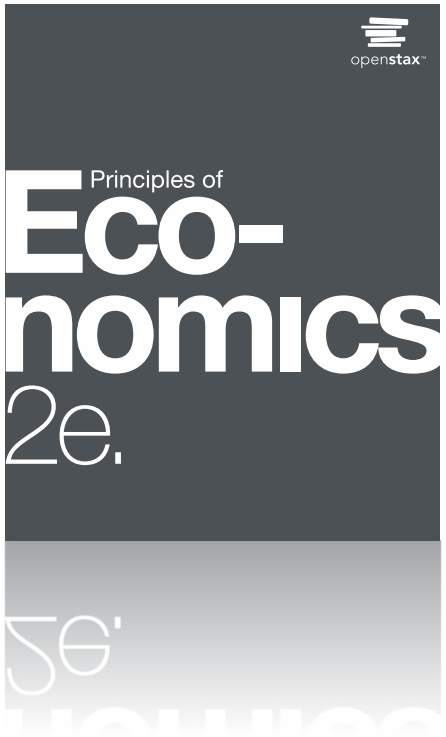
PRINCIPLES OF ECONOMICS 2e

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

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- This chart shows that macroeconomics encompasses:
  - Goal Setting: choosing the goals to be pursued by macroeconomic policy.
  - Analytical Framework: concepts economists use to investigate macroeconomic relationships (such as the causes of inflation or recession).
  - Policy Tools: the monetary and fiscal 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.

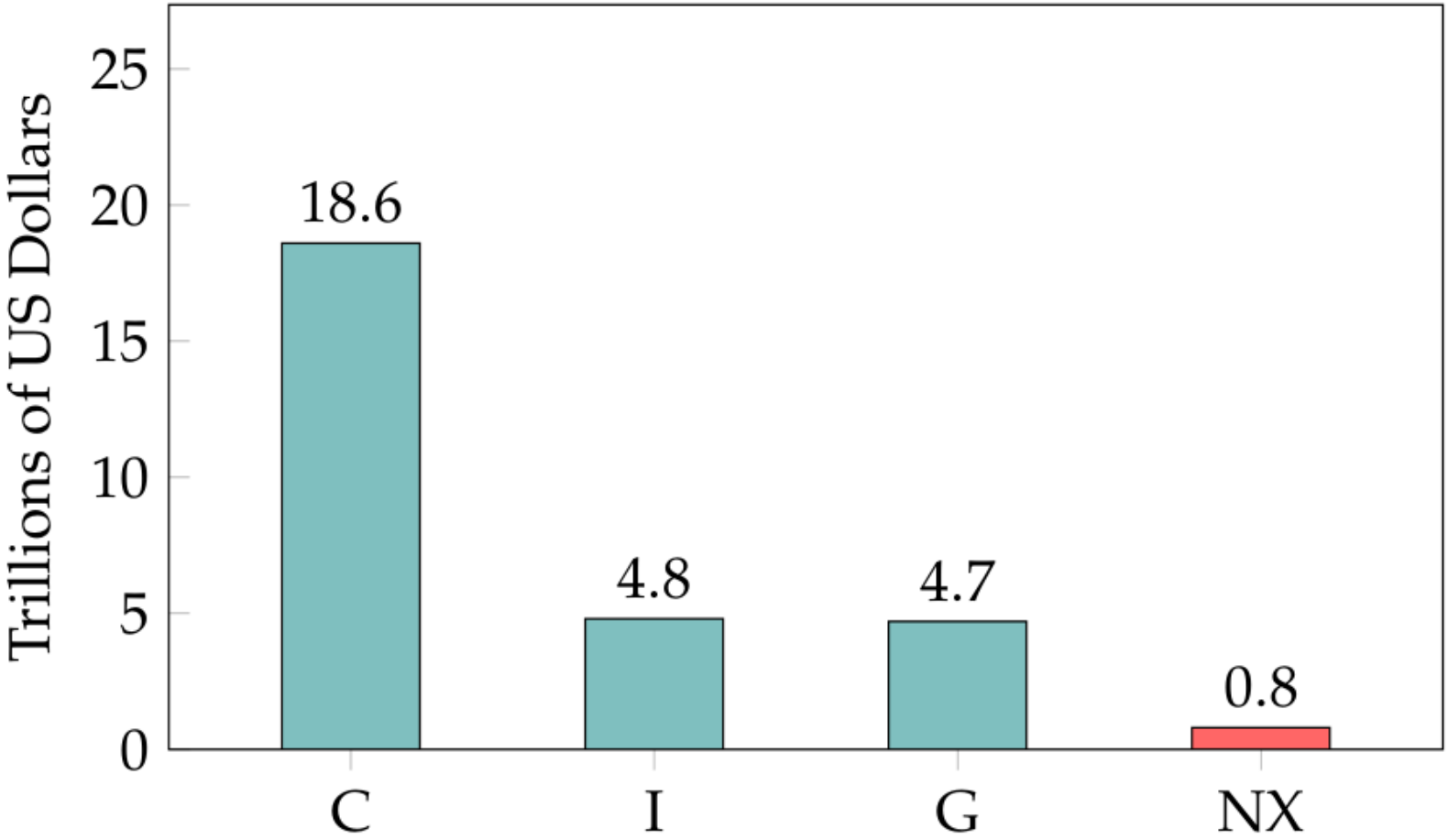
- Aside from measurement error, an economy's GDP can equally well be measured by either:
  - the total dollar value of what consumers purchase in the economy.
  - the total dollar value of what the country produces.

GDP Measured by Expenditure Category

Individuals, firms, and institutions acquire each year's production. We can therefore categorize GDP by expenditure category.

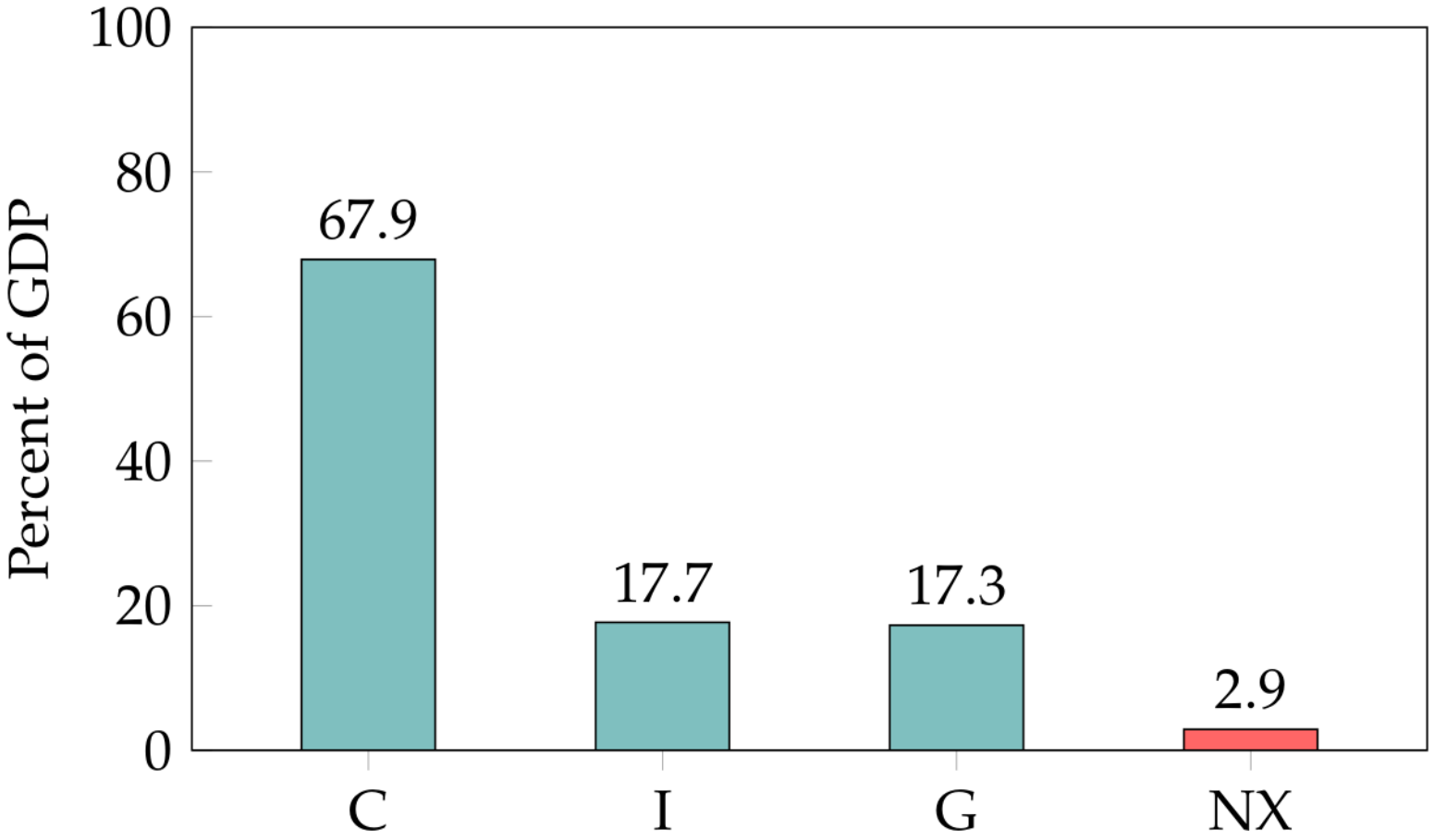
- The National Income and Product Accounts (NIPAs) use four major expenditure categories:
  - consumer spending (consumption)
  - business spending (investment)
  - government spending on goods and services
  - Net foreigin spending on our exports (i.e., net exports)

2023 US GDP Expenditure Components ($27.4T in Current Dollars)



Data Source: BEA

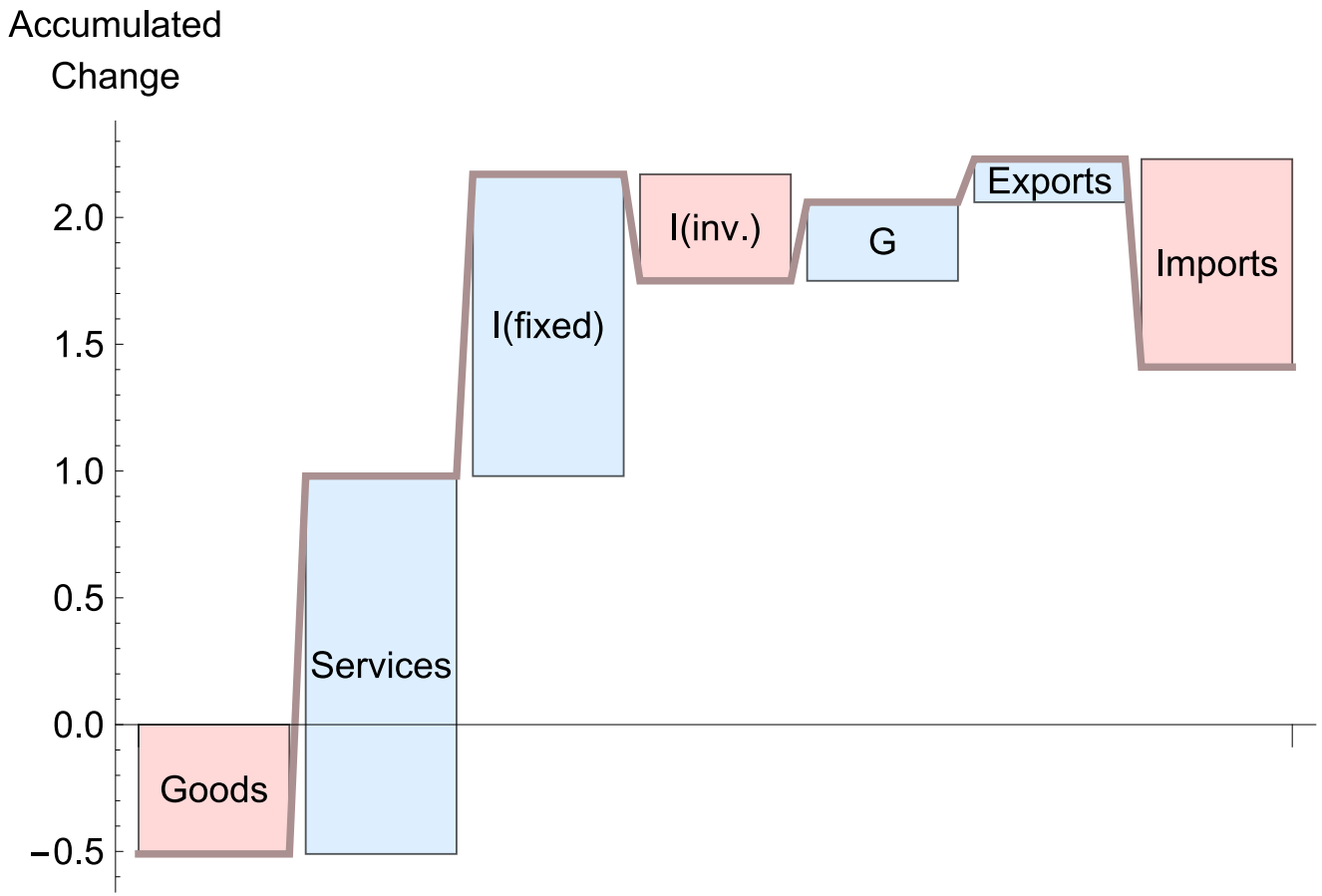
2023 US GDP Expenditure Components (Percent of GDP)



You should know the following:

- C: is about two-thirds of GDP & is relatively stable over time.
- I: a quarter as much, but much more volatile.
- G: is very roughly the same size as I, but less volatile.

Sources of Changes in GDP (2024QI)

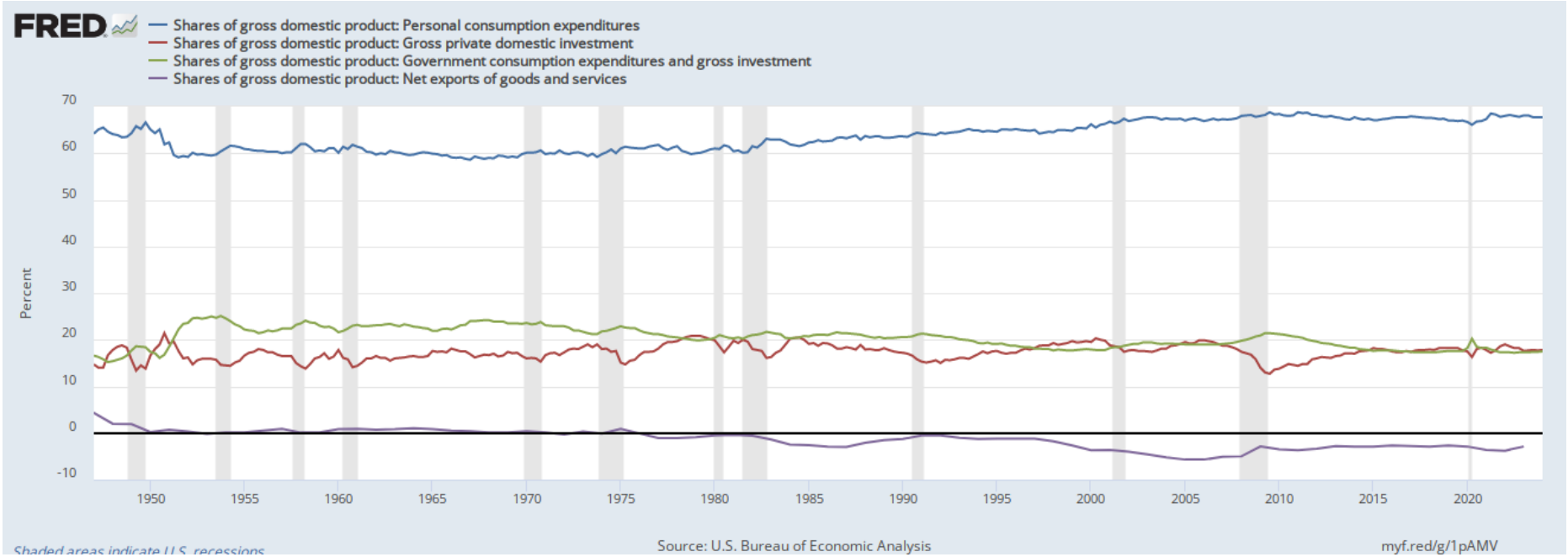


Accumulated changes in percentage points (annualized). Red is a decrease; blue is an increase.

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 bars are color coded so you can quickly tell negative from positive numbers.

GDP over Time by Expenditure Category



Source: https://fred.stlouisfed.org/graph/?g=1pAMV

In recent decades consumption has been around 2/3 of GDP while investment and government spending have been a bit less thant 1/5 of GDP. Net exports have been negative.

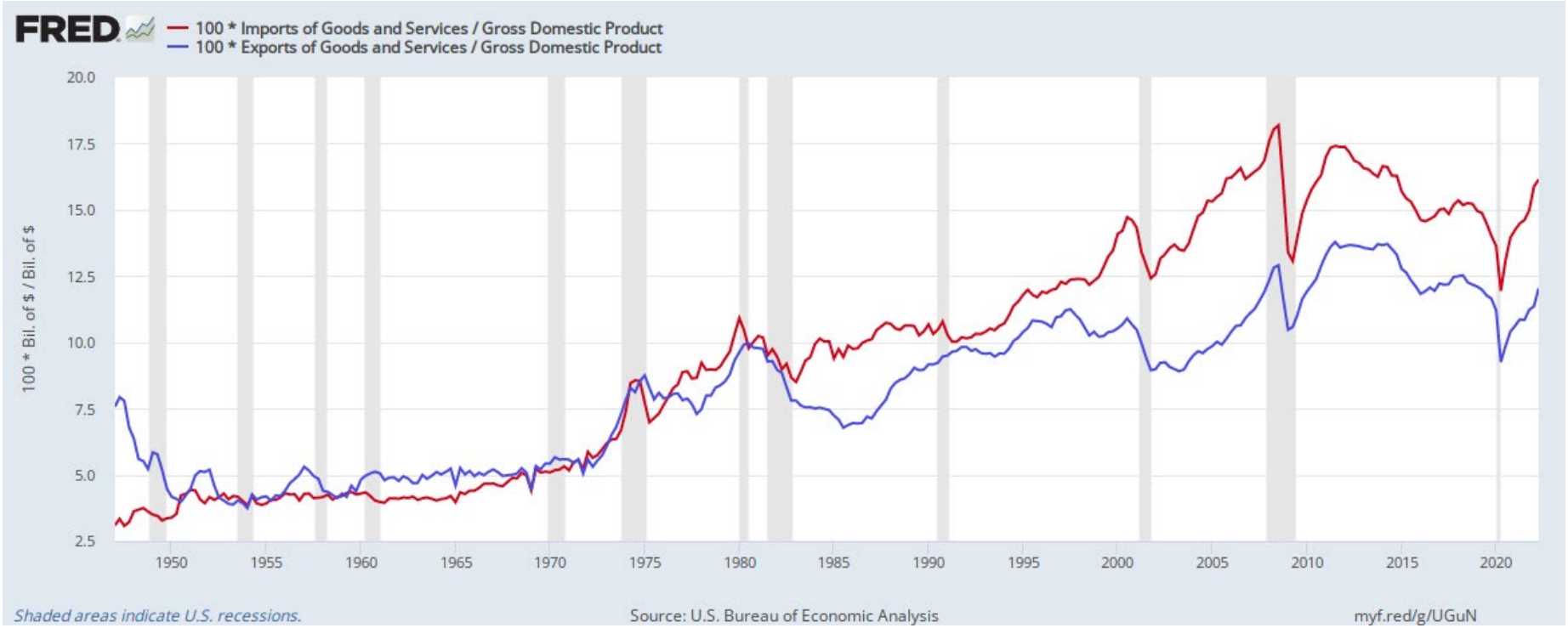
The most volatile component is investment.

Net Export Component

The dollar value of exports (X) minus the dollar value of imports (M) is GDP's net export component, called the trade balance.

- **Trade balance** - the gap between exports and imports.
  - Trade balance = (X – M)
- **Trade surplus:** a positive trade balance, when a country's exports are larger than its imports;
  - reported as exports – imports.
- **Trade deficit**: a negative trade balance, when a country's imports exceed its exports;
  - reported as imports – exports.

US Exports and Imports Since 1950



Source: FRED (https://fred.stlouisfed.org/graph/?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 Decomposition by Major Expenditure Category

GDP = Consumption + Investment + Government + Net Exports

OR

GDP = C + I + G + (X – M)

GDP Decomposition by Production Category

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.

(Note: this course will focus on the decomposition by expenditure category rather than by production category.)

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.

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.

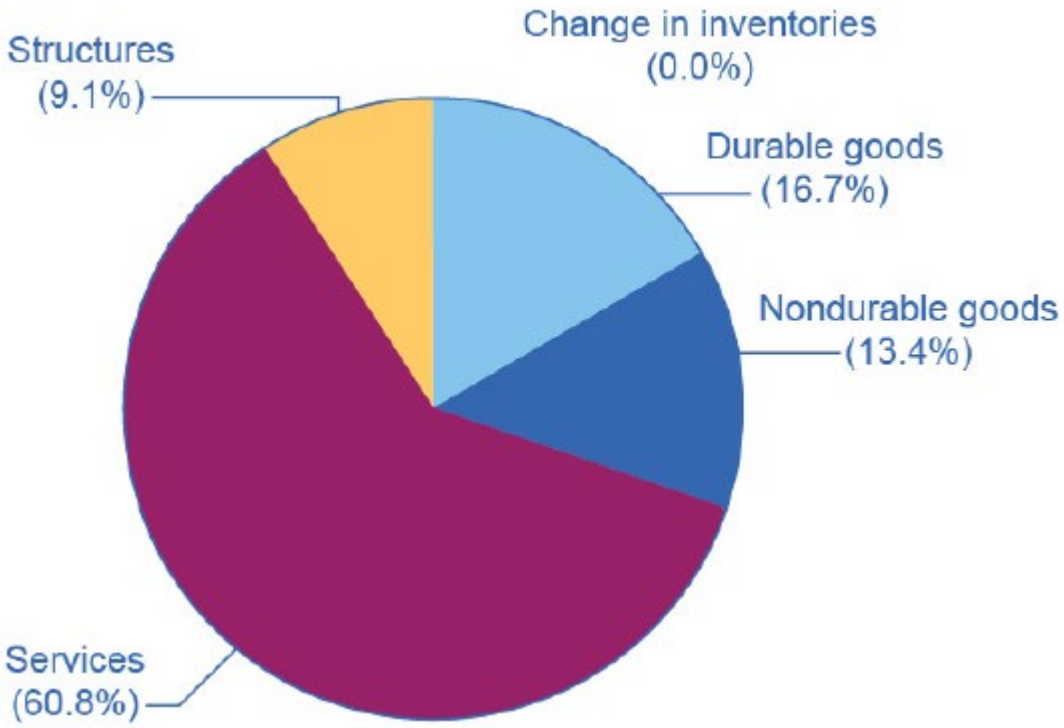
-vs.-

- **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 is *double counted*.
  - When measuring GDP, we must avoid double counting.

- GDP is the dollar value of all *final* goods and services produced in the economy in a year.

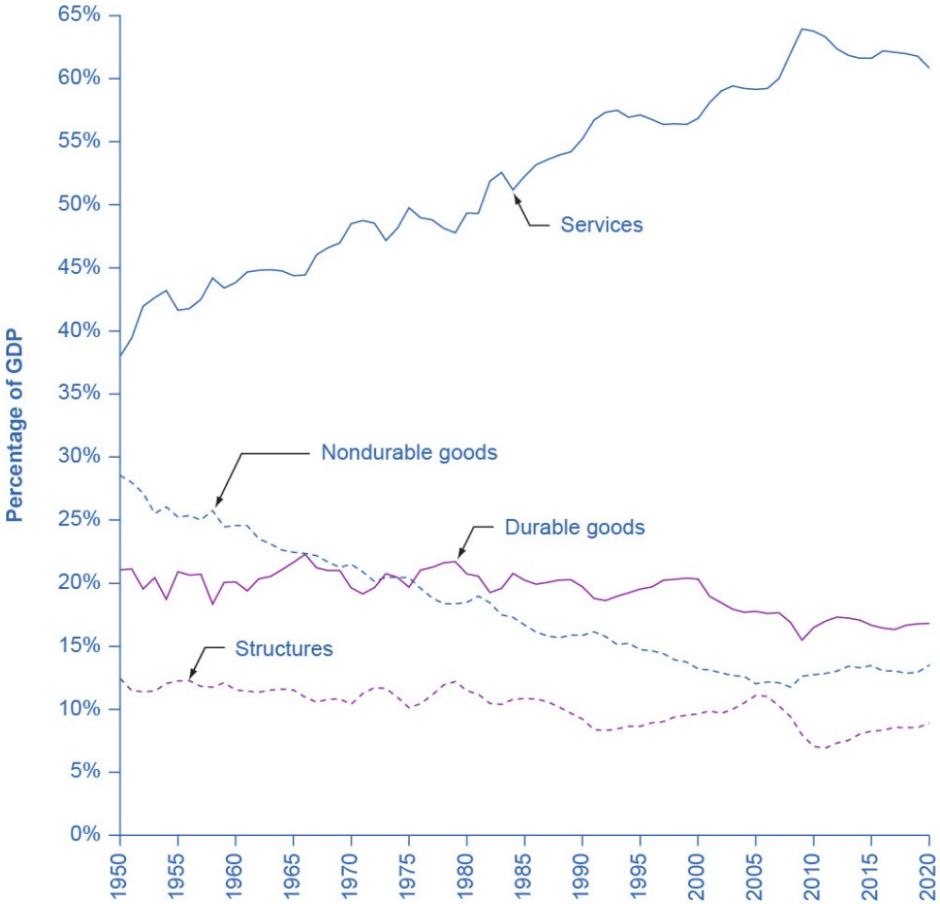
GDP Decomposed by Production Category



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

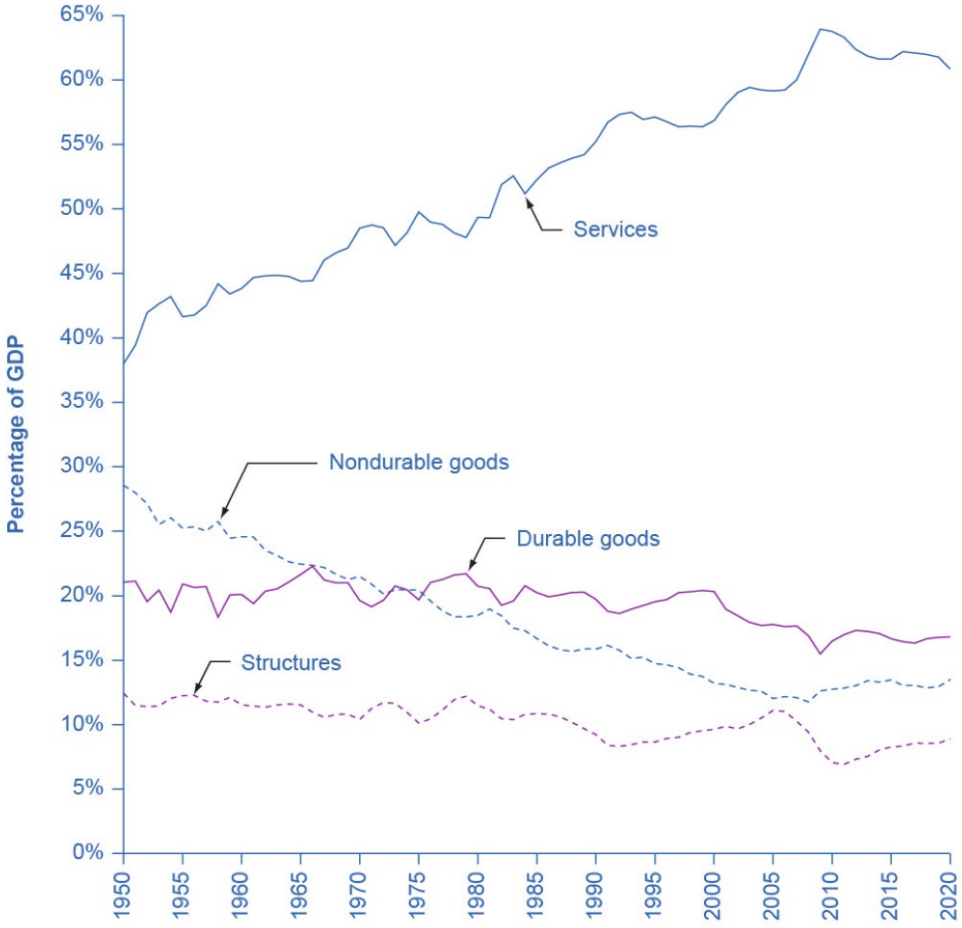
Note: the change in inventories is not shown since it is typically less than 1% of GDP.

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 2020.

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:** concurrent dollar value, not adjusted for inflation.
- **Real value:** adjusted for inflation to facilitate comparison.
- Generally, real values are more informative.

U.S. Nominal GDP

[click]Nominal GDP values have risen exponentially.

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

US GDP Deflator

- The [click]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 conventionally 100 (i.e., 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 (2012 = 100)	Calculations	Real GDP (billions of dollars)
2015	18206.0	104.7	18,206.0 / (104.7/100)	17388.7
2020	20893.7	113.6	20,893.7 / (113.6/100)	18392.3

TABLE 19.6 Converting Nominal to Real GDP (Source: Bureau of Economic Analysis, www.bea.gov)

2012

- To calculate the real GDP in 2020:
- Real GDP = Nominal GDP/(Price Index / 100)

  = $20894 billion / (113.6 / 100)

  = $18392 billion
- Question: 2012 is the base year. Given that 2012 nominal GDP was $16254 billion, what is the real GDP for 2012? Why?

Note: your book may have a typo in the heading of the final column of Table 19.6. (This is corrected above.)

U.S. Real GDP

[click]Real GDP values have risen exponentially.

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

U.S. Nominal and Real GDP

[click]Real and nominal GDP both grow exponentially.

Therefore: we generally prefer a ratio scale.

Identical in the base year.

With a 2012 base year:

- Real GDP is greater than nominal GDP in the years before 2012, because dollars were worth less in 2012 than in previous years.
- Real GDP is less than nominal GDP in the years after 2012, because dollars were worth more in 2012 than in later years.

19.3 Fluctuations in Real GDP

- **Recession:** a significant decline in national economic activity (e.g.,output as measured by GDP). (The gray bars on FRED.)

- **Depression:** an especially lengthy and deep recession.

[click]Official recession dating is a task of the NBER.

Example: Calculating Real GDP Growth as Pct

Year	Nominal GDP (billions of dollars)	GDP Deflator (2012 = 100)	Calculations	Real GDP (billions of 2005 dollars)
2015	18206.0	104.7	18,206.0 / (104.7/100)	17388.7
2020	20893.7	113.6	20,893.7 / (113.6/100)	18392.3

TABLE 19.6 Converting Nominal to Real GDP (Source: Bureau of Economic Analysis, www.bea.gov)

- What was the percent change in real GDP from 2015 to 2020?

$$\frac{\text{2020 real GDP} - \text{2015 real GDP}}{\text{2015 real GDP}}$$

$$\frac{18392.3 - 17388.7}{17388.7} = 0.0577 = 5.77\%$$

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

Real GDP Growth (as a percentage of initial)

Real GDP (in 2012 dollars) for 1960 is $3267.5 billion.

What was the percent change in real GDP from 1960 to 2020?

$$\frac{\text{2020 real GDP} - \text{1960 real GDP}}{\text{1960 real GDP}}$$

$$\frac{18392.3 - 3267.5}{3267.5} = 4.63 = 463\%$$

- The U.S. economy has increased its real production of goods and services by more than a factor of four since 1960.

Annualized Growth Rates

- 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).

Annualized Growth Rates

When there is inflation, nominal GDP grows faster than real GDP.

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

- Countries have different currencies. Therefore, convert to a “common denominator” using an exchange rate.

- **Exchange rate:** the value or price of one currency in terms of another currency.

Example: Conversion to a Common Currency

- Brazil's GDP in 2013: 4.8 trillion reals
- U.S. GDP in 2013: $16.6 trillion
- Exchange rate 2013: 2.157 reals = $1.

Convert Brazil's GDP into U.S. dollars:

$$\text{Brazil's GDP in \$U.S.} = \frac{\text{Brazil's GDP in reals}}{\text{Exchange rate (reals/\$ U.S.)}}$$

$$= \frac{\text{4.845 trillion reals}}{\text{2.157 reals per \$ U.S.}}$$

$$= \$2.246 \text{ trillion}$$

- Comparison: The U.S. GDP was $16.6 trillion in 2013, which is more than 7 times that of GDP in Brazil.
- 16.6/2.24 = 7.4

19.5 Does GDP Measure Well-Being?

Real GDP Per Capita

- The U.S. economy has the largest GDP in the world.
  - But, it is also a populous country.
  - Is its economy also larger on a per-person basis?

- **Real GDP per capita:** the real GDP divided by the population.

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

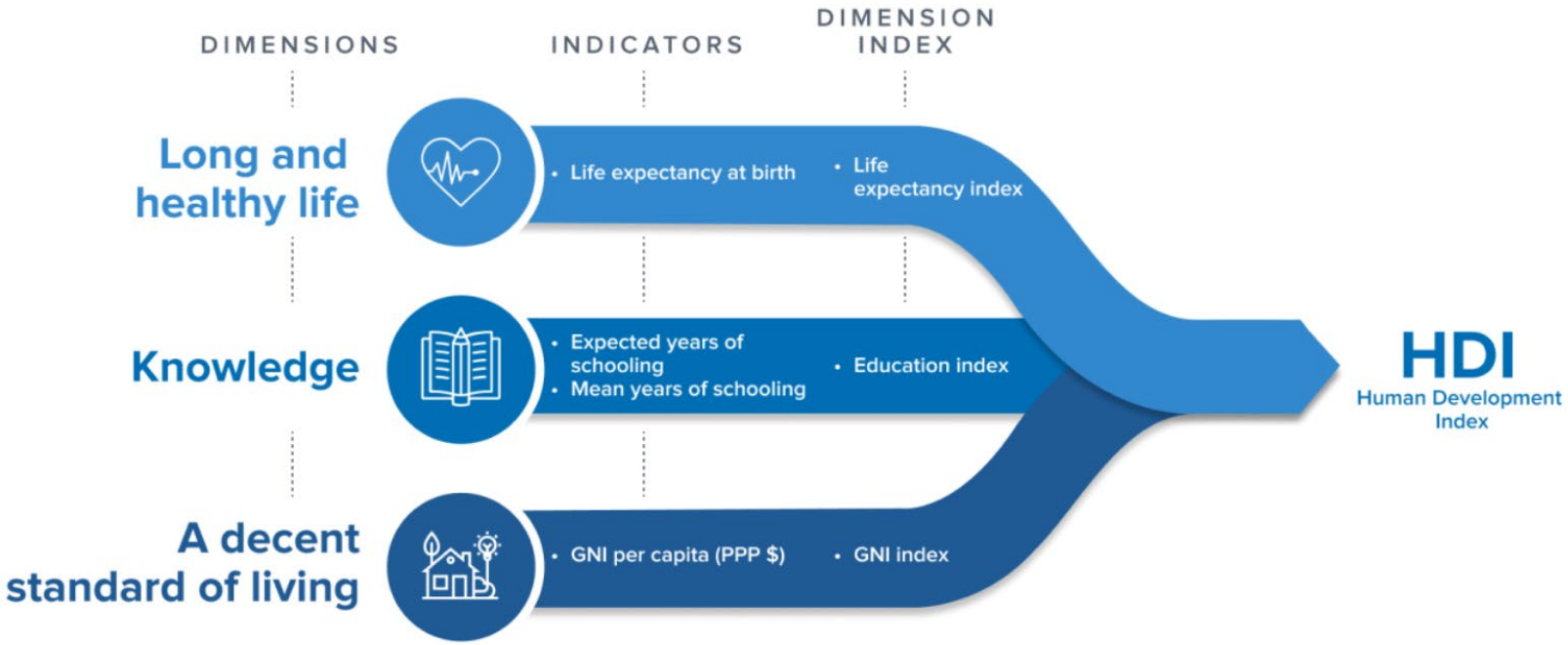
Does Real GDP per capita Measure Well-Being?

- **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
    - 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

Human Development Index



Source: UNDP

HDI is geometric mean of 3 indexes.

UNDP has interactive country data and reports.

[UN Development Programme website]

OECD Better Life Index

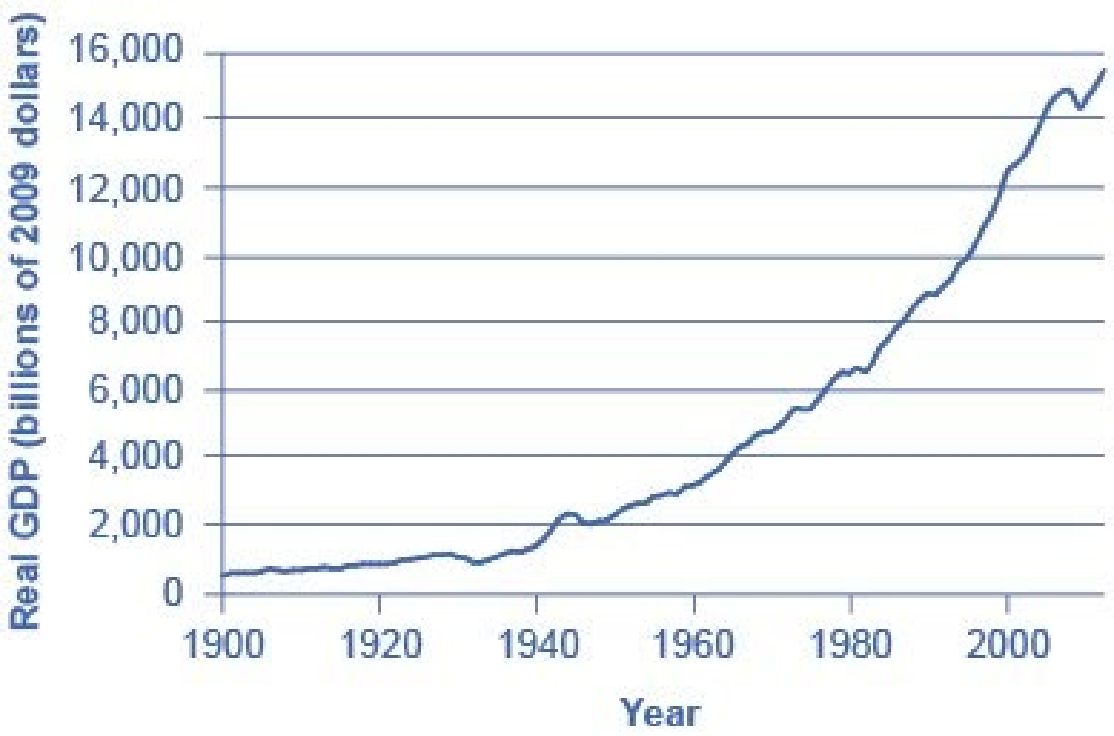
The OECD identifies 11 topics as essential to quality of life:

- Housing
- Income
- Jobs
- Community
- Education
- Environment
- Civic Engagement
- Health
- Life Satisfaction
- Safety
- Work-Life Balance

Resource: OECD Better Life Index

End

Appendix: 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