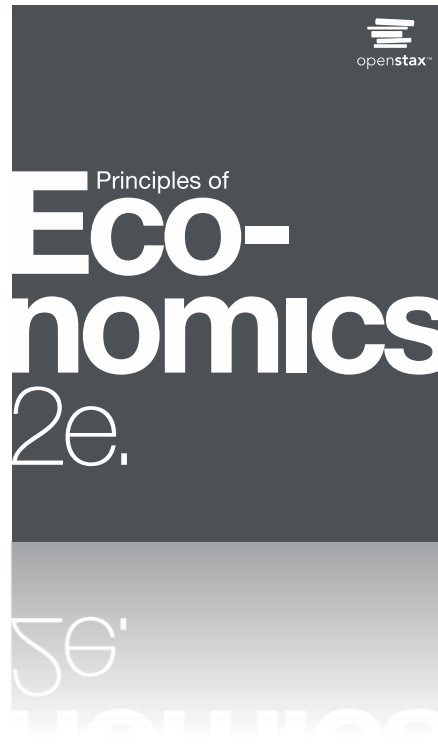


PRINCIPLES OF ECONOMICS 2e

Chapter 19 The Macroeconomic Perspective

PowerPoint Image Slideshow



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CH.19 OUTLINE

19.1: GDP Measuring the Size of the Economy

19.2: Nominal Values vs Real Values

19.3: Tracking Real GDP over Time

19.4: Comparing GDP among Countries

19.5: GDP as a Measure of Well-Being

The Great Depression



People lined up during the Great Depression, waiting for relief checks.

Credit: modification of work by the U.S. Library of Congress/Wikimedia Commons

- When many people suddenly have trouble making ends meet, it is easy to tell that the economy is not doing great.
- At other times, when some are doing well and others are not, it is more difficult to ascertain how the economy of a country is doing.

Macroeconomic Goals, Framework, and Policies



- This chart shows what macroeconomics is about:
 - Goals - a consensus of what are the most important goals for the macro economy.
 - Framework - what economists use to analyze macroeconomic changes (such as inflation or recession).
 - Policy Tools - the tools the federal government uses to influence the macro economy.

19.1 Measuring the Size of the Economy: Gross Domestic Product



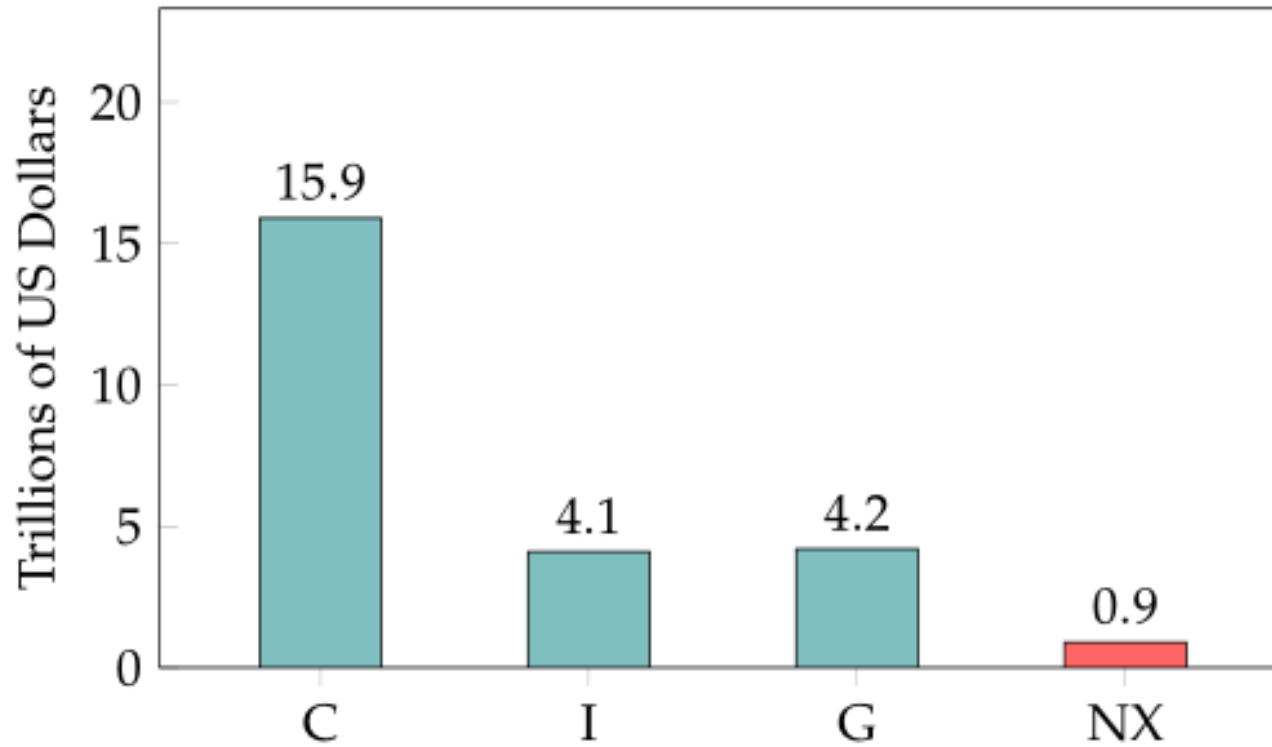
- **Gross domestic product (GDP)** - the value of the output of all final goods and services produced within a country in a given year.
 - Measures the size of a nation's overall economy.
- An economy's GDP can be measured by either:
 - the total dollar value of what consumers purchase in the economy.
 - the total dollar value of what the country produces.

GDP Measured by Components of Demand



- Who buys a country's production?
- Demand for production can be divided into four main parts:
 - consumer spending (consumption)
 - business spending (investment)
 - government spending on goods and services
 - spending on net exports

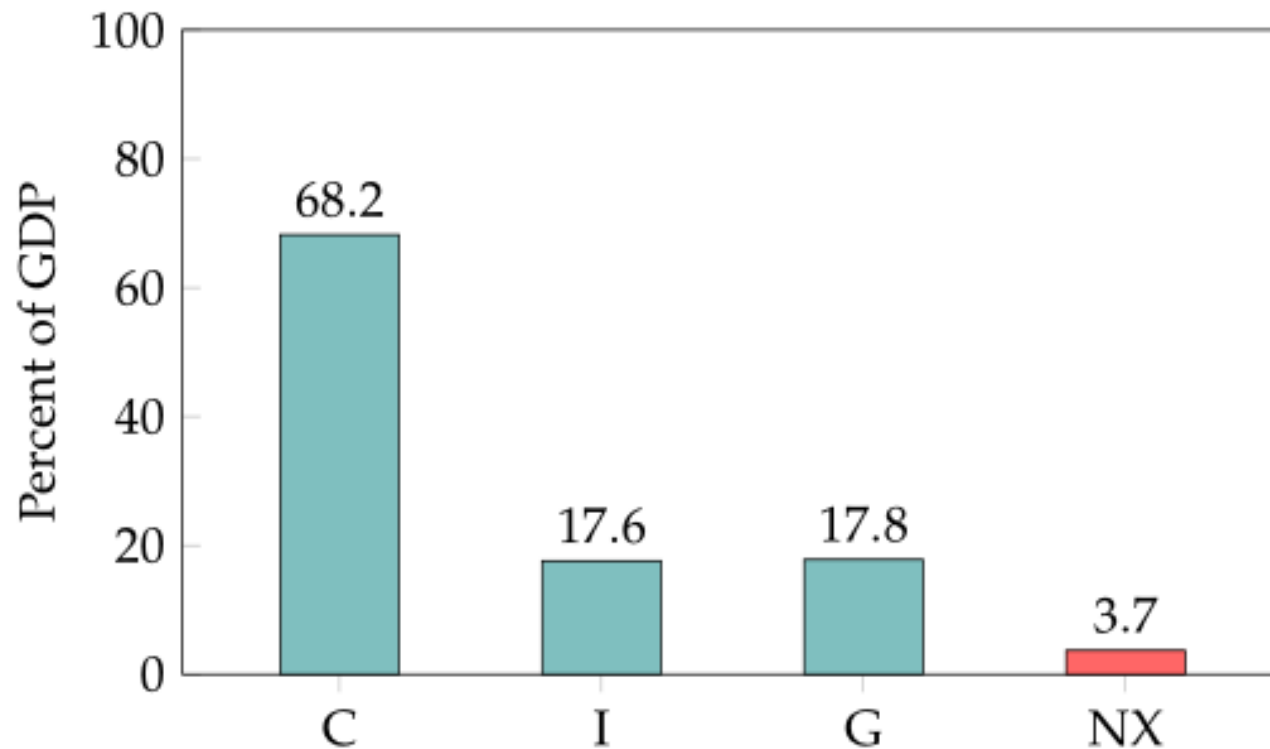
GDP Components (Current Dollars)



Data Source: BEA

GDP 2021: \$23.3T.

GDP Components (Percent of GDP)

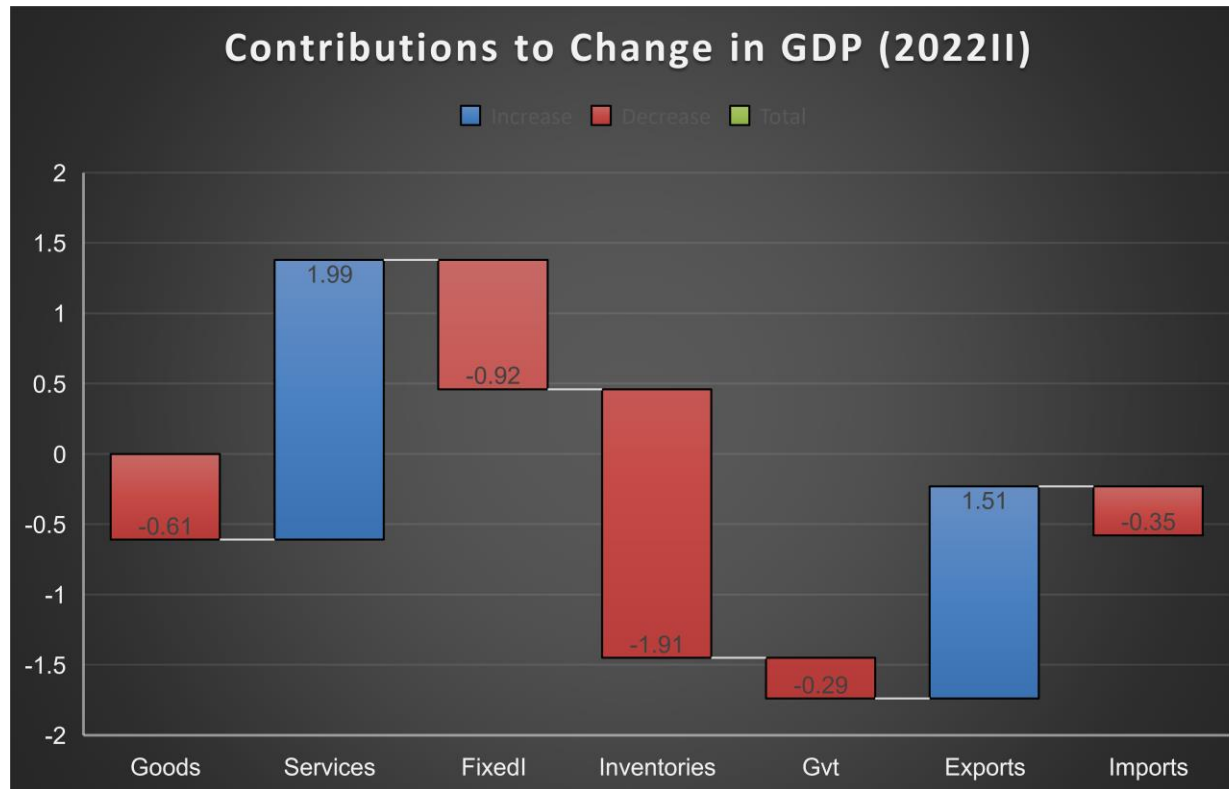


Data Source: BEA

- C: is about two-thirds of GDP & is relatively stable.
- I: a quarter as much, but much more volatile.
- G: slightly outpaces I.

GDP in 2021: \$23.3T.

Sources of Changes in GDP



Red is a decrease; blue is an increase.

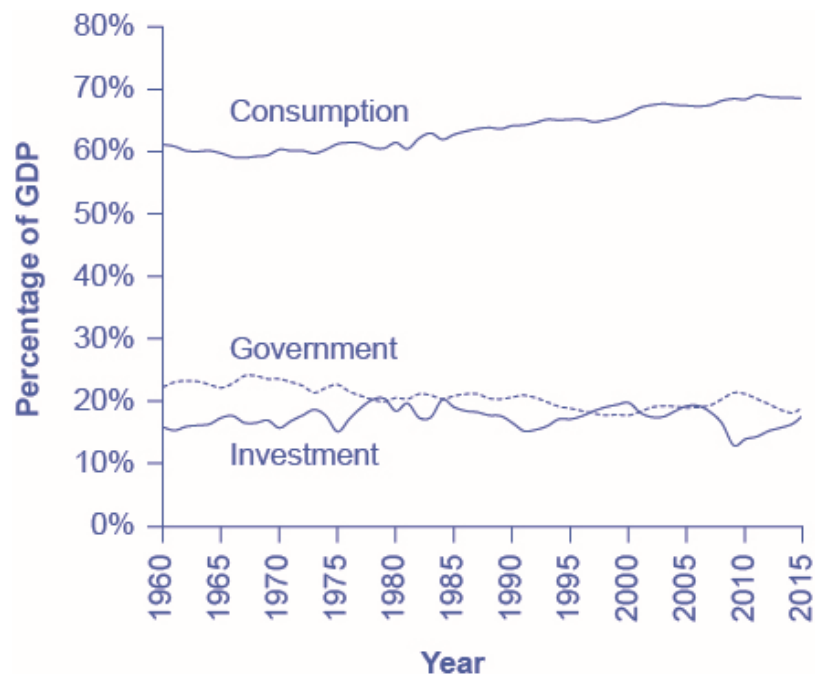
Data Source: BEA (Table 1.1.2)

A waterfall chart shows a running total as values are added or subtracted. It shows how an initial value is changed by a series of positive and negative increments. The columns are color coded so you can quickly tell positive from negative numbers.

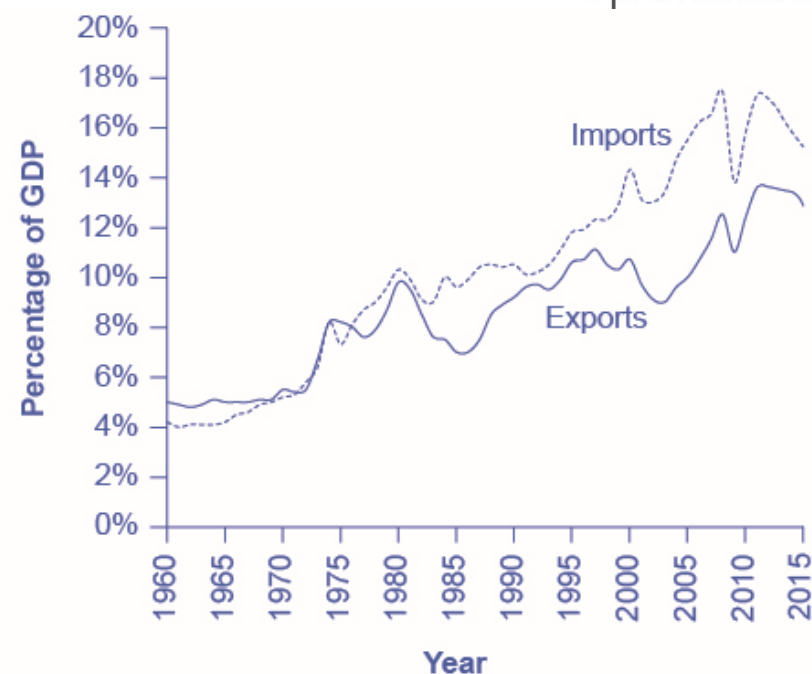
Components of GDP on the Demand Side



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(a) Demand from consumption, investment, and government



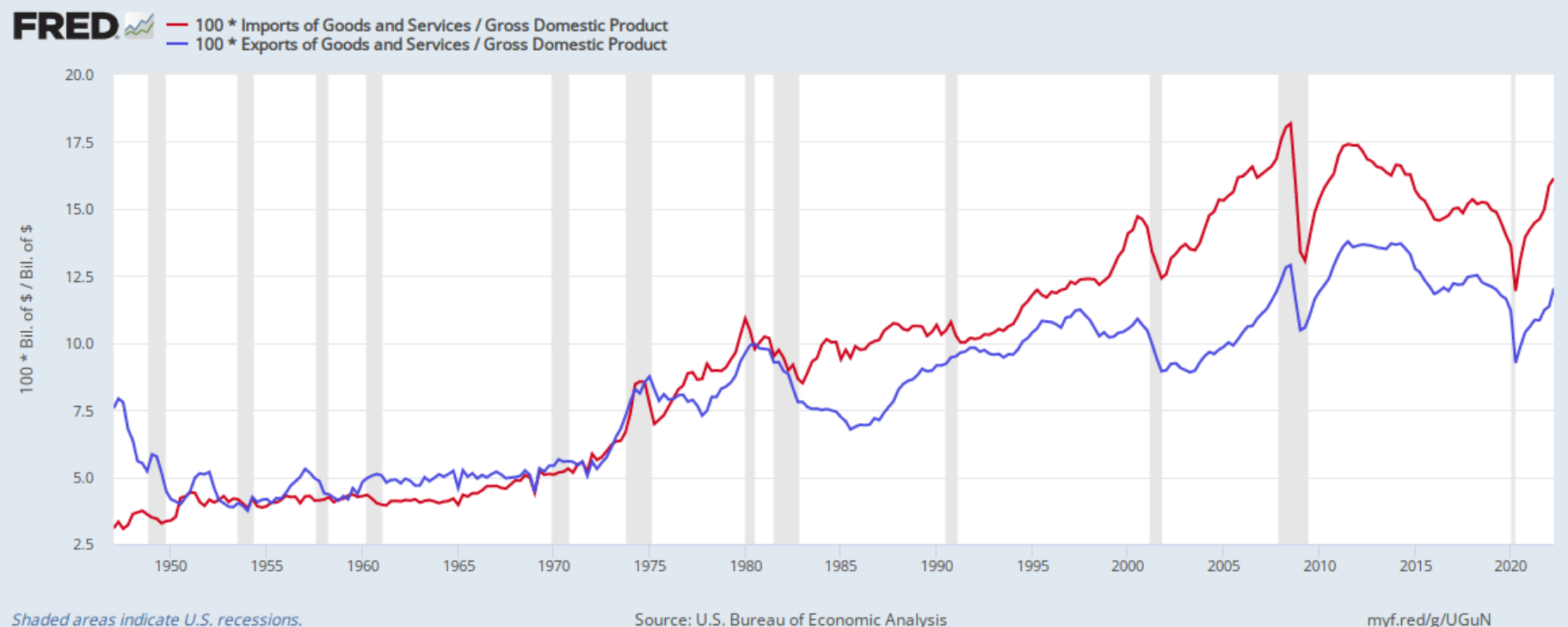
(b) Imports and exports

- For graph (a):
 - Consumption is about two-thirds of GDP, but it moves relatively little over time.
 - Business investment hovers around 15% of GDP, but it increases and declines more than consumption.
 - Government spending on goods and services is around 20% of GDP.

Net Export Component

- The GDP net export component, or trade balance, is equal to the dollar value of exports (X) minus the dollar value of imports (M).
- **Trade balance** - the gap between exports and imports.
 - Trade balance = $(X - M)$
- **Trade surplus** - when a country's exports are larger than its imports; calculated as exports – imports.
- **Trade deficit** - when a country's imports exceed exports; calculated as imports – exports.

US Exports and Imports Since 1950



Source: FRED (<https://fred.stlouisfed.org/graph/fredgraph.png?g=UGuN>)

- Exports are added to total demand for goods and services, while imports are subtracted from total demand.
- If exports exceed imports, as in most of the 1960s and 1970s in the U.S. economy, a trade surplus exists.
- When imports exceed exports, a trade deficit exists.

GDP Using Demand

- Based on the four components of demand, GDP can be measured as:

GDP = Consumption + Investment + Government + Trade balance

OR

$$\text{GDP} = C + I + G + (X - M)$$

GDP: What is Produced

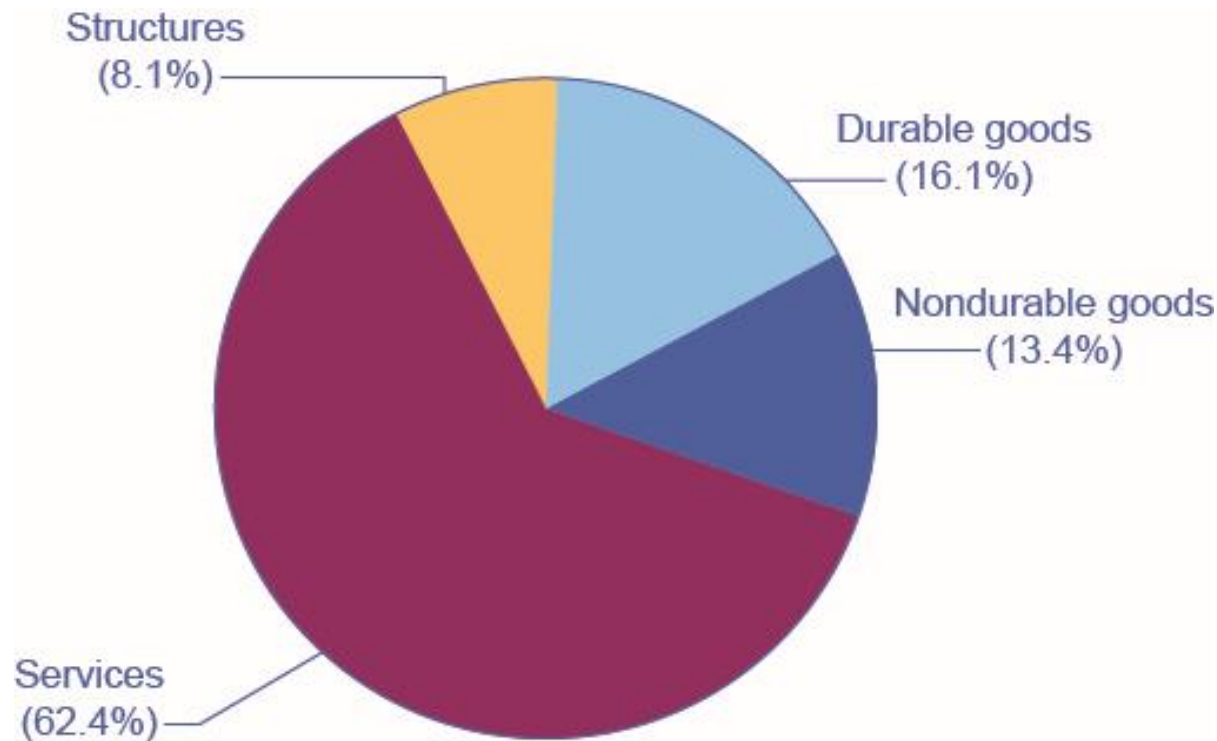
Production can be divided into five main parts:

- **Durable goods** - long-lasting good like a car or a refrigerator.
 - **Nondurable goods** - short-lived good like food and clothing.
 - **Services** - product which is intangible (in contrast to goods) such as entertainment, healthcare, or education.
 - **Structures** - building used as residence, factory, office building, retail store, or for other purposes.
 - Change in **inventories** - good that has been produced, but not yet been sold.
-
- Every market transaction must have both a buyer and a seller, so GDP must be the same whether measured by what is demanded or by what is produced.

The Problem of Double Counting

- **Final goods and services** - output used directly for consumption, investment, government, and trade purposes.
 - Goods at the furthest stage of production at the end of a year.
- -VS.-
- **Intermediate goods** - output provided to other businesses at an intermediate stage of production, not for final users.
 - Excluded from GDP calculation.
- **Double counting** - output that is counted more than once as it travels through the stages of production.
 - A potential mistake to avoid in measuring GDP.
- GDP is the dollar value of all final goods and services produced in the economy in a year.

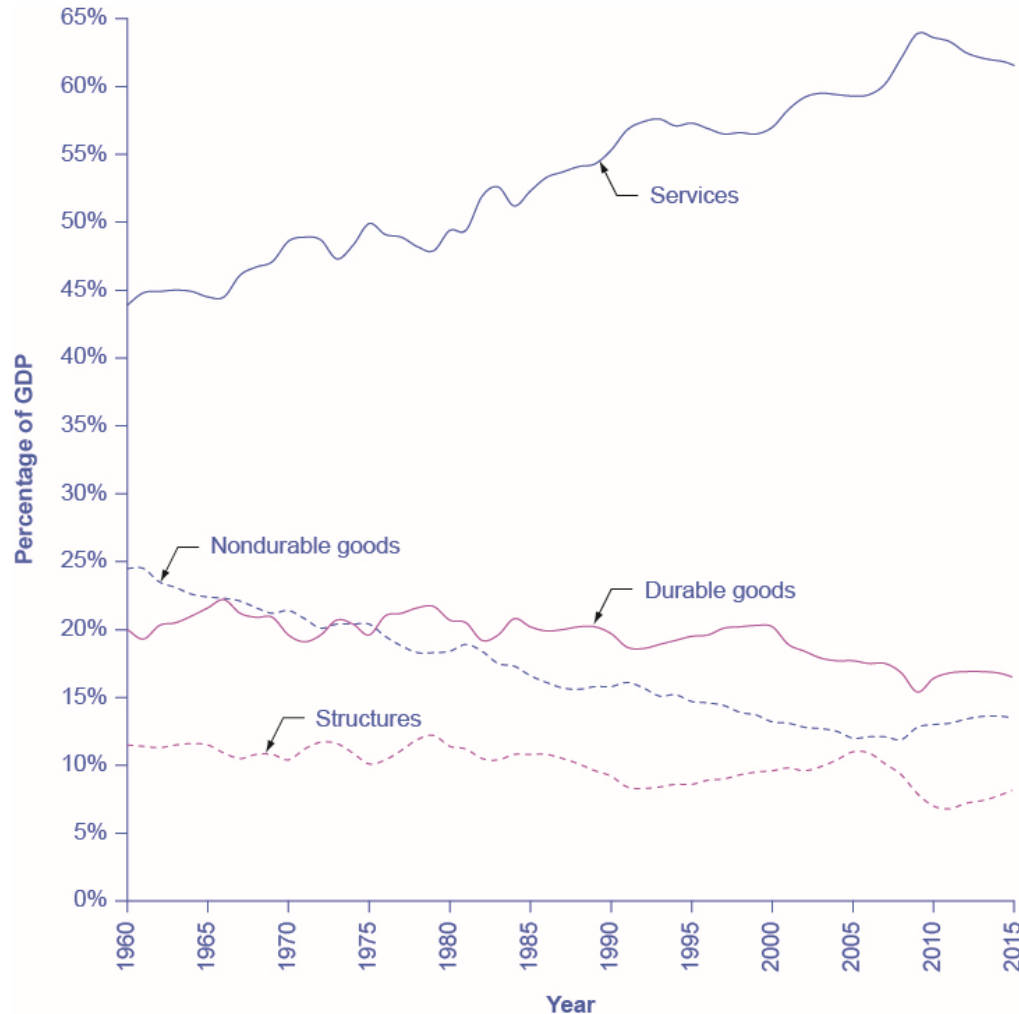
GDP: What is Produced



Services make up over 60 percent of the production side components of GDP in the United States.

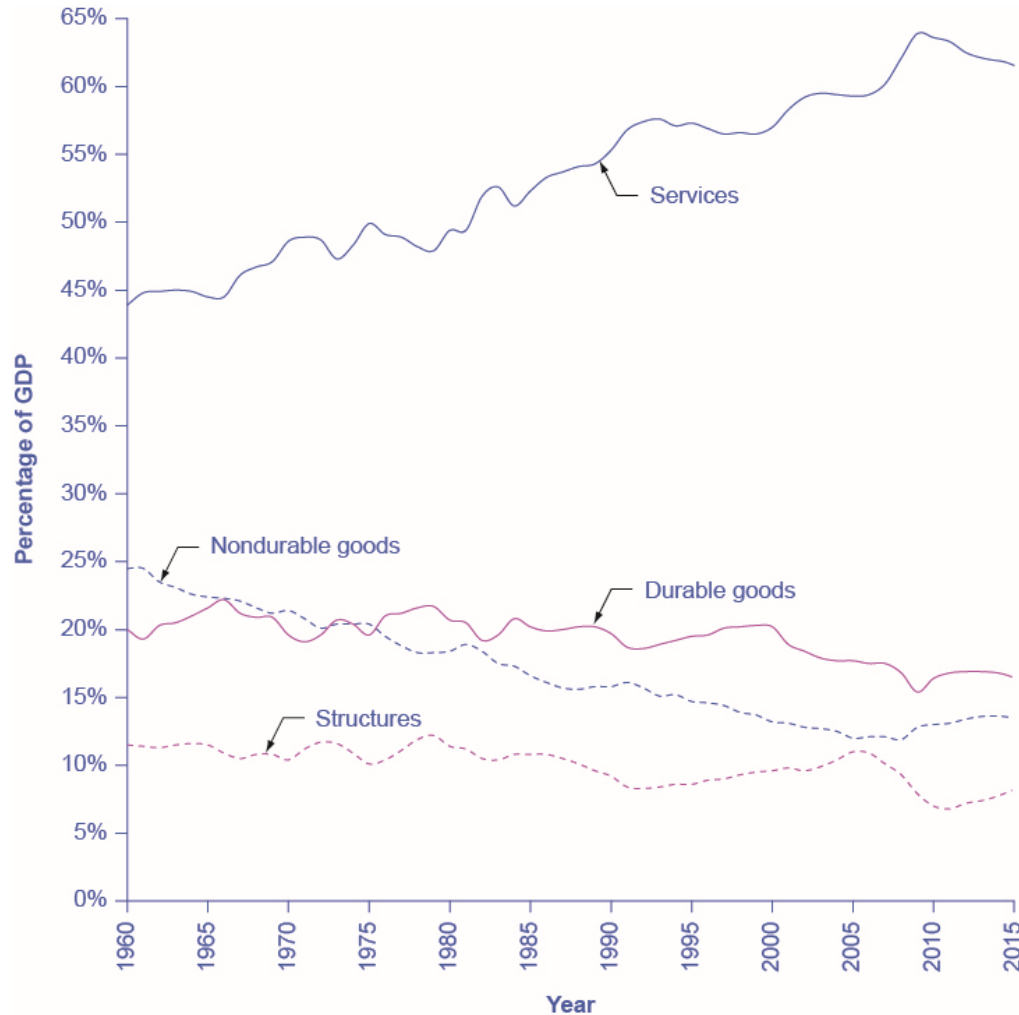
Note: the change in inventories is not shown since it is typically less than 1% of GDP.

Types of Production



- Services are the largest single component of total supply, representing over 60 percent of GDP, up from about 45 percent in the early 1960s.
- Durable and nondurable goods constitute the manufacturing sector, and they have declined from 45 percent of GDP in 1960 to about 30 percent in 2016.

Types of Production, Continued



- Nondurable goods used to be larger than durable goods, but in recent years, nondurable goods have been dropping to below the share of durable goods, which is less than 20% of GDP.
- Structures hover around 10% of GDP.
- The change in inventories is not shown here since it is typically less than 1% of GDP.

Other Ways to Measure the Economy



- **Gross national product (GNP)** - includes what is produced domestically and what is produced by domestic labor and business abroad in a year.
- **Net national product (NNP)** - GNP minus the value of depreciation.
- **Depreciation** - the process by which capital ages over time and therefore loses its value.
- NNP can be further subdivided into **national income** - includes all income earned: wages, profits, rent, and profit income.

19.2 Adjusting Nominal Values to Real Values



- **Nominal value** - the economic statistic actually announced at that time; not adjusted for inflation.

-VS.-

- **Real value** - an economic statistic after it has been adjusted for inflation.

- Generally, the real value is more informative.

U.S. Nominal GDP

Nominal GDP values have risen exponentially, according to the BEA.

Therefore, easier to understand it chart with a ratio scale.

US GDP Deflator

- The [GDP deflator](#) is a price index measuring the average prices of all goods and services included in the economy.
- Base year value of deflator: 100.
- The GDP deflator has risen exponentially over time.

Calculating Real GDP

One year (or period) is called the base year (or base period).
The base year is the year whose prices we use to compute the real value.
The base-year price index is traditionally 100.

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{Price Index} / 100}$$

Price index: the GDP deflator. (100 in the base year.)

- The base-year price index is traditionally 100 (percent).
 - So, divide the price index by 100 when deflating.

Example: Calculating Real GDP

Year	Nominal GDP (billions of dollars)	GDP Deflator (2005 = 100)	Calculations	Real GDP (billions of 2005 dollars)
1960	543.3	19.0	543.3 / (19.0/100)	2859.5
2005	13095.4	100.0	[REDACTED]	[REDACTED]
2010	14958.3	110.0	14,958.3 / (110.0/100)	13598.5

- To calculate the real GDP in 1960:

$$\begin{aligned}\text{Real GDP} &= \frac{\text{Nominal GDP}}{\text{Price Index} / 100} \\ &= \frac{\$543.3 \text{ billion}}{19 / 100} \\ &= \$2,859.5 \text{ billion}\end{aligned}$$

- 2005 is the base year.
- Question: What will the Real GDP be in 2005? Why?

Example: Calculating Real GDP, Continued

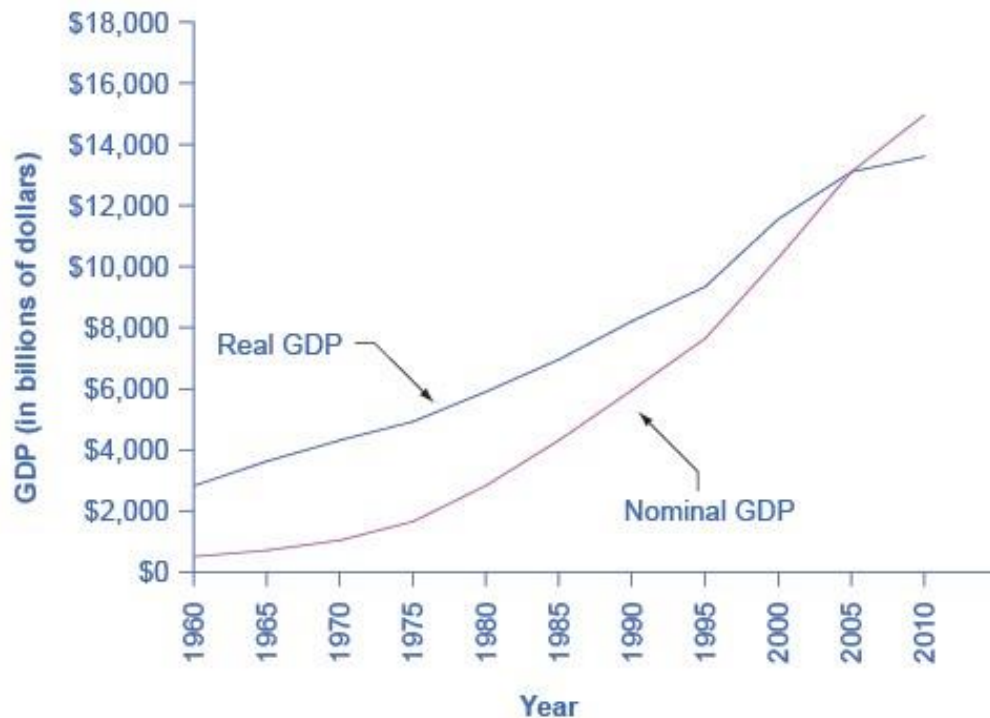
Year	Nominal GDP (billions of dollars)	GDP Deflator (2005 = 100)	Calculations	Real GDP (billions of 2005 dollars)
1960	543.3	19.0	$543.3 / (19.0/100)$	2859.5
2005	13095.4	100.0	$13,095.4 / (100.0/100)$	13095.4
2010	14958.3	110.0	$14,958.3 / (110.0/100)$	13598.5

- To calculate the real GDP in 2010:

$$\begin{aligned}\text{Real GDP} &= \frac{\text{Nominal GDP}}{\text{Price Index} / 100} \\ &= \frac{\$14,958.3 \text{ billion}}{110 / 100} \\ &= \$13,598.5 \text{ billion}\end{aligned}$$

- As long as inflation is positive (prices increase on average from year to year) real GDP should be less than nominal GDP in any year *after* the base year.

U.S. Nominal and Real GDP, 1960–2012



- The black line measures U.S. GDP in real dollars, where all dollar values are converted to 2005 dollars.
- Since we express real GDP in 2005 dollars, the two lines cross in 2005.
- Real GDP will appear higher than nominal GDP in the years before 2005, because dollars were worth less in 2005 than in previous years.
- Conversely, real GDP will appear lower in the years after 2005, because dollars were worth more in 2005 than in later years.

Example: Calculating Real GDP Growth Rate

Year	Nominal GDP (billions of dollars)	GDP Deflator (2005 = 100)	Calculations	Real GDP (billions of 2005 dollars)
1960	543.3	19.0	$543.3 / (19.0/100)$	2859.5
2005	13095.4	100.0	$13,095.4 / (100.0/100)$	13095.4
2010	14958.3	110.0	$14,958.3 / (110.0/100)$	13598.5

- What was the percent change in real GDP from 1960 to 2010?

$$\frac{2010 \text{ real GDP} - 1960 \text{ real GDP}}{1960 \text{ real GDP}}$$

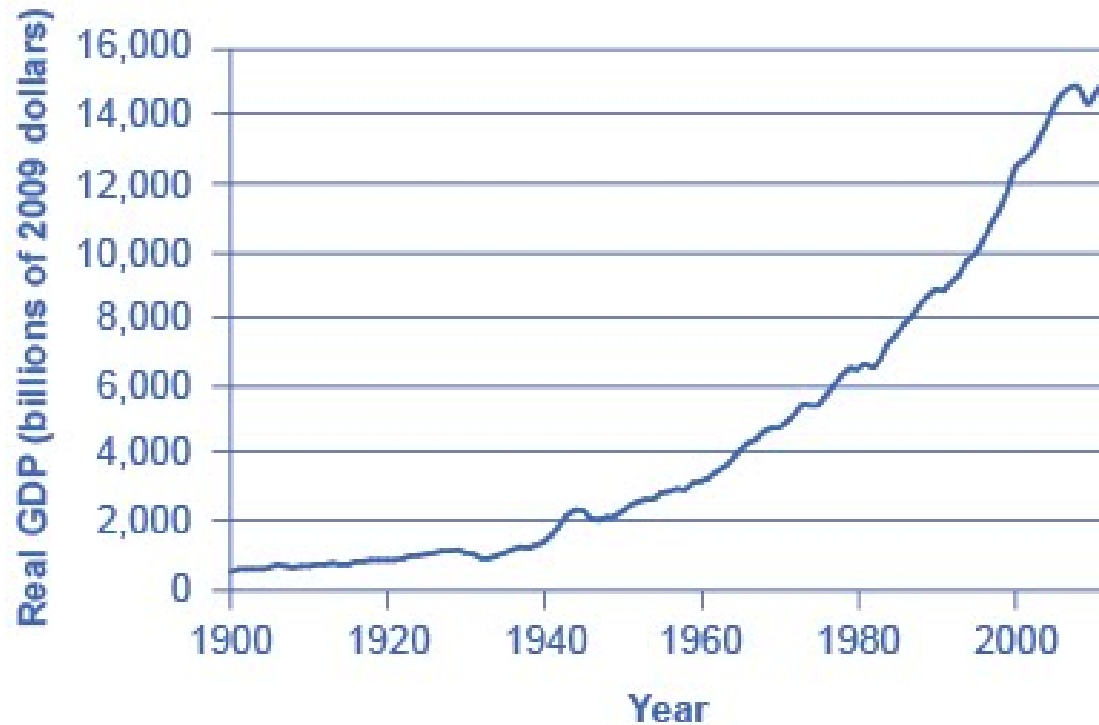
$$\frac{13,598.5 - 2,859.5}{2,859.5} = 3.76 = 376\%$$

- The U.S. economy increased real production of goods and services by nearly a factor of four since 1960.

19.3 Tracking Real GDP over Time

- Governments report GDP growth as an annualized rate.
 - When analyzing growth in a quarter, the calculated growth in real GDP for the quarter is multiplied by four when it is reported (as if the economy were growing at that rate for a full year).
- **Recession** - a significant decline in national output/GDP.
- **Depression** - an especially lengthy and deep decline in output.

U.S. GDP, 1900–2016



- Real GDP in the United States in 2016 (in 2009 dollars) was about \$16.7 trillion.
- After adjusting to remove the effects of inflation, this represents a roughly 20-fold increase in the economy's production of goods and services since the start of the twentieth century. (Source: bea.gov)

Patterns of Recessions and Expansions



- **Peak** - during the business cycle, the highest point of output before a recession begins.
- **Trough** - during the business cycle, the lowest point of output in a recession, before a recovery begins.
- A recession lasts from peak to trough, and an economic upswing runs from trough to peak.
- **Business cycle** - the economy's relatively short-term movement in and out of recession

19.4 Comparing GDP among Countries

- To compare the GDP of countries with different currencies, it is necessary to convert to a “common denominator” using an exchange rate.
- **Exchange rate** - the value or price of one currency in terms of another currency.

Example: Converting GDP to a Common Currency



- Example: Compare Brazil's GDP in 2013 of 4.8 trillion reals with the U.S. GDP of \$16.6 trillion for the same year.
 - In 2013, the exchange rate was 2.157 reals = \$1.
- Convert Brazil's GDP into U.S. dollars:

$$\begin{aligned}\text{Brazil's GDP in \$U.S.} &= \frac{\text{Brazil's GDP in reals}}{\text{Exchange rate (reals/\$ U.S.)}} \\ &= \frac{4.845 \text{ trillion reals}}{2.157 \text{ reals per \$ U.S.}} \\ &= \$2.246 \text{ trillion GDP}\end{aligned}$$

- Compare this value to the GDP in the United States in the same year.
- The U.S. GDP was \$16.6 trillion in 2013, which is nearly eight times that of GDP in Brazil.

GDP Per Capita

- The U.S. economy has the largest GDP in the world, and is also a populous country.
- Is its economy also larger on a per-person basis?
- **GDP per capita** - the GDP divided by the population.

$$\text{GDP per capita} = \frac{\text{GDP}}{\text{population}}$$

19.5 Does GDP Measure Well-Being?



- **Standard of living** - all elements that affect people's happiness and well-being, whether they are bought and sold in the market or not.
- Difference between GDP and standard of living.
 - GDP does not include:
 - leisure time
 - actual levels of environmental cleanliness, health, and learning
 - production that is not exchanged in the market
 - the level of inequality in society
 - what technology and products are available

End