Measuring an income

LECTURE: 5

Questions:

- ✓ What is Gross Domestic Product (GDP)?
- ✓ How is GDP related to a nation's total income and spending?
- ✓ What are the components of GDP?
- ✓ How is GDP corrected for inflation?
- ✓ Does GDP measure society's well-being?

Economics

Microeconomics
- Study of how households and firms
  - Make decisions
  - Interact in markets

Macroeconomics
- Study of economy-wide phenomena
  - Including inflation, unemployment, and economic growth

Income and Expenditure

Gross Domestic Product (GDP)

- Measures total income of everyone in the economy.
- Also measures total expenditure on the economy's output of goods and services.

Income equals expenditure

- For the economy as a whole
- Because every dollar a buyer spends is a dollar of income for the seller.

The Circular-Flow Diagram

The Circular-Flow Diagram

- Simple depiction of the macroeconomy
- Illustrates GDP as spending, revenue, factor payments, and income

Preliminaries:

- Factors of production are inputs like labor, land, capital, and natural resources.
- Factor payments are payments to the factors of production (e.g., wages, rent).

The Circular-Flow Diagram

Households:

- own the factors of production, sell/rent them to firms for income
- buy and consume goods & services

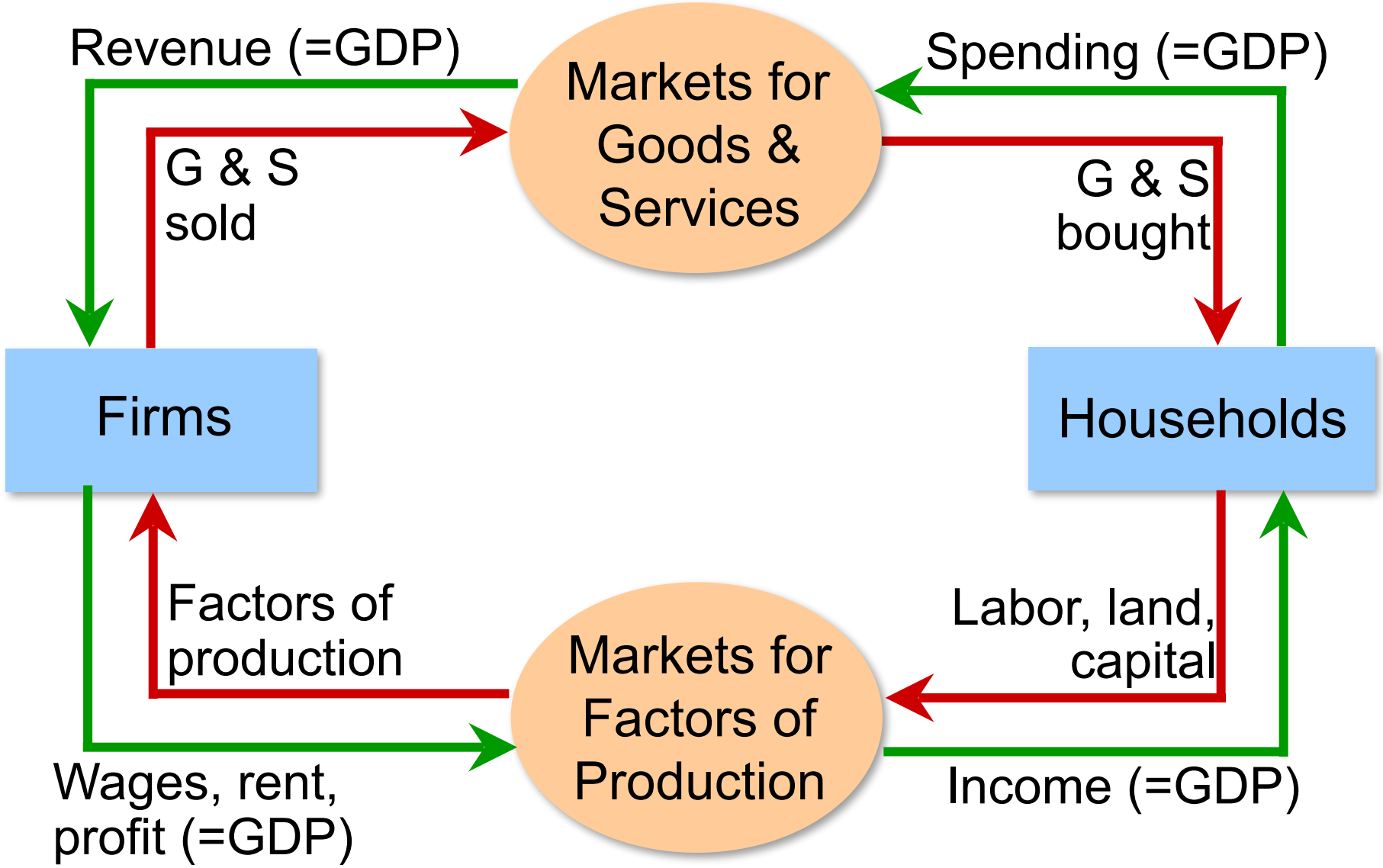
Firms

Households

Firms:

- buy/hire factors of production, use them to produce goods and services
- sell goods & services

The Circular-Flow Diagram



What This Diagram Omits

The government
Collects taxes, buys goods and services

The financial system
Matches savers' supply of funds with borrowers' demand for loans

The foreign sector
Trades goods and services, financial assets, and currencies with the country's residents

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, e.g., housework you do for yourself.

- GDP includes all items produced in the economy and sold legally in markets
- GDP excludes most items produced and sold illicitly. It also excludes most items that are produced and consumed at home.

- 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.

- GDP includes tangible goods (like DVDs, mountain bikes, beer)
- and intangible services (dry cleaning, concerts, cell phone service).

- GDP includes currently produced goods, not goods produced in the past.

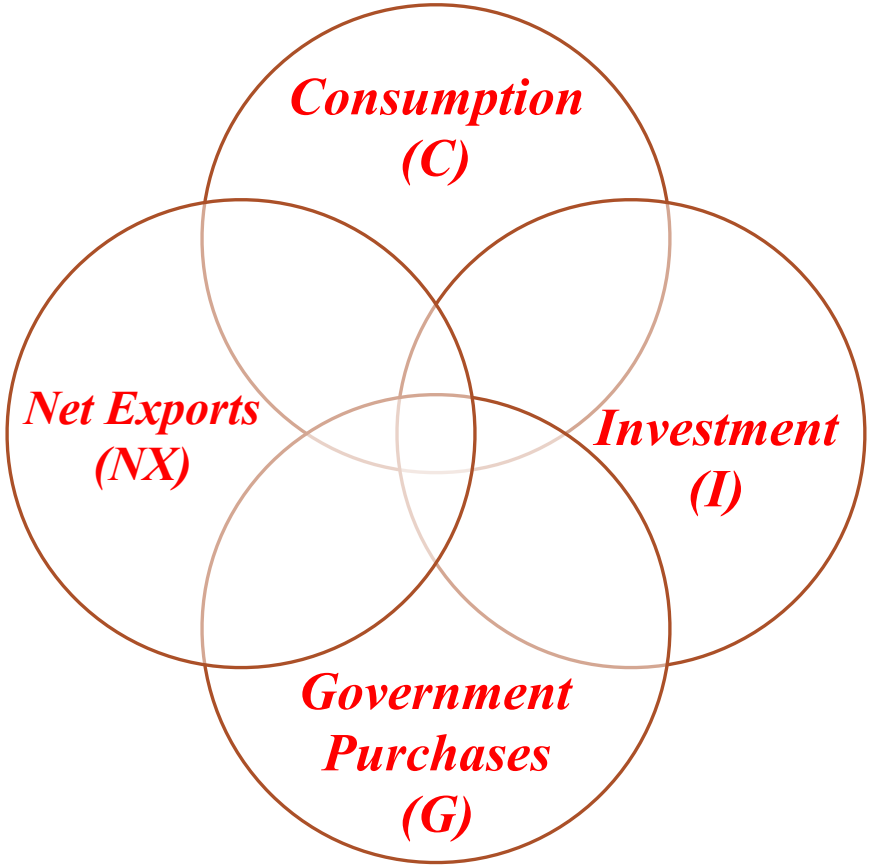
- GDP measures the value of production that occurs within a country's borders, whether done by its own citizens or by foreigners located there.

- Usually a year or a quarter (3 months)

The Components of GDP

These components add up to GDP (denoted Y):

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



Consumption (C)

Consumption, C
- Total spending by households on goods and services

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

Not included in C: purchases of new housing

Investment (I)

"Investment" does not mean the purchase of financial assets like stocks and bonds.

Government Purchases (G)

Government purchases (G)

- All spending on the goods and services purchased by the government
  - At the federal, state, and local levels.

Excludes transfer payments

- Such as Social Security or unemployment insurance benefits.
- They are not purchases of goods and services

Net Exports (NX)

Net exports, NX = exports – imports

- Exports: foreign spending on the economy's goods and services
- Imports: are the portions of C, I, and G that are spent on goods and services produced abroad

Adding up all the components of GDP gives:

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

What's *not* counted in GDP?

GDP includes all items produced in the economy and sold *legally* in markets.

- It excludes items produced and sold illicitly, such as illegal drugs.

GDP excludes most items that are produced and consumed at home and that never enter the marketplace.

Real versus Nominal GDP

Nominal and Real GDP

	Apples		Oranges	
	Price ($)	Quantity	Price ($)	Quantity
2015	50	10	20	50
2016	100	20	30	100
2017	150	20	50	200
	Nominal GDP			**$**
2015	($50 × 10) + ($20 × 50) =			1500
2016	($100 × 20) + ($30 × 100) =			5000
2017	($150 × 20) + ($50 × 200) =			13000
	Real GDP (Base year 2012)			**2012 $**
2015	($50 × 10) + ($20 × 50) =			1500
2016	($50 × 20) + ($20 × 100) =			3000
2017	($50 × 20) + ($20 × 200) =			5000

Note that the base year's nominal and real GDP *must* be the same.

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Inflation makes it impossible to meaningfully compare Nominal GDP across the years

Real GDP takes inflation out of the picture, thereby making the numbers comparable over time. These numbers are changing from one year to the next *entirely* because of changes in production

Nominal and Real GDP

	Apples		Oranges		
	Price ($)	Quantity	Price ($)	Quantity	
2015	50	10	20	50	$\text{Growth Rate} = \frac{\text{New value} - \text{Old value}}{\text{Old value}} \times 100$
2016	100	20	30	100	
2017	150	20	50	200	
	Nominal GDP			**$**	**Growth Rate (%)**
2015	($50 × 10) + ($20 × 50) =			1500	
2016	($100 × 20) + ($30 × 100) =			5000	100 × [(5000 - 1500)/ 1500] = 233
2017	($150 × 20) + ($50 × 200) =			13000	100 × [(13000 - 5000)/ 5000] = 160
	Real GDP (Base year 2012)			**2012 $**	
2015	($50 × 10) + ($20 × 50) =			1500	
2016	($50 × 20) + ($20 × 100) =			3000	100 × [(3000 - 1500)/ 1500] = 100
2017	($50 × 20) + ($20 × 200) =			5000	100 × [(5000 - 3000)/ 3000] = 67

Gross *National* Product

There's another measure of national income called Gross National Product

GNP = GDP
+ income earned by domestic residents from foreign residents
– income paid to foreign residents by domestic residents

Gross National Product is theoretically the same as Gross National Income (GNI)

There's a lot that's missing in GDP

- Where to begin!
- Inequality, work done in home, volunteer work, illegal work, leisure, environment, disasters, …

No matter what GDP is the best single measure of the economic well-being of a society.
GDP per person tells us the income and expenditure of the average person in the economy.

SUMMARY

Because every transaction has a buyer and a seller, the total expenditure in the economy must equal the total income in the economy.	*Gross Domestic Product (GDP) measures an economy's total expenditure on newly produced goods and services and the total income earned from the production of these goods and services.*	*GDP is the market value of all final goods and services produced within a country in a given period of time.*	*GDP is divided among four components of expenditure: consumption, investment, government purchases, and net exports.*	*Nominal GDP uses current prices to value the economy's production. Real GDP uses constant base-year prices to value the economy's production of goods and services.*	*The GDP deflator—calculated from the ratio of nominal to real GDP—measures the level of prices in the economy.*	*GDP is a good measure of economic well-being because people prefer higher to lower incomes.*	*It is not a perfect measure of well-being because some things, such as leisure time and a clean environment, aren't measured by GDP.*

THANKS FOR YOUR ATTENTION!