: Welfare and Income across Countries, 2000
# GDP and Welfare

<table>
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<th>Country</th>
<th>Welfare</th>
<th>Per capita income</th>
<th>&quot;Difference&quot;</th>
<th>Life expectancy</th>
<th>C/Y</th>
<th>Leisure</th>
<th>Inequality</th>
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GDP is not perfect, but...

- Having a large GDP enables a country to afford better schools, a cleaner environment, health care, better infrastructure, etc.

- Many indicators of the quality of life are positively correlated with GDP. For example...
GDP and School Enrollment
GDP and Urbanization

![Scatter plot showing the relationship between GDP per capita (2007) and the share of urban population (1990).]
GDP and Cell Phones

![Graph showing the relationship between GDP per capita and cell subscribers per 100 inhabitants in 2007. The x-axis represents GDP per capita in thousands of dollars, ranging from 0 to 10, and the y-axis represents cell subscribers per 100 inhabitants, ranging from 0 to 180. The data points are scattered across the graph, indicating a general trend of increased cell phone usage associated with higher GDP per capita.](image-url)
Next Class

- Homework/Reading on MyEconLab.com for Sections 5.3-5.4
- Discuss how to compare GDP at different points in time
- In particular, take into account changes in prices