

Macroeconomics in One Equation

Lecture 2: National Income and Wealth

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Basic Concepts: GDP and GNP

Gross Domestic Product (GDP)

The market value of final goods and services produced within a country in a given period of time. Or, nominal GDP. Domestic in geography.

Gross National Product (GNP)

The market value of final goods and services produced by a country's citizens in a given period of time. Or, nominal GNP. National in citizenship.

Real Gross Domestic Product (RGDP)

Nominal GDP adjusts for the effect of the price change over time.

GDP growth rate is the percentage change in GDP over time.

GDP per capita is the GDP of a nation over its total population.

Basic Concepts: Income and Wealth

Income is a Flow, Wealth is a Stock.

Income is the alpha and omega of economic life. Net total income is wealth.

National Income (NI)

GDP minus the depreciation of the capital stock used in production processes, plus net incomes received from or paid to the rest of the world.

National Wealth (NW)

The stock of assets owned by nationals of the country (both in that country and abroad), private (owned by individuals) or public (owned by the state).

Net Household Wealth

The sum of financial (e.g. deposits, stocks, bonds, equity) and non-financial (e.g. housing, business) assets, net of debts, possessed by individuals.

Basic Concepts: Personal Income

Personal Income

The income received by, or on behalf of, all persons from all sources: from laborers in production, from owning a home or business, from the ownership of financial assets, and from government and business in the form of transfers. It includes income from domestic sources and the rest of world, but excludes capital gains or losses.

Disposable Personal Income

Personal income less personal current taxes. It is the income available to persons for spending or saving.

Personal Outlays

The sum of personal consumption expenditures, personal interest payments, and personal current transfer payments.

Personal Saving

Personal income less personal outlays and personal current taxes. Personal saving rate is personal saving as a percentage of disposable income.

Income is a Series of Events

Income is a series of events. ... For each individual only those events which come within the purview of his experience are of direct concern. It is these events—the psychic experiences of the individual mind—which constitute ultimate income for that individual. The outside events have significance for that individual only in so far as they are the means to these inner events of the mind. ...

Enjoyment income is a psychological entity and cannot be measured directly. We can approximate it indirectly, however, by going one step back of it to what is called real income. Real wages, and indeed real income in general, consist of those final physical events in the outer world which give us our inner enjoyments.

This real income includes the shelter of a house, the music of a victrola or radio, the use of clothes, the eating of food, the reading of the newspaper and all those other innumerable events by which we make the world about us contribute to our enjoyments. Metaphorically we sometimes refer to this, our real income, as our "bread and butter."

Source: Irving Fisher (1930) CH1 "The Theory of Interest, as determined by Impatience to Spend Income and Opportunity to Invest it." Liberty Fund Press.

Introduction and Overview

Gross domestic product measures the economy and helps size up its progress: Is it booming, slumping or something in between? GDP also helps Americans see historical trends, make projections about the economic future, and compare their economy to other nations (US Bureau of Economic Analysis).

- Fundamentals of the GDP statistics and its measurement techniques (nominal vs real GDPs)
- Three approaches to national income measurement: the product (value-added), the expenditures (demand), and the income
- A breakdown of the four components in GDP from the aggregate demand (expenditures) of the economy
- Applications of national income statistics in economic growth, international comparison, income and wealth inequality studies
- Classical and Keynesian theories and models behind national income determination and distribution

Why is GDP Important to the U.S. Economy?

- In the U.S., Economists at the U.S. Bureau of Economic Analysis estimate GDP using thousands of data points gathered by other federal agencies and some private data collectors.
- The pace of economic growth or decline affects jobs, businesses and investments. Understanding the economy helps the public and policymakers make informed decisions. GDP also helps compare the U.S. economy with economies around the world.
- Congress, the White House, the Federal Reserve, state and local governments, business leaders, analysts and researchers, and the American public rely on GDP and related statistics from the Bureau of Economic Analysis.
- These statistics inform decisions about taxes and spending, hiring and investing, interest rates and trade policy, and more.

Source: BEA - What is GDP? A printable explainer
<https://www.bea.gov/resources/learning-center/what-to-know-gdp>

OUTLINE

- ① U.S. Data**
- ② World Data**
- ③ Measurement Methods**
- ④ Aggregate Expenditures**

GDP Measures the Size of U.S. Economy

Gross Domestic Product

Total market value



Within the United States



Goods and services



GDP = the ***total market value*** of the ***goods and services*** produced ***within the United States*** in a year.

A **good** is a video game, a car, an apple, a gold ring. Goods are things that people make, grow or extract from the land.

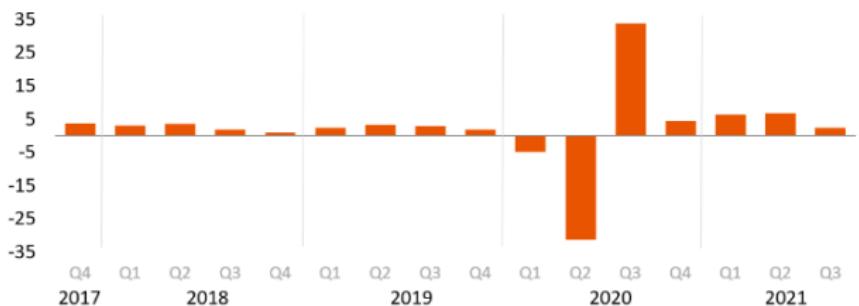
A **service** is a haircut, a bus ride, computer repair, a doctor's care. Services are actions that people do for someone else.

Market value is how much something costs in the marketplace. It's what you pay for that video game or haircut.

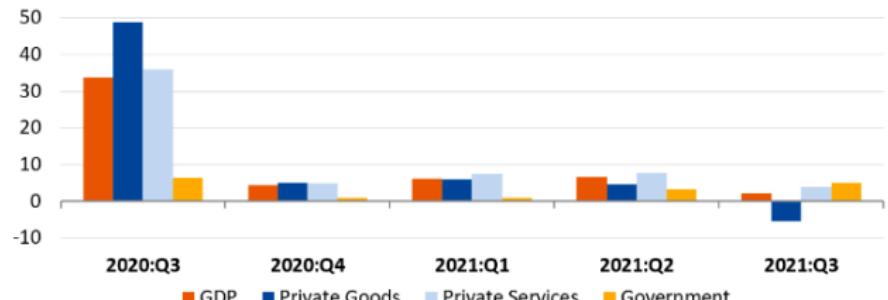
Source: BEA - What is GDP? A printable explainer

Statistics Releases: Real GDP Change

Real GDP: Percent change from preceding quarter



Real GDP by Sector: Percent change from preceding period

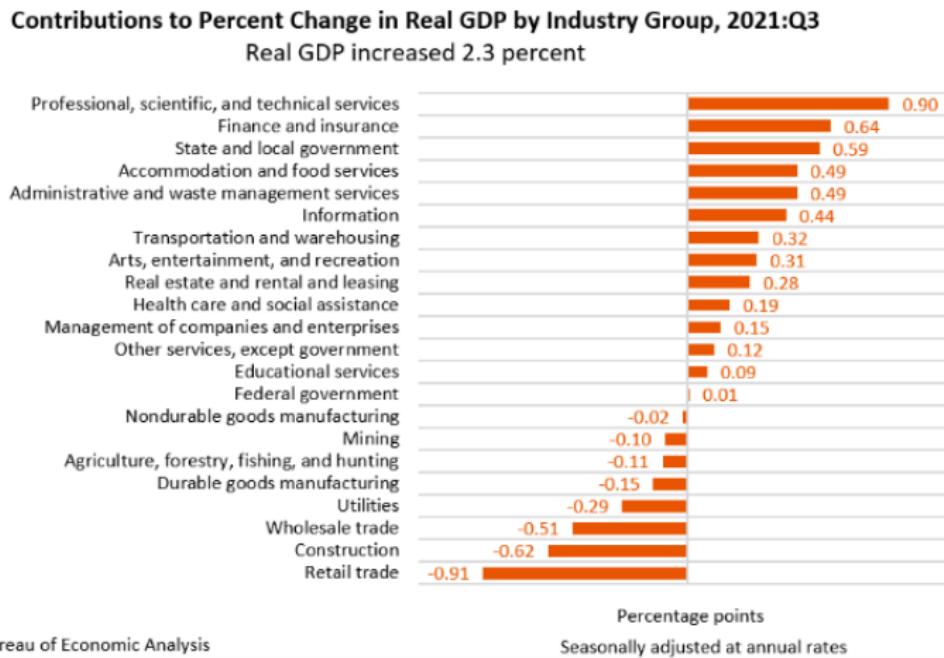


U.S. Bureau of Economic Analysis

Seasonally adjusted at annual rates

<https://www.bea.gov/data/gdp/gross-domestic-product>

Statistics Releases: GDP by Industry



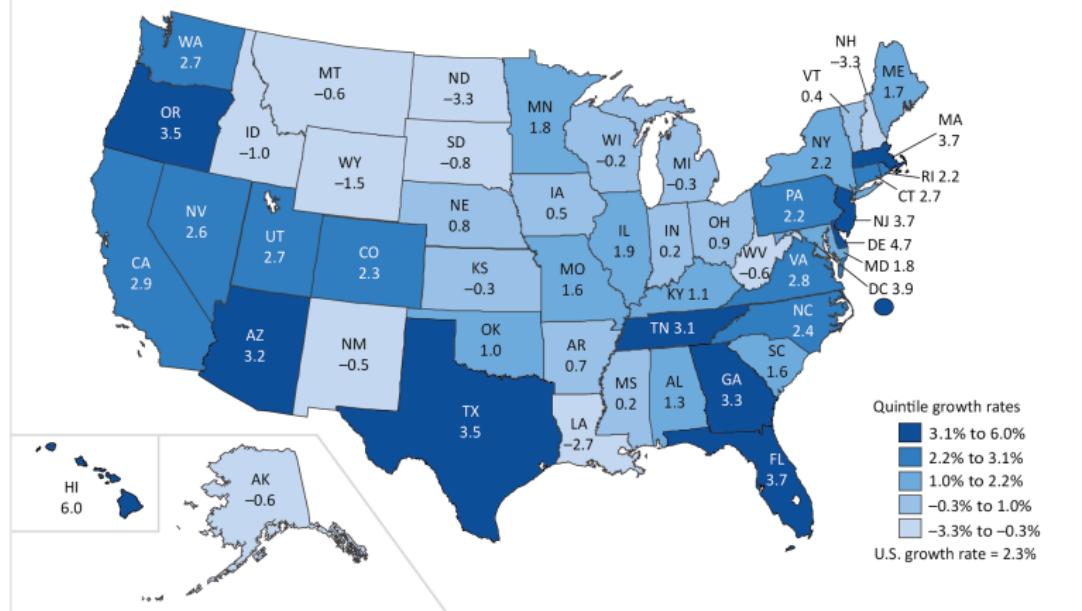
U.S. Bureau of Economic Analysis

Seasonally adjusted at annual rates

<https://www.bea.gov/data/gdp/gdp-industry>

Statistics Releases: GDP by State

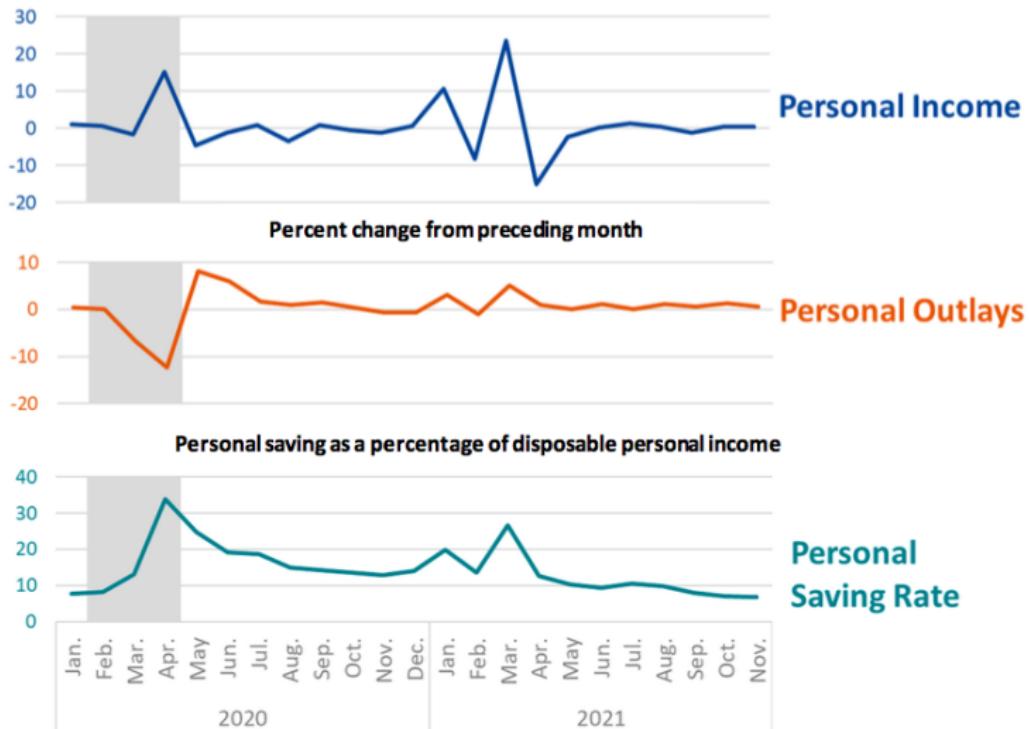
Real GDP: Percent Change at Annual Rate, 2021:Q2–2021:Q3



U.S. Bureau of Economic Analysis

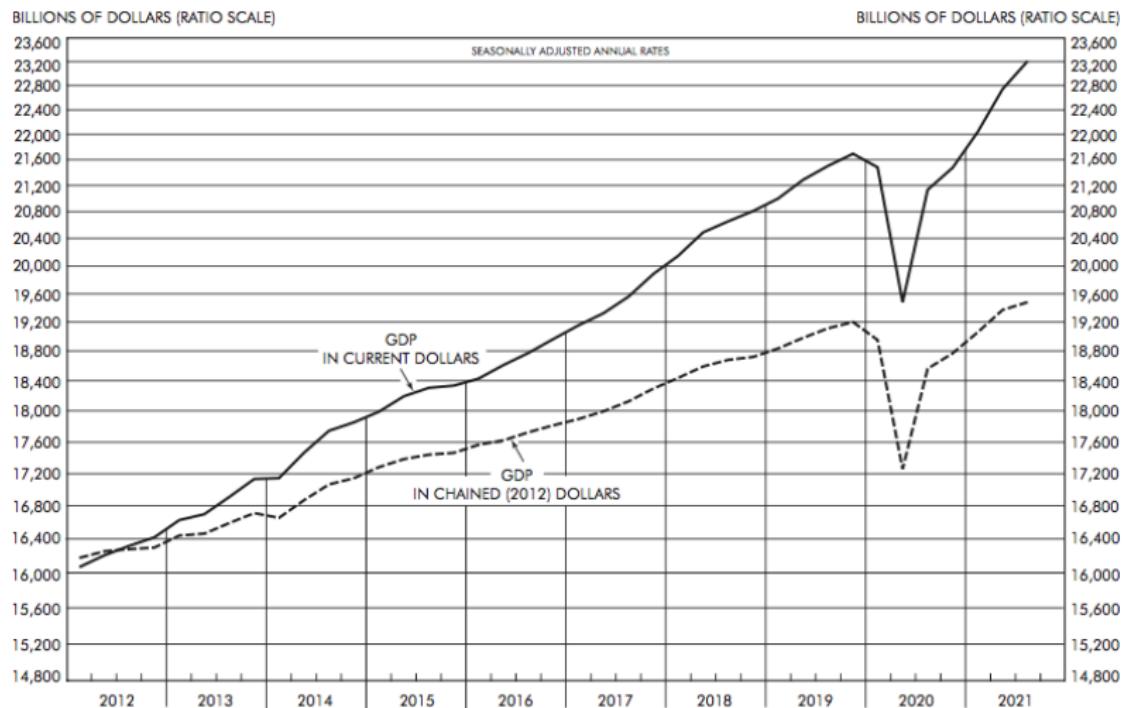
<https://www.bea.gov/data/gdp/gdp-state>

Statistics Releases: Personal Income and Outlays



<https://www.bea.gov/data/income-saving/personal-income>

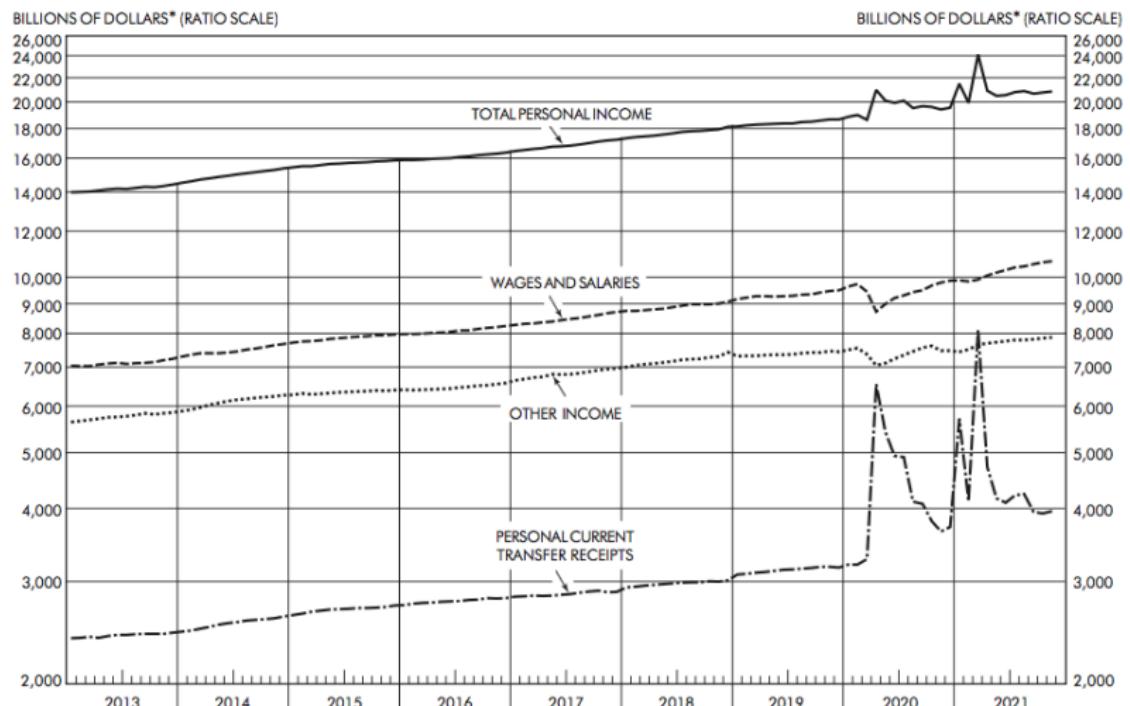
U.S. GDP and RGDP: 2012-2021



SOURCE: DEPARTMENT OF COMMERCE

COUNCIL OF ECONOMIC ADVISERS

U.S. Total Personal Income: 2013-2021



*SEASONALLY ADJUSTED ANNUAL RATES
SOURCE: DEPARTMENT OF COMMERCE

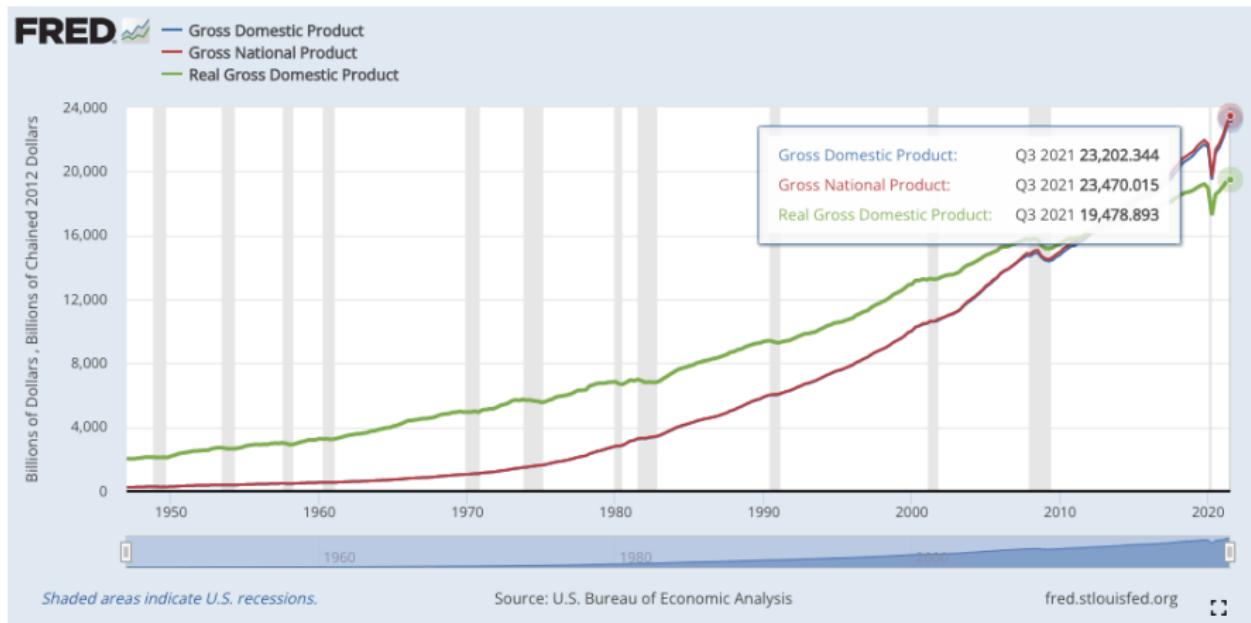
COUNCIL OF ECONOMIC ADVISERS

RGDP Growth Rates, 2003-2022

Area and country	2003-2012 annual aver- age										
		2013	2014	2015	2016	2017	2018	2019	2020	2021 ¹	2022 ¹
World	4.2	3.4	3.5	3.4	3.3	3.8	3.6	2.8	-3.1	5.9	4.4
Advanced economies	1.7	1.4	2.0	2.3	1.8	2.5	2.3	1.7	-4.5	5.0	3.9
<i>Of which:</i>											
United States	1.9	1.8	2.3	2.7	1.7	2.3	2.9	2.3	-3.4	5.6	4.0
Euro area ²	0.9	-2	1.4	2.0	1.9	2.6	1.9	1.5	-6.4	5.2	3.9
Germany	1.1	.4	2.2	1.5	2.2	2.7	1.1	1.1	-4.6	2.7	3.8
France	1.2	.6	1.0	1.0	1.0	2.4	1.8	1.8	-8.0	6.7	3.5
Italy	-0.1	-1.8	0	.8	1.3	1.7	.9	.3	-8.9	6.2	3.8
Spain	1.1	-1.4	1.4	3.8	3.0	3.0	2.3	2.1	-10.8	4.9	5.8
Japan	0.7	2.0	.3	1.6	.8	1.7	.6	.0	-4.5	1.6	3.3
United Kingdom	1.4	2.2	2.9	2.4	1.7	1.7	1.3	1.4	-9.4	7.2	4.7
Canada	1.9	2.3	2.9	.7	1.0	3.0	2.4	1.9	-5.2	4.7	4.1
Other advanced economies	3.5	2.6	3.0	2.3	2.6	3.1	2.8	1.9	-1.9	4.7	3.6
Emerging market and developing economies	6.6	5.0	4.7	4.3	4.5	4.8	4.6	3.7	-2.0	6.5	4.8
<i>Regional groups:</i>											
Emerging and Developing Asia	8.7	6.9	6.9	6.8	6.8	6.6	6.4	5.4	-9	7.2	5.9
China	10.5	7.8	7.4	7.0	6.9	6.9	6.8	6.0	23	8.1	4.8
India ³	7.9	6.4	7.4	8.0	8.3	6.8	6.5	4.0	-7.3	9.0	9.0
ASEAN-5 ⁴	5.5	5.0	4.7	5.0	5.1	5.5	5.4	4.9	-3.4	3.1	5.6
Emerging and Developing Europe	4.6	3.1	1.8	1.0	1.9	4.1	3.4	2.5	-1.8	6.5	3.5
Russia	4.8	1.8	.7	-2.0	.2	1.8	2.8	2.0	-2.7	4.5	2.8
Latin America and the Caribbean	3.9	2.9	1.3	.4	-6	1.4	1.2	.1	-6.9	6.8	2.4
Brazil	3.8	3.0	.5	-3.5	-3.3	1.3	1.8	1.4	-3.9	4.7	.3
Mexico	2.2	1.4	2.8	3.3	2.6	2.1	2.2	-2	-8.2	5.3	2.8
Middle East and Central Asia	5.8	3.0	3.3	2.7	4.6	2.5	2.2	1.5	-2.8	4.2	4.3
Saudi Arabia	5.3	2.7	3.7	4.1	1.7	-7	2.4	.3	-4.1	2.9	4.8
Sub-Saharan Africa	5.7	4.9	5.0	3.2	1.5	3.0	3.3	3.1	-1.7	4.0	3.7
Nigeria	7.7	5.4	6.3	2.7	-1.6	.8	1.9	2.2	-1.8	3.0	2.7
South Africa	3.4	2.5	1.4	1.3	.7	1.2	1.5	.1	-6.4	4.6	1.9

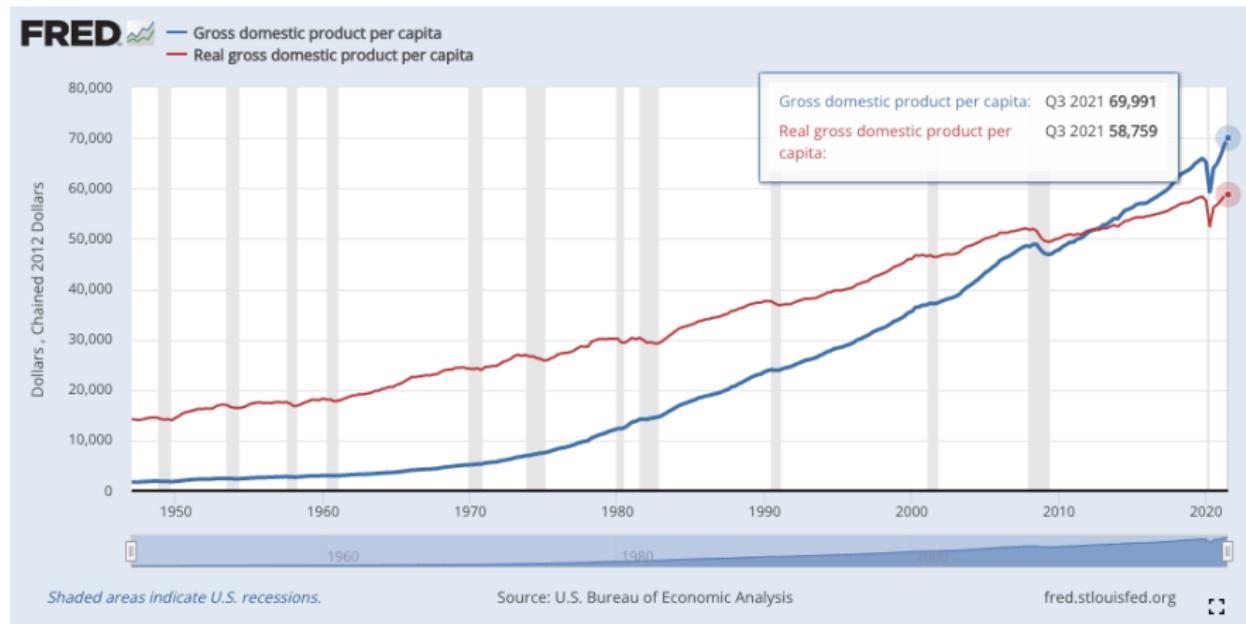
Source: 2022 Economic Report of the President, Table B-61 <https://www.govinfo.gov/app/collection/erp>

U.S. GDP and RGDP: 1947-2021



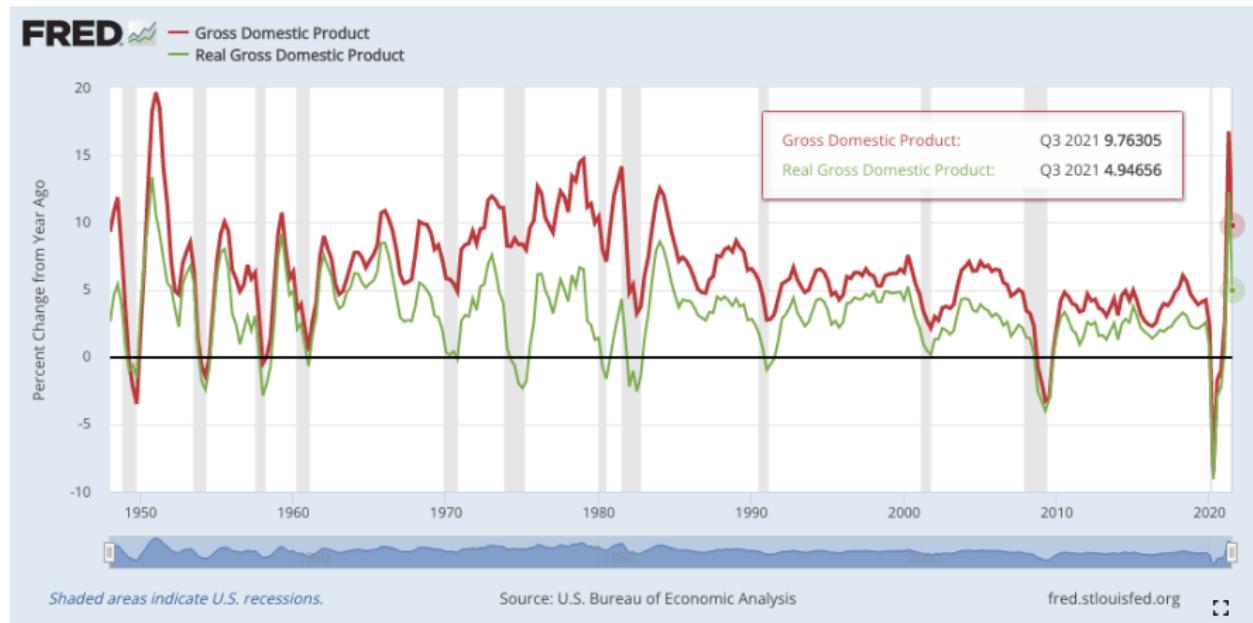
<https://fred.stlouisfed.org/series/GDP>

U.S. GDP and RGDP per capita: 1947-2021



<https://fred.stlouisfed.org/series/GDP>

U.S. GDP and RGDP: Growth Rate 1948-2021



<https://fred.stlouisfed.org/series/GDP>

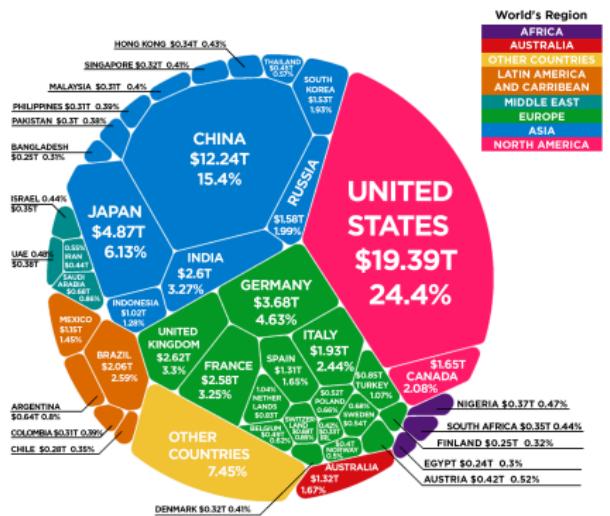
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- ④ Aggregate Expenditures

National Income by Country, 2017-2018

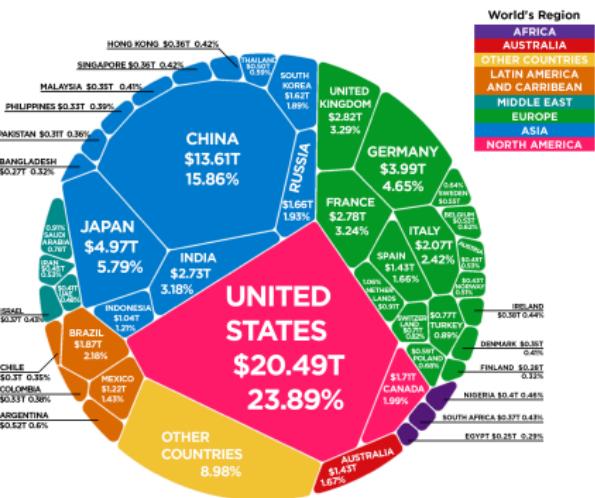
The World Economy

Gross Domestic Product (GDP) by Country 2017



The World Economy

Gross Domestic Product (GDP) by Country 2018



Article and Sources:

Article and sources:

<https://howmuch.net/articles/the-world-economy-2017>
<https://howmuch.net/articles/the-world-economy-2018>

howmuch.net

Article & Sources:

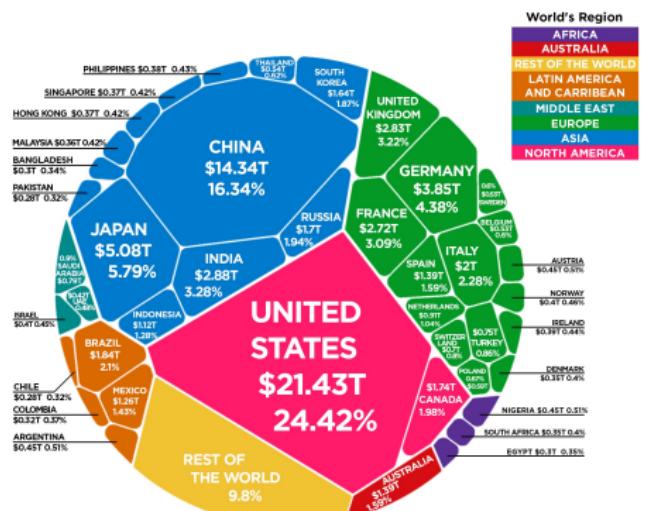
<https://howmuch.net/articles/the-world-economy-2018>
<https://databank.worldbank.org>

howmuch.net

National Income and Wealth, 2019

The World Economy

Gross Domestic Product (GDP) by Country 2019



Article & Sources:

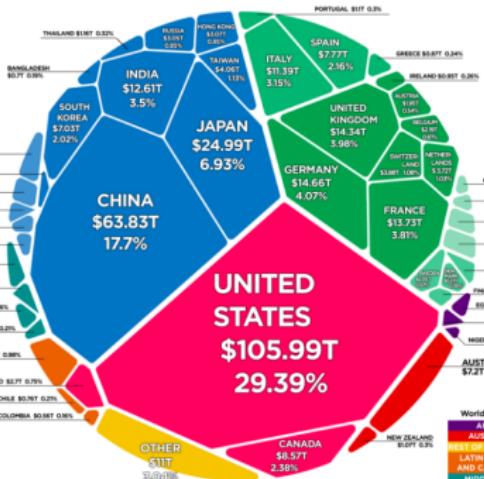
Article & Sources:
<https://howmuch.net/articles/the-world-economy-2019>
<https://databank.worldbank.org>

<https://howmuch.net/articles/the-world-economy-2019>

<https://howmuch.net/articles/distribution-worlds-wealth-2019>

The Distribution of the World's Wealth

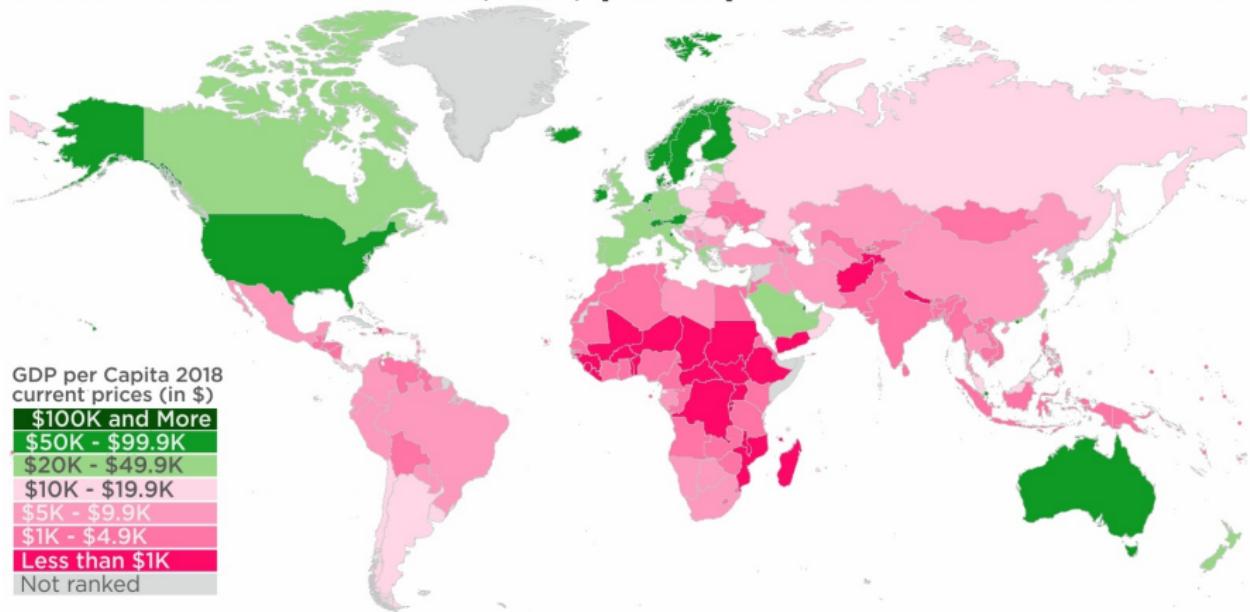
Total Wealth by Country in 2019



Article and Sources:
<https://howmuch.net/articles/distribution-worlds-wealth-2019>
Credit: G. Lewis - <https://brandilew.us>

howmuch.net

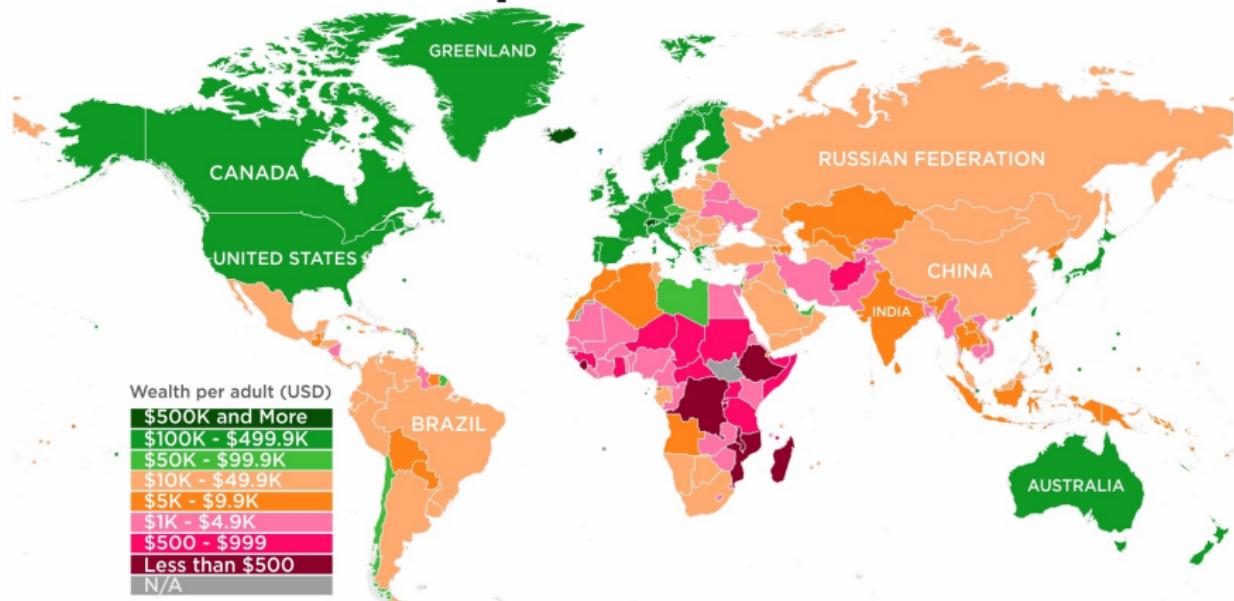
Gross Domestic Product (GDP) per Capita Around the World 2018

**Article & Sources:**

<https://howmuch.net/articles/gdp-per-capita-2018>
International Monetary Fund - World Economic Outlook (October 2018)

<https://howmuch.net/articles/gdp-per-capita-2018>

World Wealth Map 2018



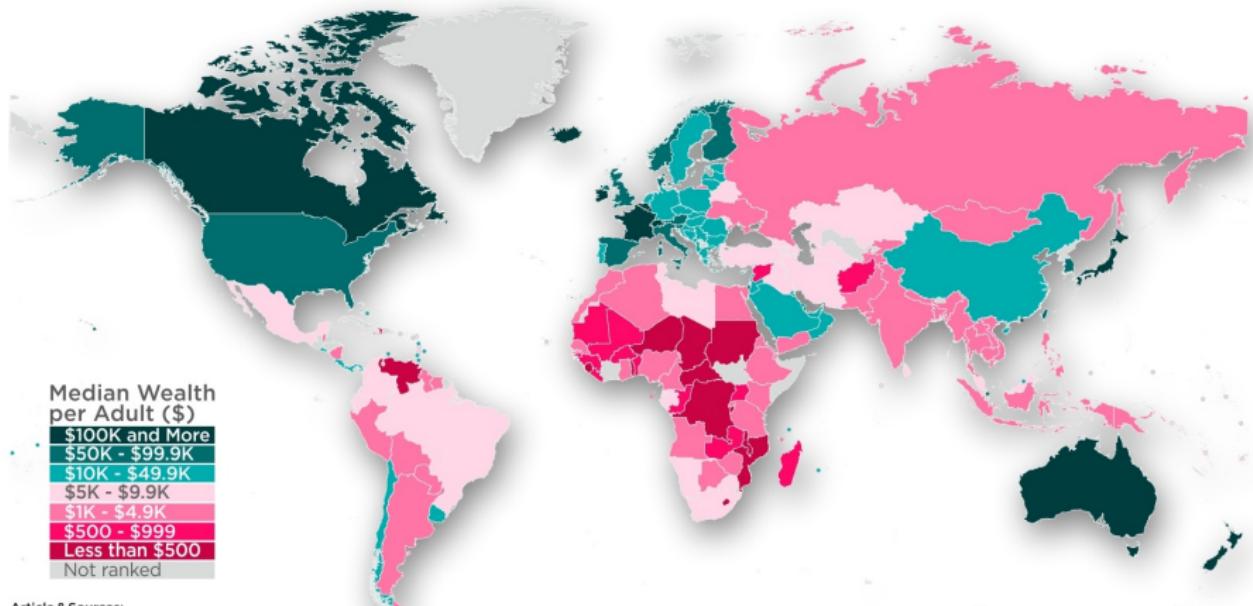
Article & Sources:

<https://howmuch.net/articles/world-wealth-map-2018>
Credit Suisse - <https://www.credit-suisse.com/>

<https://howmuch.net/articles/world-wealth-map-2018>

howmuch net

Wealth per Adult Around the World in 2019



Article & Sources:
<https://howmuch.net/articles/wealth-per-adult-world-2019>
Credit Suisse - <https://www.credit-suisse.com>

<https://howmuch.net/articles/wealth-per-adult-world-2019>

howmuch.net

U.S. Data
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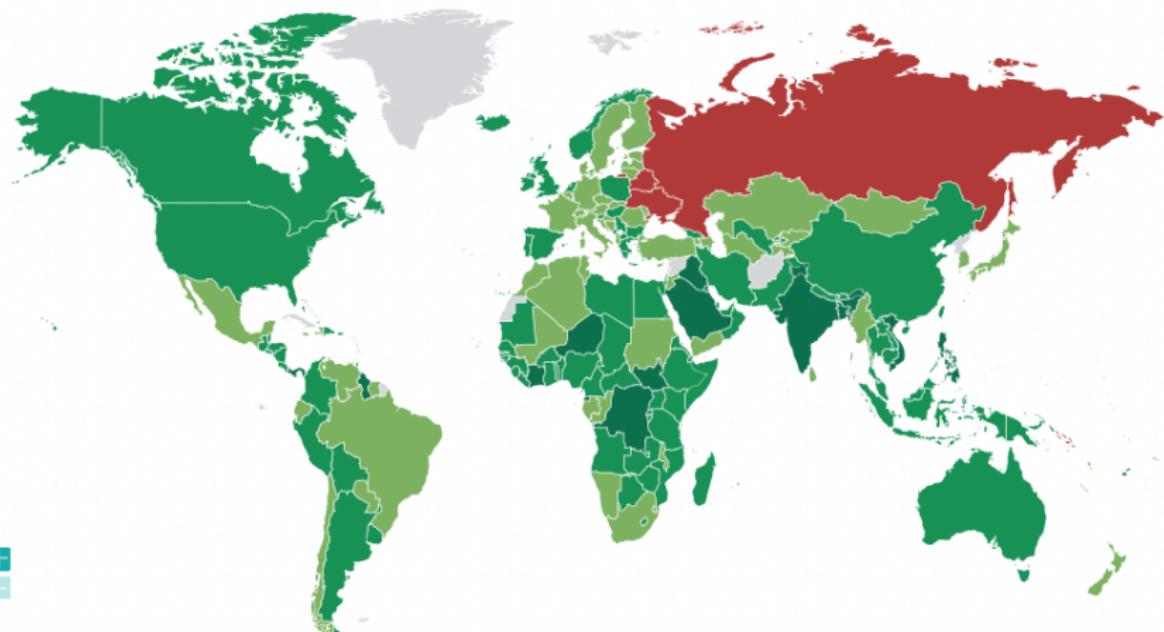
World Data
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Measurement Methods
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Aggregate Expenditures
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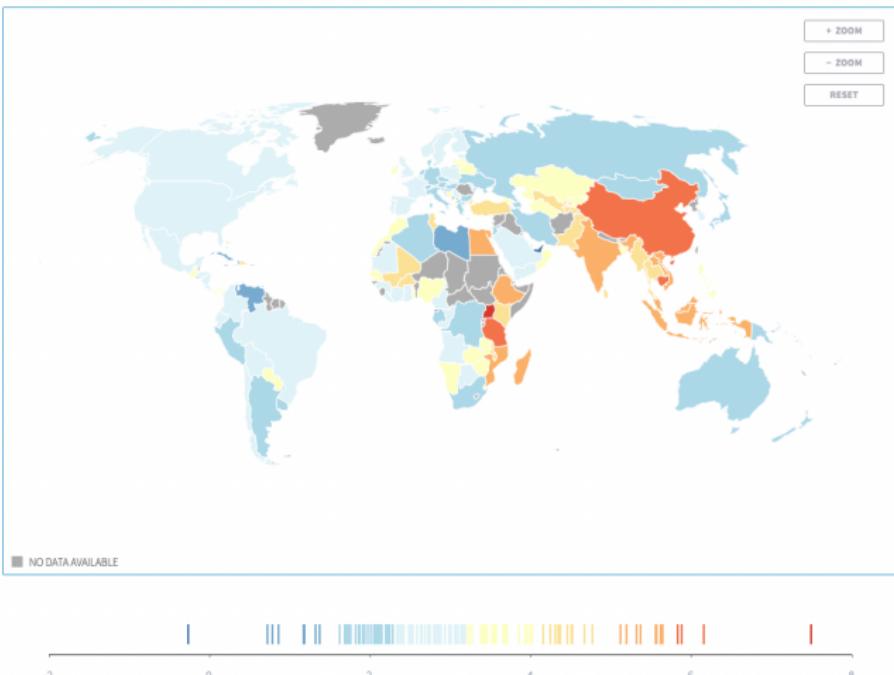
World Real GDP Growth 2022

- 6% or more
- 3% - 6%
- 0% - 3%
- -3% - 0
- less than -3%
- no data



https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD

Growth Projections to 2030



China, Vietnam, and Indonesia among Fastest-Growing Countries for Coming Decade in New Harvard Growth Lab Projections.
<https://atlas.cid.harvard.edu/growth-projections>

Real GDP and GDP Growth: 2021 Champions

Rank	Country	GDP (\$T)	% of Global GDP
1	U.S.	\$22.9	24.4%
2	China	\$16.9	17.9%
3	Japan	\$5.1	5.4%
4	Germany	\$4.2	4.5%
5	UK	\$3.1	3.3%
6	India	\$2.9	3.1%
7	France	\$2.9	3.1%
8	Italy	\$2.1	2.3%
9	Canada	\$2.0	2.1%
10	Korea	\$1.8	1.9%

Rank	Country	Region	2021 Real GDP Growth
1	Libya	Africa	123.2%
2	Guyana	South America	20.4%
3	Macao	Asia	20.4%
4	Maldives	Asia	18.9%
5	Ireland	Europe	13.0%
6	Aruba	Caribbean	12.8%
7	Panama	Central America	12.0%
8	Chile	South America	11.0%
9	Peru	South America	10.0%
10	Dominican Republic	Caribbean	9.5%

<https://www.visualcapitalist.com/visualizing-the-94-trillion-world-economy-in-one-chart/>

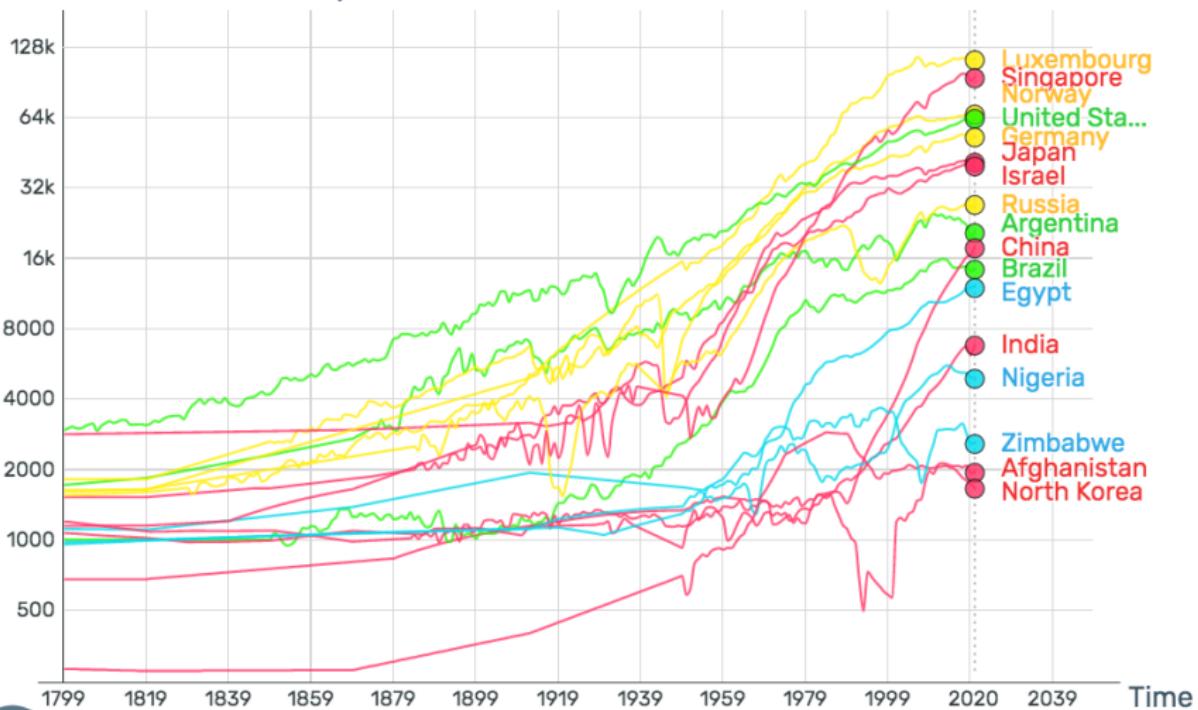
GDP Per Capita Ranking, 2020

GDP per Capita at Power Purchase Parity, Current Prices



Data from the International Monetary Fund (IMF) for 2020. GDP per capita measures the economic output of a given country adjusted for its population size. The IMF further adjusts its figures to achieve purchasing power parity, which levels the playing field between international currencies. Source: Howmuch.net (w)

Real GDP Per Capita, 1799-2020



For international comparison, data are purchasing power parity (PPP) and inflation adjusted.

Source: Gapminder. <https://www.gapminder.org/>

OUTLINE

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Measuring the National Income: NIPAs

- How fast is the economy growing? Is it speeding up or slowing down? How does the trade deficit affect economic growth? What's happening to the pattern of spending on goods and services in the economy?
- To answer these types of questions about the economy, economists and policymakers turn to the national income and product accounts (NIPAs) produced by the Bureau of Economic Analysis (BEA).
- The NIPAs are a set of economic accounts that provide information on the value and composition of output produced in the U.S. during a given period and on the types and uses of the income generated by that production. Featured in the NIPAs is GDP.
- To fully understand an economy's performance, one must ask not only "What is GDP?" but other questions such as: "Who is producing the output of the economy?" "What output are they producing?" "What income is generated as a result?" and "How is that income used?"

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

Measuring the National Income: The Economists



Simon Kuznets
The Sveriges Riksbank Prize in Economic Sciences in
Memory of Alfred Nobel 1971

Born: 30 April 1901, Pinsk, Russian Empire (now Belarus)

Died: 8 July 1985, Cambridge, MA, USA

Affiliation at the time of the award: Harvard University,
Cambridge, MA, USA

Prize motivation: "for his empirically founded
interpretation of economic growth which has led to new
and deepened insight into the economic and social
structure and process of development."

Contribution: Extensive research on the economic growth
of nations, developed methods for calculating the size of,
and changes in, national income.

Prize share: 1/1



Photo from the Nobel
Foundation archive.

Richard Stone
The Sveriges Riksbank Prize in Economic Sciences in
Memory of Alfred Nobel 1984

Born: 30 August 1913, London, United Kingdom

Died: 6 December 1991, Cambridge, United Kingdom

Affiliation at the time of the award: University of
Cambridge, Cambridge, United Kingdom

Prize motivation: "for having made fundamental
contributions to the development of systems of national
accounts and hence greatly improved the basis for empirical
economic analysis."

Contribution: Pioneering research around national
accounting systems.

Prize share: 1/1

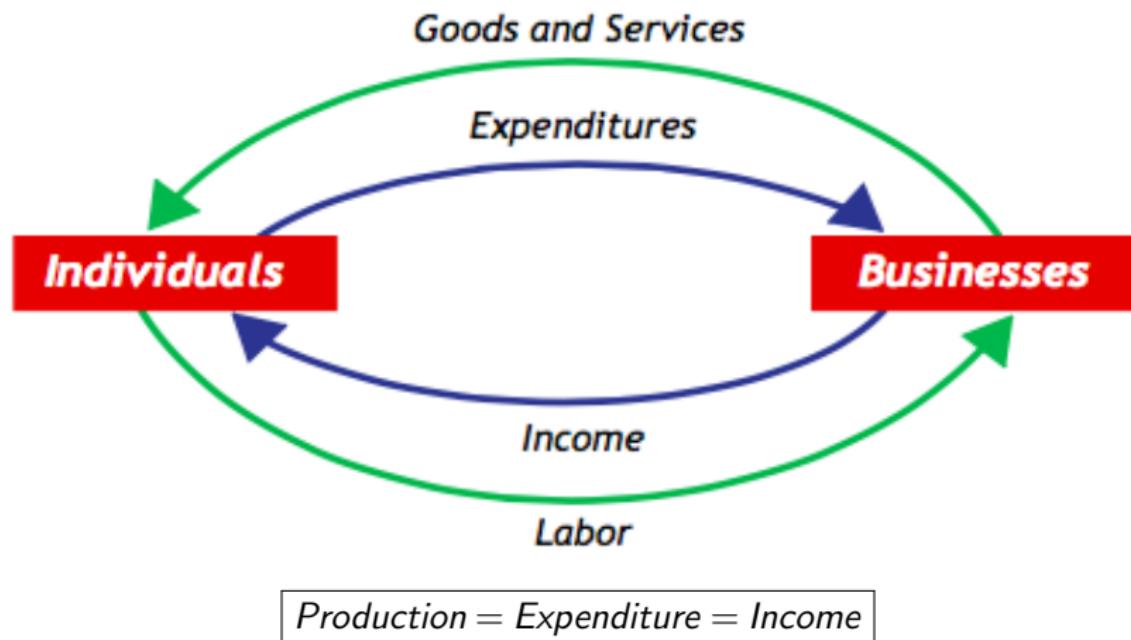
An indication of National Income Accounts' impacts on Economics is that the 3d and 15th Nobel Prizes in economic science were awarded largely for contributions to the development of national income statistics—to Simon Kuznets in 1969 and to Richard Stone in 1984.

<https://www.nobelprize.org/prizes/economic-sciences/1971/kuznets/facts/>

<https://www.nobelprize.org/prizes/economic-sciences/1984/stone/facts/>

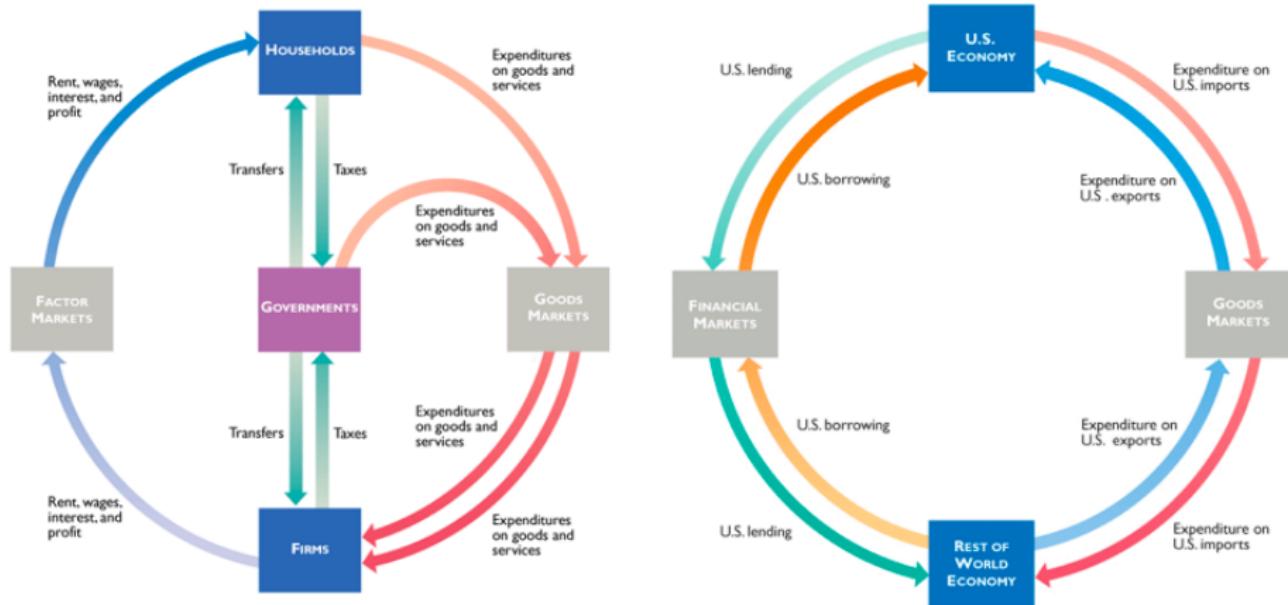
<https://www.econlib.org/library/Enc/NationalIncomeAccounts.html>

The Circular Flow Model



Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

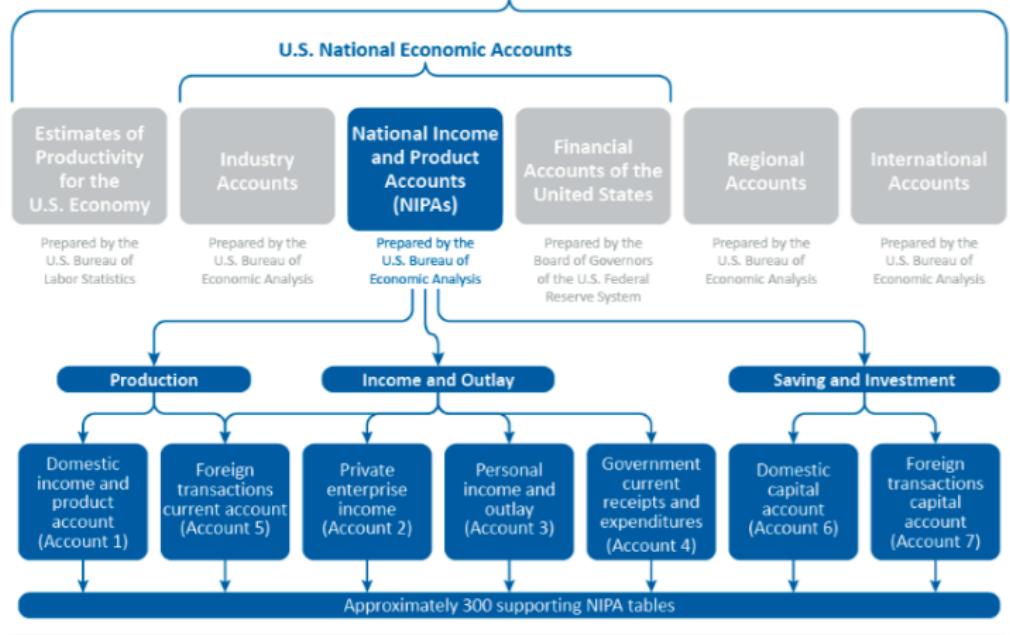
The Circular Flow Model: Extensions



Source: Bade and Parkin (2021), CH2, Foundations of Macroeconomics, 9e, Pearson.

The System of National Income and Product Accounts

Figure 1. The System of U.S. Economic Accounts



Source: BEA (2021) Concepts and Methods of the U.S. National Income and Product Accounts

NIPAs Summary Accounts

From the NIPAs, three major types of producers (or sectors) are recognized:

- ① Businesses and corporations
- ② Households and (nonprofit) institutions
- ③ General governments.

In the NIPAs, the flows of production-related activities and income between sectors of the economy are summarized in the seven T-accounts:

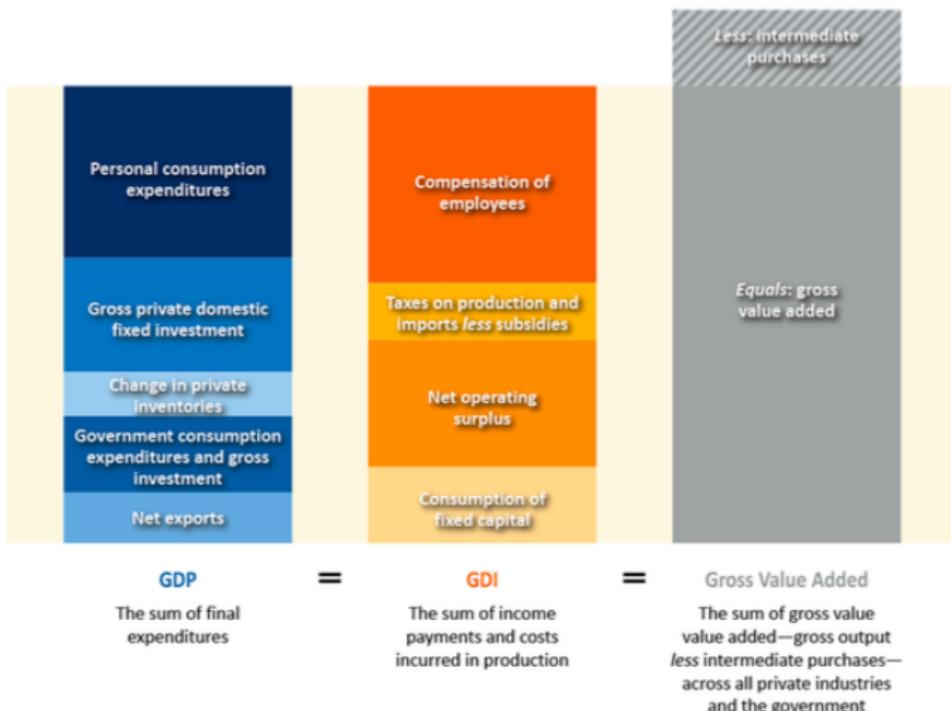
- ① Domestic Income and Product Account
- ② The Private Enterprise Income Account
- ③ The Personal Income and Outlay Account
- ④ The Government Receipts and Expenditures Account
- ⑤ Foreign Transactions Current Account
- ⑥ Domestic Capital Account
- ⑦ Foreign Transactions Capital Account

NIPAs Summary Accounts

Transactions	Domestic accounts			Rest of the world
	Business economic sector	Government economic sector	Personal economic sector	
Production	Domestic income and product account (Account 1)			Foreign transactions current account (Account 5)
Income and outlay	Private enterprise income (Account 2)	Government current receipts and expenditures (Account 4)	Personal income and outlay (Account 3)	
Saving and investment	Domestic capital account (Account 6)			Foreign transactions capital account (Account 7)

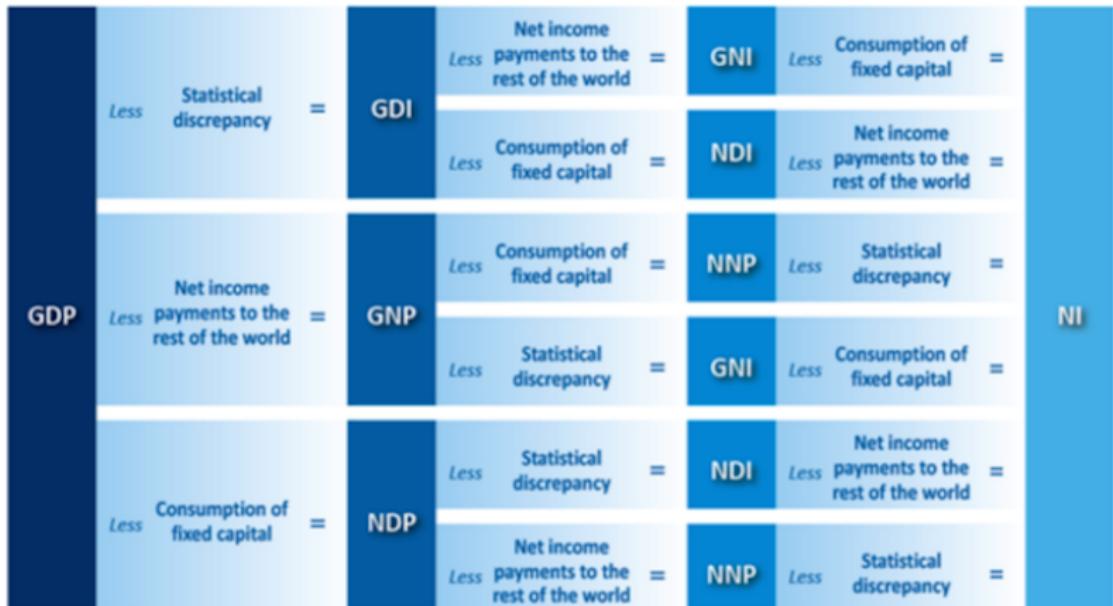
Source: BEA (2021) Concepts and Methods of the U.S. National Income and Product Accounts

Approaches to National Income Measurement



Source: BEA (2021) Concepts and Methods of the U.S. National Income and Product Accounts

NIPA Measures of Income and Product: Relationships



GDI Gross domestic income
GDP Gross domestic product
GNI Gross national income

GNP Gross national product
NDI Net domestic income
NNP Net domestic product

NI National income
NNP Net national product

Source: BEA (2021) Concepts and Methods of the U.S. National Income and Product Accounts

The Output/Product Approach

The following are several points worth noting when considering the output of the economy.

- ① GDP includes market production and some nonmarket production.
- ② GDP is a measure of current production, not exchange (sales).
- ③ GDP is equal to the value of goods and services for "final" users.
- ④ Whenever possible, GDP is valued at market prices.
- ⑤ GDP can be measured in three different ways.
- ⑥ GDP captures output produced in the U.S.
- ⑦ GDP is a "gross" measure (depreciation).

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

https://www.bea.gov/sites/default/files/methodologies/nipa_primer.pdf

The Income Approach

- This approach measures output as the sum of the incomes accruing to the owners of the factors of production (capital and labor) and to governments. In other words, as the circular flow diagram suggests, income is equal to product.
- In addition to GDP, which is measured using the final expenditures approach, the NIPAs also present gross domestic income (GDI), which is GDP measured using the income approach (GDI is equal to GDP conceptually).
- The NIPAs also include other measures of income: GNI and PI.
 - Gross national income (GNI), the most comprehensive measure of a nation's income, is calculated as GDI plus income receipts from the rest of the world less income payments to the rest of the world. As such, it is a measure of income from production that accrues to U.S. residents, regardless of where that productive activity is located.
 - Personal income is the income received by persons from participation in production (including compensation, proprietors' income, and interest and dividend income) and from transfers from government and businesses. Personal income is closely monitored both as an indicator of economic activity and as a predictor of future spending.

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

The Expenditure Approach

- ① Consumption (C). In NIPA, personal consumption expenditures consist of purchases of goods and services by households and by nonprofit institutions serving households (NPISHs).
- ② Investment (I). Gross private domestic investment consists of purchases of fixed assets (structures, equipment, and intellectual property products) by private businesses that contribute to production and have a useful life of more than one year, of purchases of homes by households, and of private business investment in inventories.
- ③ Government expenditure (G), Government consumption and investment measures final expenditures by Federal, state, and local governments.
- ④ Exports (EX), which consists of goods and services that are sold, given away, or otherwise transferred by U.S. residents to the rest of the world.
- ⑤ Imports (IM), which is deducted in the calculation of GDP, consists of goods and services that are sold, given away, or otherwise transferred by the rest of the world to U.S. residents.

T-account: Income and Outlay for an Individual

Uses of income		Sources of income	
Consumption	50	Compensation	70
Tax payments	20	Interest received	20
Saving	30	Dividends received	10
Total Expenditures and Saving	100	Total Income	100

A T-account offers another way to illustrate the flows of the economy. More detailed than the circular flow diagram, it is a two-sided table that matches "sources" of funds on the right, or credit side, with "uses" on the left, or debit side. The entries on each side sum to a total shown at the bottom; the totals on each side are equal. As with the circular flow diagram, the T-account shows that income equals expenditures.

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

NIPAs: Domestic Income and Product Account 2012 in \$B

Line		Line	
1	Compensation of employees, paid.....	8,618.5	15 Personal consumption expenditures (3–3)
2	Wages and salaries.....	6,938.9	16 Goods.....
3	Domestic (3–12).....	6,924.0	17 Durable goods
4	Rest of the world (5–15).....	14.9	18 Nondurable goods
5	Supplements to wages and salaries (3–14).....	1,679.6	19 Services
6	Taxes on production and imports (4–15).....	1,132.1	20 Gross private domestic investment.....
7	Less: Subsidies (4–8).....	58.0	21 Fixed investment (6–2)
8	Net operating surplus.....	4,131.7	22 Nonresidential.....
9	Private enterprises (2–19).....	4,151.0	23 Structures.....
10	Current surplus of government enterprises (4–28).....	-19.3	24 Equipment.....
11	Consumption of fixed capital (6–14).....	2,534.2	25 Intellectual property products.....
12	Gross domestic income.....	16,358.5	26 Residential.....
13	Statistical discrepancy (6–20).....	-203.3	27 Change in private inventories (6–4).....
14	Gross domestic product.....	16,155.3	28 Net exports of goods and services.....
			29 Exports (5–1).....
			30 Imports (5–13).....
			31 Government consumption expenditures and gross investment (4–1 plus 6–3).....
			32 Federal
			33 National defense
			34 Nondense
			35 State and local
			36 Gross domestic product.....

A T-account offers another way to illustrate the flows of the economy. More detailed than the circular flow diagram, it is a two-sided table that matches "sources" of funds on the right, or credit side, with "uses" on the left, or debit side. The entries on each side sum to a total shown at the bottom; the totals on each side are equal.

BEA (2015) Measuring the Economy: A Primer on GDP and the National Income and Product Accounts

GDP Measures Production

- The GDP data are usually presented in a format that emphasizes exchange (the use of GDP) rather than production (the source of GDP).
- GDP can be represented as the sum of consumer spending, housing and business investment, net exports, and government purchases.
- Behind this accounting facade lurks the truth: GDP is generated by individual labor combined with both proprietors' and business capital, raw materials, energy, and technology in a myriad of different industries.
- The Bureau of Economic Analysis (the agency within the Department of Commerce) does show these relationships in the input-output tables and in the GDP-by-industry data tables.
- But most economists and the press focus on the uses of GDP rather than these presentations of GDP as production. For better or worse, the different formats do influence how people think about the sources of economic growth.

Source: Lincoln Anderson, Gross Domestic Product, Econlib.
<https://www.econlib.org/library/Enc/GrossDomesticProduct.html>

GDP v.s. GNP: Difference and History

- GDP measures the goods and services produced within the country's geographical borders, by both U.S. residents and residents of the rest of the world. GNP measures total output by U.S. citizens, domestic and abroad. The difference is net factor income received from abroad.
- Beginning with the comprehensive update of the National Income and Product Accounts (NIPAs) in November 1991, the Bureau of Economic Analysis began releasing estimates of GDP as its featured measure of U.S. production, rather than GNP, the measure in use since 1934.
- The change from GNP to GDP reflected a more appropriate measure for U.S. aggregate production, particularly in short-term monitoring and analysis of the economy. The difference is trivial for the U.S., amounting to only \$13 billion (0.2% of 1991 GDP). This shift in emphasis brings the U.S. into conformance with the international accounting convention.

Source: Kelly Ramey (2021) The Changeover from GNP to GDP. A Milestone in BEA History. BEA.

<https://apps.bea.gov/scb/2021/03-march/pdf/0321-reprint-gnp.pdf>

Nominal GDP v.s. Real GDP

$$NGDP_T = P_T^1 Q_T^1 + P_T^2 Q_T^2 + \dots + P_T^N Q_T^N = \sum_i^N P_T^i Q_T^i$$

$$RGDP_T = P_0^1 Q_T^1 + P_0^2 Q_T^2 + \dots + P_0^N Q_T^N = \sum_i^N P_0^i Q_T^i$$

- Nominal gross domestic product (NGDP): The total market value of all final goods and services produced in an economy in a given year, expressed by using the current year's price for goods and services.
- Real gross domestic product (RGDP): The total market value of all final goods and services produced in an economy in a given year, calculated by using a base year's price (P_0 in the formula) for goods and services.
- NGDP adjusted for inflation is the RGDP. The difference between the two is the effect of inflation on the market value of output. NGDP is known as current-dollar GDP. RGDP is known as constant-dollar GDP.

Nominal and Real GDP Calculation

Year	Price of Hot Dogs	Quantity of Hot Dogs	Price of Hamburgers	Quantity of Hamburgers
2019	\$1	100	\$2	50
2020	2	150	3	100
2021	3	200	4	150

Calculating Nominal GDP

$$2019 (\$1 \text{ per hot dog} \times 100 \text{ hot dogs}) + (\$2 \text{ per hamburger} \times 50 \text{ hamburgers}) = \$200$$

$$2020 (\$2 \text{ per hot dog} \times 150 \text{ hot dogs}) + (\$3 \text{ per hamburger} \times 100 \text{ hamburgers}) = \$600$$

$$2021 (\$3 \text{ per hot dog} \times 200 \text{ hot dogs}) + (\$4 \text{ per hamburger} \times 150 \text{ hamburgers}) = \$1,200$$

Calculating Real GDP (base year 2019)

$$2019 (\$1 \text{ per hot dog} \times 100 \text{ hot dogs}) + (\$2 \text{ per hamburger} \times 50 \text{ hamburgers}) = \$200$$

$$2020 (\$1 \text{ per hot dog} \times 150 \text{ hot dogs}) + (\$2 \text{ per hamburger} \times 100 \text{ hamburgers}) = \$350$$

$$2021 (\$1 \text{ per hot dog} \times 200 \text{ hot dogs}) + (\$2 \text{ per hamburger} \times 150 \text{ hamburgers}) = \$500$$

Calculating the GDP Deflator

$$2019 (\$200/\$200) \times 100 = 100$$

$$2020 (\$600/\$350) \times 100 = 171$$

$$2021 (\$1,200/\$500) \times 100 = 240$$

The GDP deflator is a measure of aggregate price level, which equals NGDP over RGDP.

Source: Mankiw (2021) CH23 Measuring National Income.

What are not measured in the GDP?

- ① Nonmarket production in the household—for example, meal preparation, cleaning, laundry, and child care. Therefore, when these activities are, because of greater labor force participation, shifted to the market—as restaurant meals and semiprepared foods in grocery stores, cleaning and laundry services, and day care—the change in the value of production is overstated due to the decline in nonmarket (household) production.¹
- ② Underground economy: transactions that are intentionally hidden from government statisticians. Gray market and illegal activities—such as production and distribution of marijuana or gambling—can be significant sources of sustenance in economies but are not included.
- ③ Physical capital depreciation: reduction of the value of physical capital due to obsolescence or wear and tear. Most productive processes cause physical capital to lose value over time (e.g., buildings, equipments, facilities, and non-renewable natural resources).²

What GDP does not Reveal?

While GDP (and GDP per capita) is used as an indicator of economic size and progress, it is not a measure of the overall standard of living or well-being (for example, it does not account for rates of poverty, crime, or literacy).

- ① Increased output may come at the huge cost of environmental damage, pollution, or other external costs.
- ② It might involve the reduction of leisure time, sacrifice of health, or the depletion of nonrenewable natural resources.
- ③ The quality of life may also depend on the distribution of GDP (equality) among the residents of a country, not just the overall level.

To try to account for such factors, the United Nations computes a Human Development Index, which ranks countries not only based on GDP per capita, but on other factors, such as life expectancy, literacy, and school enrollment. Other attempts have been made to account for some of the shortcomings of GDP, such as the Genuine Progress Indicator and the Gross National Happiness Index, but these too have their critics (Tim Callen, IMF).

GDP as a Well-being Measure: Limitations

- Since its conceptual development in the 1940s, GDP has been criticized for its many limitations: it is blind to environmental degradation, it poorly captures variations in human well-being, and ignores inequality.
- Therefore, increases in GDP by no means indicate that the overall standards of living in a country are improving. This has led over the years to the creation of several alternative indicators, including the Human Development Index, which factors in education and healthcare, and GDP indicators that factor in environmental degradation.
- In the aftermath of the 2008 financial crisis, a new wave of research and policy discourses, exemplified by the Stiglitz-Sen-Fitoussi Commission on measuring well-being, stressed the need to move beyond GDP.
- Measurement of inequalities in human well-being: how economic production actually benefits different groups of individuals (rich and poor, men and women, pre- and post-tax). Environmental impacts.

Source: World Inequality Report (2022) CH1, Page 48 <https://wir2022.wid.world>

GDP International Comparison: PPP

How to compare income levels and asset ownership across the world, knowing that the costs of living differ so much between (and within) nations?

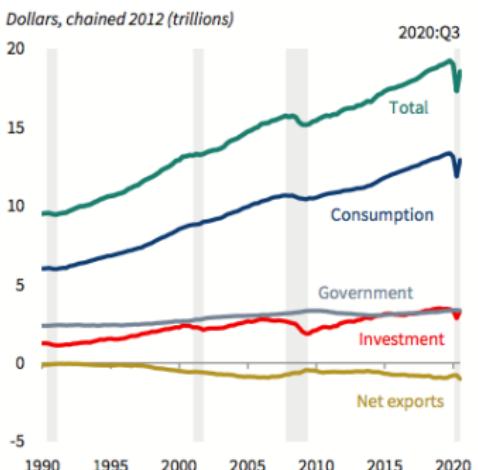
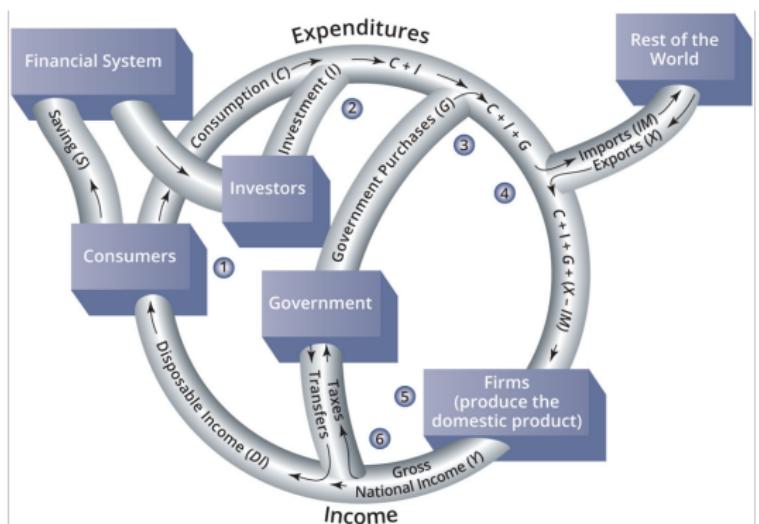
- The usual method is to convert the value of GDP of each country into US dollars and then compare them. Conversion to dollars can be done using market exchange rates. However, it may not properly account for inequalities in living standards across the globe.
- A standard way (purchasing-power-parity) to compare inequality in across the globe is to deflate (or inflate) incomes earned in a given country by the cost of goods and services in that country relative to that of others.
- The PPP exchange rate is the rate at which the currency of one country would have to be converted into that of another to purchase the same amount of goods and services in each country.
- Th emerging market and developing countries have a higher estimated dollar GDP when the PPP exchange rate is used.

Tim Callen, Gross Domestic Product: An Economy's All. (w)
World Inequality Report (2022) CH1, Page 49 (w)

OUTLINE

- ① U.S. Data
- ② World Data
- ③ Measurement Methods
- ④ Aggregate Expenditures

The Circular Flow of Open Economy



Source: Bureau of Economic Analysis; CEA calculations.
Note: Shading denotes a recession.

Expenditure=Income=Product. Source: Baumol, Blinder, and Solow (2020) CH24

The Expenditure Components in GDP

Personal **C**onsumption Expenditures Also called **consumer spending**: the goods and services people buy, such as groceries, clothing, cellphone service and health care.

+ **I**nvestment This is **business spending** on fixed assets such as land, buildings and equipment, plus investment in unsold inventory; also includes purchases of homes by consumers.

+ **G**overnment Spending **Spending by federal, state and local governments** to provide goods and services, such as schools, roads or national defense.

+ **N**et **E**Xports Also known as **exports minus imports ($X - M$)**: the value of exports to other countries minus the value of imports into the United States.
Why are imports subtracted? Consumers, businesses and governments spend some of their money on imports. U.S. production would be overstated if the formula didn't remove imports.

= **GDP** The total market value of the goods and services produced within the United States in a year.

In NIPAs, the expenditures approach is used to identify the goods and services purchased by persons, businesses, governments, and foreigners. It is calculated by summing the final expenditures components. Source: BEA—What is GDP?

The Expenditure Approach

- ① Consumption (C). In NIPA, personal consumption expenditures consist of purchases of goods and services by households and by nonprofit institutions serving households (NPISHs).
- ② Investment (I). Gross private domestic investment consists of purchases of fixed assets (structures, equipment, and intellectual property products) by private businesses that contribute to production and have a useful life of more than one year, of purchases of homes by households, and of private business investment in inventories.
- ③ Government expenditure (G), Government consumption and investment measures final expenditures by Federal, state, and local governments.
- ④ Exports (EX), which consists of goods and services that are sold, given away, or otherwise transferred by U.S. residents to the rest of the world.
- ⑤ Imports (IM), which is deducted in the calculation of GDP, consists of goods and services that are sold, given away, or otherwise transferred by the rest of the world to U.S. residents.

Summary National Income and Product Accounts, 2012

[Billions of dollars]

Account 1. Domestic Income and Product Account

Line		Line	
1	Compensation of employees, paid	8,618.5	15 Personal consumption expenditures (3-3)
2	Wages and salaries	6,938.9	16 Goods
3	Domestic (3-12)	6,924.0	17 Durable goods
4	Rest of the world (5-15)	14.9	18 Nondurable goods
5	Supplements to wages and salaries (3-14)	1,679.6	19 Services
6	Taxes on production and imports (4-15)	1,132.1	20 Gross private domestic investment
7	Less: Subsidies (4-8)	58.0	21 Fixed investment (6-2)
8	Net operating surplus	4,131.7	22 Nonresidential
9	Private enterprises (2-19)	4,151.0	23 Structures
10	Current surplus of government enterprises (4-28)	-19.3	24 Equipment
11	Consumption of fixed capital (6-14)	2,534.2	25 Intellectual property products
12	Gross domestic income	16,358.5	26 Residential
13	Statistical discrepancy (6-20)	-203.3	27 Change in private inventories (6-4)
14	Gross domestic product	16,155.3	28 Net exports of goods and services
			29 Exports (5-1)
			30 Imports (5-13)
			31 Government consumption expenditures and gross investment (4-1 plus 6-3)
			32 Federal
			33 National defense
			34 Nondefense
			35 State and local
			36 Gross domestic product

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

Personal Consumption and Domestic Investment

- Personal consumption expenditures (PCE) include goods and services include imputed expenditures on items such as the services of housing by a homeowner (the equivalent of rent), financial and insurance services for which there is no explicit charge, and medical care provided to individuals and financed by government or by private insurance.
- Gross private domestic investment consists of fixed assets and business inventories. Inventory investment, which is shown as "change in private inventories," includes the value of goods produced during a period but not sold, less sales of goods from inventories that were produced in previous periods.
- It is measured as ending period less beginning period inventories valued at current prices (and is equivalent to additions to, less withdrawals from, inventories). Intermediate inputs, which become an integral part of the final product and do not contribute to future production, are not included in investment.

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

Government Spendings and Net Exports

- Government consumption expenditures represents the value of goods and services provided to the public by governments (such as defense or education). Gross investment consists of government purchases of structures, equipment, and intellectual property products to use in producing those goods and services. These expenditures do not include government spending for social benefit programs (such as Medicaid), interest payments, and subsidies.
- Net exports is the difference between exports and imports. Since the value of imports is already included in the other expenditure components of GDP, imports must be deducted in order to derive a measure of total domestic output. Deducting total imports purchased by all sectors from total exports, rather than deducting each sector's imports from its total expenditures, provides an analytically useful measure—net exports—that enables one to examine the effects of foreign trade on the economy.

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

Account 4. Government Receipts and Expenditures Account

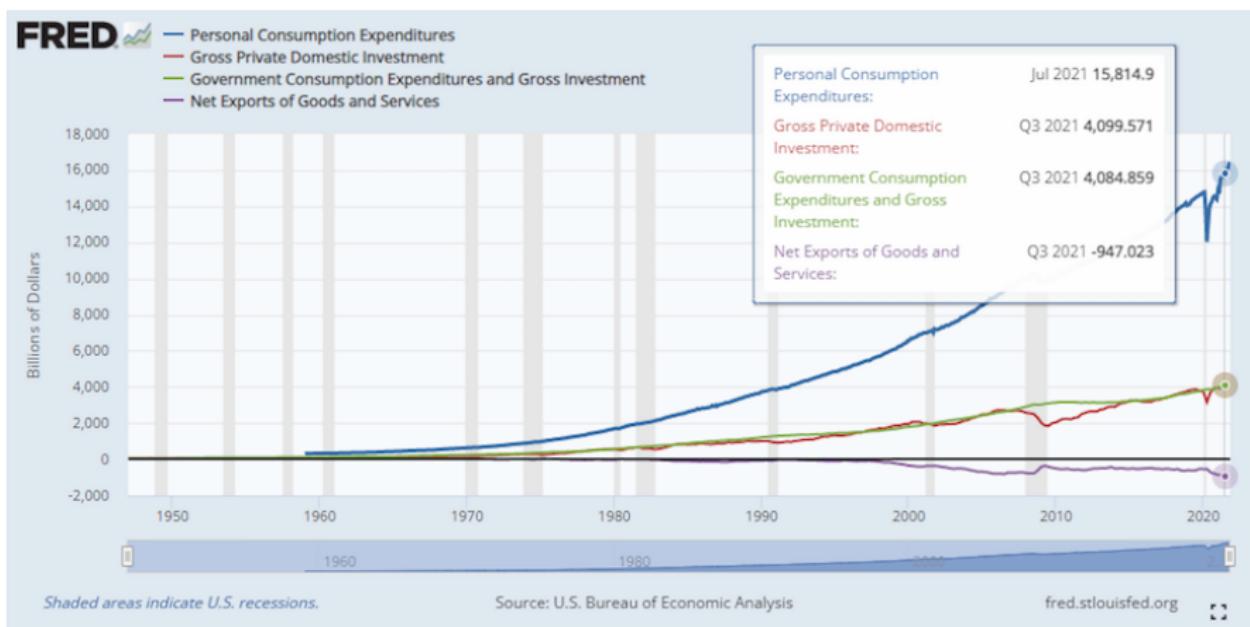
Line		Line		
1	Consumption expenditures (1-31).....	2,544.2	13 Current tax receipts	3,077.2
2	Current transfer payments.....	2,396.9	14 Personal current taxes (3-1)	1,511.4
3	Government social benefits.....	2,341.5	15 Taxes on production and imports (1-6).....	1,132.1
4	To persons (3-23).....	2,323.6	16 Taxes on corporate income (2-13).....	415.6
5	To the rest of the world (5-22).....	18.0	17 Taxes from the rest of the world (5-10).....	18.2
6	Other current transfer payments to the rest of the world (5-22).....	55.3	18 Contributions for government social insurance.....	956.2
7	Interest payments (2-21 and 3-20 and 4-22 and 5-17).....	624.0	19 From persons (3-25).....	951.6
8	Subsidies (1-7).....	58.0	20 From the rest of the world (5-10).....	4.6
9	Net government saving (6-13).....	-1,310.8	21 Income receipts on assets.....	128.0
10	Federal.....	-1,090.1	22 Interest and miscellaneous receipts (2-2 and 3-4 and 4-7 and 5-5).....	103.6
11	State and local.....	-220.8	23 Dividends (2-16 less 3-21).....	24.4
			24 Current transfer receipts.....	170.1
			25 From business (net) (2-7).....	72.6
			26 From persons (3-6).....	91.1
			27 From the rest of the world (5-10).....	6.5
			28 Current surplus of government enterprises (1-10).....	-19.3
12	Government current expenditures and net saving.....	4,312.3	29 Government current receipts.....	4,312.3

Account 5. Foreign Transactions Current Account

Line		Line			
1	Exports of goods and services (1-29)	2,198.2	13	Imports of goods and services (1-30)	2,763.8
2	Income receipts from the rest of the world	801.5	14	Income payments to the rest of the world	563.9
3	Wage and salary receipts (3-13)	6.3	15	Wage and salary payments (1-4)	14.9
4	Income receipts on assets	795.2	16	Income payments on assets	549.0
5	Interest (2-21 and 3-20 and 4-20)	144.9	17	Interest (2-2 and 3-4 and 4-7)	309.1
6	Dividends (2-22)	331.6	18	Dividends (2-3)	152.3
7	Reinvested earnings on U.S. direct investment abroad (2-23)	318.7	19	Reinvested earnings on foreign direct investment in the United States (2-4)	87.6
8	Current taxes, contributions for government social insurance, and transfer receipts from the rest of the world	114.2	20	Current taxes and transfer payments to the rest of the world	254.3
9	To persons (3-7)	83.7	21	From persons (3-7)	158.4
10	To government (4-17 plus 4-20 plus 4-27)	29.3	22	From government (4-5 plus 4-6)	73.3
11	To business (2-8)	1.2	23	From business (2-8 and 2-14)	22.6
			24	Balance on current account, NIPAs (7-1)	-468.2
12	Current receipts from the rest of the world	3,113.9	25	Current payments to the rest of the world and balance on current account, NIPAs	3,113.9

Source: BEA (2015) Measuring the Economy: A Primer on the National Income and Product Accounts

U.S. GDP Expenditure Components



U.S. GDP Components, 2021Q2

% change over preceding quarter*

↗ +6.5%

\$22,723b



↗ +11.8%

\$15,673b



Contribution to GDP growth
(percentage points)

+7.78

-0.57

-0.27

-0.44



Gross
Domestic
Product

=
Personal
Consumption
Expenditure

Gross Private
Domestic
Investment

Government
Consumption
Expenditures &
Gross Investment

Net Exports
of Goods
and Services

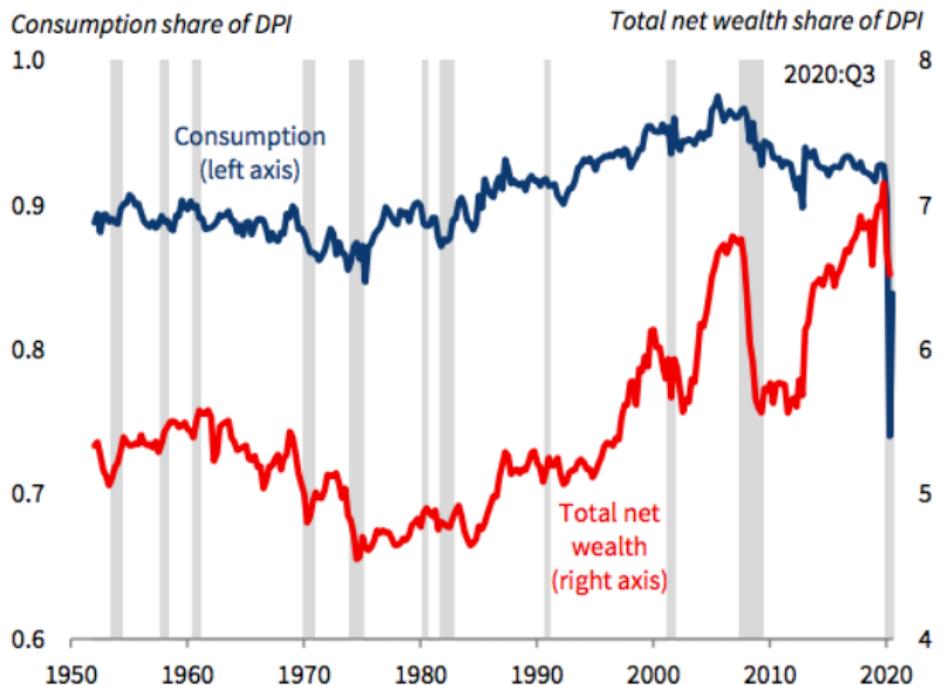
-\$896b

* growth rates refer to seasonally adjusted real measures at annual rates

Source: U.S. Bureau of Economic Analysis

<https://www.statista.com/chart/18550/gdp-components/>

Consumption and Wealth Shares, 1952-2020

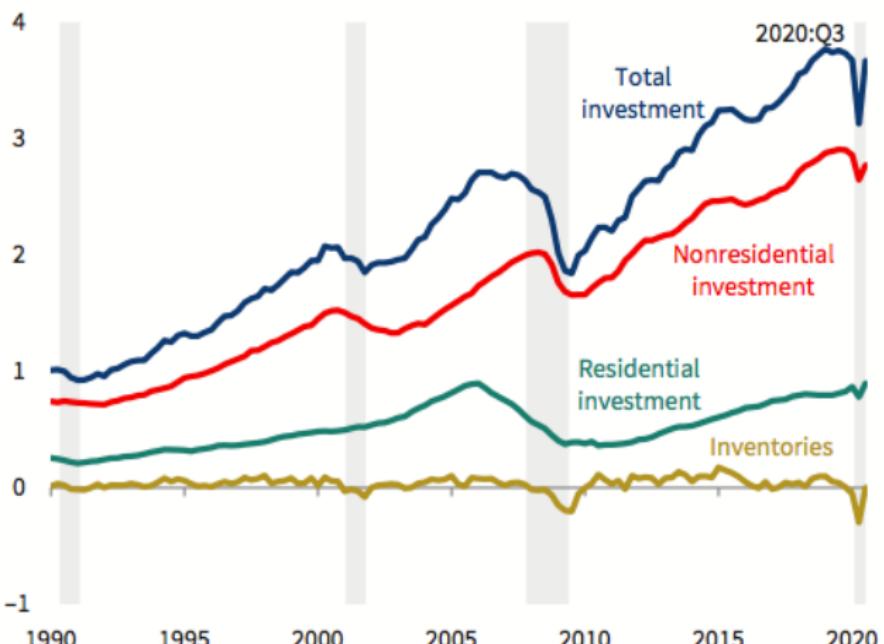


Sources: Federal Reserve Board; Bureau of Economic Analysis; CEA Calculations.

Note: Shading denotes a recession.

Components of Investment, 1990-2020

Dollars (trillions)

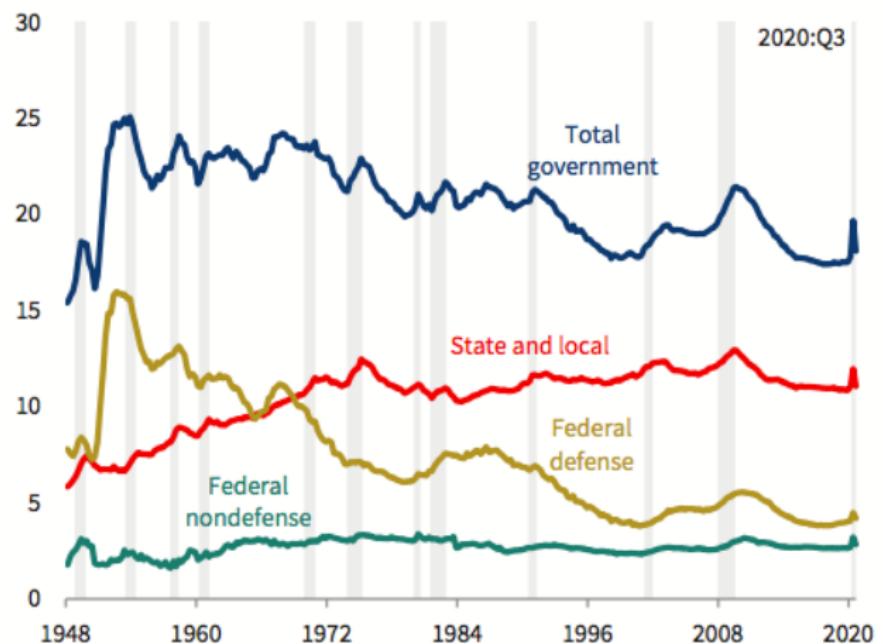


Sources: Bureau of Economic Analysis; CEA calculations.

Note: Shading denotes a recession.

Government Purchases, 1948-2020

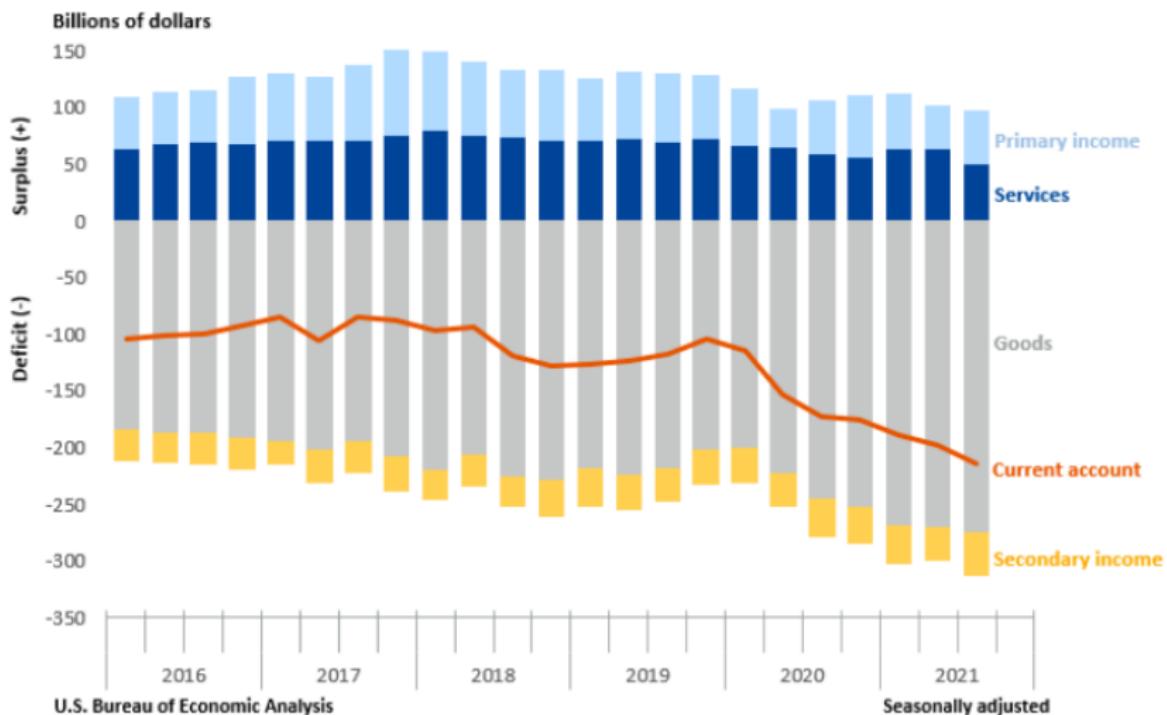
Percentage of GDP



Sources: Bureau of Economic Analysis; CEA calculations.

Note: Shading denotes a recession.

International Trade Components, 2016-2021



<https://www.bea.gov/news/2021/us-international-transactions-third-quarter-2021>

U.S. GDP Expenditure Components

[Billions of current dollars; quarterly data at seasonally adjusted annual rates]

Period	Gross domestic product	Personal consumption expenditures	Gross private domestic investment	Exports and imports of goods and services			Government consumption expenditures and gross investment				Final sales of domestic product	Gross domestic purchases ¹	Addendum: Gross national product			
				Net exports	Exports	Imports	Total	Federal								
								Total	National defense	Non-defense						
2011	15,599.7	10,698.9	2,332.6	-579.6	2,115.9	2,695.5	3,147.9	1,299.8	834.0	465.8	1,848.2	15,553.5	16,179.3	15,837.7		
2012	16,254.0	11,047.4	2,621.8	-551.6	2,217.7	2,769.3	3,136.5	1,287.0	814.2	472.8	1,849.5	16,182.8	16,805.6	16,486.7		
2013	16,843.2	11,363.5	2,826.0	-479.4	2,287.0	2,766.4	3,133.0	1,227.2	764.2	462.9	1,905.9	16,738.7	17,322.6	17,073.5		
2014	17,550.7	11,847.7	3,044.2	-510.0	2,377.4	2,887.4	3,168.8	1,216.0	743.4	472.6	1,952.8	17,466.7	18,060.7	17,785.9		
2015	18,206.0	12,263.5	3,237.2	-526.2	2,268.7	2,794.9	3,231.6	1,221.8	729.7	492.0	2,009.8	18,069.2	18,732.2	18,426.4		
2016	18,695.1	12,693.3	3,205.0	-506.3	2,232.1	2,738.4	3,303.1	1,234.5	727.9	506.6	2,068.5	18,658.8	19,201.4	18,927.1		
2017	19,479.6	13,239.1	3,381.4	-539.9	2,383.8	2,923.7	3,399.1	1,262.8	746.5	516.3	2,136.3	19,450.1	20,019.6	19,774.2		
2018	20,527.2	13,913.5	3,637.8	-596.2	2,533.5	3,129.7	3,572.0	1,339.0	792.8	546.2	2,233.0	20,468.4	21,123.3	20,821.3		
2019	21,372.6	14,428.7	3,826.3	-596.3	2,519.7	3,116.0	3,713.9	1,414.9	847.5	567.4	2,299.0	21,299.0	21,968.8	21,639.0		
2020	20,893.7	14,047.6	3,637.8	-651.2	2,123.4	2,774.6	3,859.5	1,501.8	881.3	620.5	2,357.8	20,953.3	21,544.9	21,116.1		
2019: I	21,001.6	14,155.6	3,801.9	-606.4	2,524.6	3,131.0	3,650.5	1,387.0	829.3	557.6	2,263.5	20,883.1	21,608.0	21,254.3		
II	21,289.3	14,375.7	3,843.0	-632.3	2,533.4	3,165.7	3,702.9	1,406.9	840.4	566.6	2,296.0	21,200.8	21,921.6	21,564.9		
III	21,505.0	14,529.5	3,858.2	-614.0	2,512.1	3,126.1	3,731.3	1,424.1	852.5	571.7	2,307.2	21,438.0	22,119.0	21,780.8		
IV	21,694.5	14,653.9	3,801.9	-532.4	2,508.7	3,041.1	3,771.0	1,441.7	868.0	573.7	2,329.2	21,673.9	22,226.8	21,956.0		
2020: I	21,481.4	14,439.1	3,752.4	-541.7	2,385.5	2,927.3	3,831.6	1,454.7	868.3	586.4	2,376.9	21,502.0	22,023.1	21,721.3		
II	19,477.4	12,989.7	3,167.0	-538.9	1,807.9	2,346.7	3,858.6	1,525.0	872.4	652.6	2,334.6	19,767.4	20,016.3	19,649.4		
III	21,138.6	14,293.8	3,708.8	-725.7	2,079.6	2,805.3	3,861.7	1,515.1	883.9	631.3	2,346.5	21,123.6	21,864.3	21,365.4		
IV	21,477.6	14,467.6	3,923.2	-798.4	2,220.7	3,019.1	3,885.3	1,512.3	900.8	611.5	2,373.0	21,420.3	22,276.0	21,728.2		
2021: I	22,038.2	15,005.4	3,928.0	-872.5	2,311.9	3,184.5	3,977.3	1,568.6	897.1	671.6	2,408.7	22,132.5	22,910.8	22,273.1		
II	22,741.0	15,681.7	3,925.1	-881.7	2,461.5	3,343.2	4,015.9	1,563.3	904.1	659.2	2,452.6	22,915.3	23,622.6	22,971.4		
III ^r	23,202.3	15,964.9	4,099.6	-947.0	2,485.2	3,432.3	4,084.9	1,562.0	910.9	651.1	2,522.9	23,262.5	24,149.4	23,470.0		

¹ GDP less exports of goods and services plus imports of goods and services.

Source: Department of Commerce (Bureau of Economic Analysis).

U.S. RGDP Expenditure Components

[Billions of chained (2012) dollars; quarterly data at seasonally adjusted annual rates]

Period	Gross domestic product	Personal consumption expenditures	Gross private domestic investment			Exports and imports of goods and services			Government consumption expenditures and gross investment				Final sales of domestic product	Gross domestic purchases ¹	Addendum: Gross national product			
			Nonresidential fixed investment	Residential fixed investment	Change in private inventories	Net exports	Exports	Imports	Total	Federal								
										Total	National defense	Non-defense						
2011	15,891.5	10,898.3	1,935.4	382.5	46.7	-571.0	2,132.1	2,703.1	3,202.7	1,312.0	842.9	469.1	1,890.8	15,847.4	16,462.7	16,133.7		
2012	16,254.0	11,047.4	2,118.5	432.0	71.2	-551.6	2,217.7	2,769.3	3,136.5	1,287.0	814.2	472.8	1,849.5	16,182.8	16,805.6	16,486.7		
2013	16,553.3	11,211.7	2,206.0	485.5	108.7	-519.3	2,283.6	2,802.9	3,060.7	1,215.8	759.6	456.2	1,844.4	16,444.1	17,073.1	16,780.3		
2014	16,932.1	11,515.3	2,386.3	504.1	86.3	-575.3	2,372.3	2,947.6	3,033.2	1,184.7	728.4	456.1	1,847.6	16,842.3	17,505.4	17,159.2		
2015	17,390.3	11,892.9	2,420.3	555.4	137.6	-721.7	2,378.7	3,100.4	3,088.4	1,184.5	713.1	471.0	1,902.2	17,248.3	18,100.1	17,802.5		
2016	17,680.3	12,187.7	2,442.0	592.1	35.7	-757.1	2,388.4	3,145.4	3,148.8	1,190.5	709.1	480.8	1,956.3	17,630.6	18,423.5	17,901.9		
2017	18,079.1	12,483.7	2,541.4	615.9	33.6	-799.5	2,485.8	3,285.2	3,165.2	1,194.7	715.7	478.5	1,968.5	18,030.4	18,857.5	18,354.6		
2018	18,606.8	12,845.0	2,704.4	612.3	65.7	-864.2	2,556.8	3,419.9	3,208.8	1,231.0	739.9	490.7	1,976.4	18,528.8	19,443.0	18,874.6		
2019	19,032.7	13,126.3	2,822.0	606.7	75.1	-905.3	2,554.0	3,459.2	3,279.5	1,277.2	778.5	498.7	2,001.5	18,944.4	19,910.1	19,271.9		
2020	18,384.7	12,629.9	2,671.1	648.0	-42.3	-942.7	2,207.6	3,150.3	3,360.2	1,340.7	800.9	539.0	2,019.9	18,395.9	19,306.6	18,582.3		
2019: I	18,833.2	12,975.1	2,780.7	599.1	131.7	-906.7	2,565.3	3,472.0	3,235.2	1,248.7	765.4	483.5	1,985.4	18,704.8	19,706.9	19,061.5		
II	18,982.5	13,088.8	2,826.0	605.2	84.3	-935.3	2,551.3	3,486.6	3,274.9	1,255.5	773.4	501.9	1,998.7	18,881.4	19,883.1	19,230.3		
III	19,112.7	13,192.3	2,846.5	610.6	68.3	-931.5	2,545.9	3,477.4	3,291.7	1,286.8	781.9	504.7	2,004.3	19,027.1	20,013.2	19,359.7		
IV	19,202.3	13,249.0	2,834.7	612.2	16.3	-847.6	2,553.3	3,400.9	3,316.3	1,298.0	793.4	504.7	2,017.6	19,164.4	20,036.9	19,436.2		
2020: I	18,952.0	13,014.5	2,775.5	641.2	-30.4	-841.9	2,442.1	3,283.9	3,346.3	1,305.8	791.9	513.7	2,039.7	18,940.1	19,787.6	19,166.1		
II	17,258.2	11,756.4	2,535.7	584.9	-252.8	-774.8	1,943.0	2,717.7	3,378.1	1,368.4	798.2	568.6	2,011.0	17,471.0	18,046.1	17,412.7		
III	18,560.8	12,820.8	2,646.9	657.8	25.3	-1,021.3	2,166.3	3,187.5	3,360.2	1,349.6	801.6	547.0	2,011.4	18,508.0	19,551.0	18,762.5		
IV	18,767.8	12,927.9	2,726.2	708.2	88.8	-1,132.8	2,279.0	3,411.8	3,356.0	1,338.8	812.0	526.7	2,017.6	18,664.8	19,841.7	18,987.9		
2021: I	19,055.7	13,282.7	2,810.4	730.6	-88.3	-1,226.1	2,262.3	3,488.4	3,390.9	1,375.2	799.9	573.7	2,017.1	19,076.1	20,211.1	19,262.1		
II	19,368.3	13,665.6	2,873.1	708.2	-168.5	-1,244.5	2,304.2	3,548.7	3,373.8	1,356.7	797.8	557.7	2,017.9	19,449.3	20,540.9	19,568.1		
III'	19,478.9	13,732.4	2,884.8	694.2	-66.8	-1,316.6	2,273.0	3,589.6	3,381.6	1,339.1	794.3	543.9	2,042.1	19,453.4	20,716.4	19,707.3		

¹ GDP less exports of goods and services plus imports of goods and services.

Note: Because of the formula used for calculating real GDP, the chained (2012) dollar estimates for the detailed components do not add to the chained-dollar value of GDP or to any intermediate aggregates.

Source: Department of Commerce (Bureau of Economic Analysis).

U.S. Real Personal Consumption Expenditures

[Billions of chained (2012) dollars, except as noted; quarterly data at seasonally adjusted annual rates]

Period	Total personal consumption expenditures	Goods					Services					Addendum: Personal consumption expenditures excluding food and energy ²	Retail sales of new passenger cars and light trucks (millions of units)		
		Total goods	Durable		Nondurable			Total services ¹	Household consumption expenditures	Housing and utilities	Health care	Financial services and insurance			
			Total durable goods ¹	Motor vehicles and parts	Total non-durable goods ¹	Food and beverages purchased for off-premises consumption	Gasoline and other energy goods								
2011	10,898.3	3,561.8	1,079.7	370.1	2,482.9	839.0	427.8	7,336.7	7,023.9	2,019.1	1,788.7	841.3	9,417.7	12.7	
2012	11,047.4	3,637.7	1,144.2	396.8	2,493.5	846.2	421.9	7,409.6	7,068.1	2,014.7	1,821.3	830.9	9,571.6	14.4	
2013	11,211.7	3,752.2	1,214.1	415.3	2,538.5	855.5	429.7	7,460.3	7,114.7	2,033.6	1,832.6	826.0	9,712.4	15.5	
2014	11,515.3	3,905.1	1,301.6	439.4	2,605.3	871.4	430.0	7,613.2	7,267.9	2,039.3	1,892.8	828.7	9,996.8	16.5	
2015	11,892.9	4,090.9	1,400.6	472.8	2,693.7	884.8	450.0	7,809.8	7,471.7	2,039.6	1,994.6	848.8	10,343.3	17.4	
2016	12,187.7	4,231.7	1,476.0	487.2	2,760.5	913.2	453.0	7,968.5	7,614.8	2,049.4	2,070.0	830.7	10,605.2	17.5	
2017	12,483.7	4,395.2	1,568.4	510.4	2,834.2	945.9	450.8	8,110.1	7,755.3	2,052.8	2,115.0	846.5	10,869.0	17.2	
2018	12,845.0	4,569.3	1,678.2	531.2	2,903.6	967.3	449.2	8,305.7	7,936.0	2,082.5	2,169.7	859.1	11,189.1	17.2	
2019	13,126.3	4,723.0	1,749.7	524.9	2,988.1	987.1	447.6	8,443.7	8,090.8	2,102.2	2,240.3	849.3	11,450.7	17.0	
2020	12,829.9	4,942.9	1,884.3	542.0	3,080.5	1,082.0	386.3	7,808.5	7,393.5	2,124.3	2,051.8	851.6	10,932.3	14.5	
2019: I	12,975.1	4,630.6	1,693.6	511.7	2,948.7	970.6	448.9	8,377.8	8,020.3	2,095.9	2,211.5	852.6	11,314.1	16.9	
II	13,086.8	4,709.1	1,737.5	521.8	2,985.4	985.1	450.8	8,420.2	8,067.7	2,095.3	2,239.0	846.7	11,418.4	17.0	
III	13,192.3	4,765.5	1,773.1	528.5	3,008.2	997.9	448.0	8,471.0	8,118.2	2,105.9	2,247.5	846.8	11,504.7	17.1	
IV	13,249.0	4,786.9	1,794.7	537.5	3,010.1	994.7	443.0	8,505.9	8,157.0	2,111.8	2,263.3	850.9	11,565.6	16.9	
2020: I	13,014.5	4,790.2	1,738.3	493.0	3,061.8	1,066.8	414.1	8,284.4	7,870.2	2,104.9	2,165.7	847.3	11,300.9	15.0	
II	11,756.4	4,665.8	1,731.8	498.4	2,949.1	1,056.5	341.7	7,217.3	6,748.9	2,128.9	1,782.6	842.0	10,998.1	11.3	
III	12,820.8	5,158.9	2,030.6	588.6	3,159.9	1,066.8	401.2	7,815.2	7,422.8	2,130.7	2,094.5	852.4	11,103.1	15.4	
IV	12,927.9	5,155.0	2,036.4	589.7	3,151.1	1,057.9	388.3	7,917.0	7,531.9	2,132.5	2,164.4	864.7	11,227.2	16.2	
2021: I	13,282.7	5,476.6	2,253.5	661.2	3,269.3	1,103.3	393.7	7,993.4	7,622.4	2,142.4	2,140.7	874.7	11,523.8	16.8	
II	13,665.6	5,646.7	2,316.2	686.1	3,377.2	1,112.1	425.5	8,214.3	7,863.1	2,143.9	2,193.6	867.9	11,785.1	16.9	
III ⁷	13,732.4	5,518.3	2,158.5	576.0	3,394.0	1,111.2	437.1	8,378.5	8,031.4	2,152.5	2,219.8	876.6	11,930.8	13.3	

¹ Includes other items, not shown separately.

² Food consists of food and beverages purchased for off-premises consumption; food services, which include purchased meals and beverages, are not classified as food.

Note: Because of the formula used for calculating real GDP, the chained (2012) dollar estimates for the detailed components do not add to the chained-dollar value of GDP or to any intermediate aggregates.

Source: Department of Commerce (Bureau of Economic Analysis).

U.S. Real Gross Private Domestic Investment

[Billions of chained (2012) dollars; quarterly data at seasonally adjusted annual rates]

Period	Gross private domestic investment	Fixed investment						Change in private inventories	
		Total	Nonresidential				Residential	Total	Nonfarm
			Total	Structures	Equipment	Intellectual property products			
2011	2,362.1	2,317.8	1,935.4	424.1	886.2	624.8	382.5	46.7	48.4
2012	2,621.8	2,550.5	2,118.5	479.4	983.4	655.7	432.0	71.2	89.9
2013	2,801.5	2,692.1	2,206.0	485.5	1,029.2	691.4	485.5	108.7	98.2
2014	2,959.2	2,869.2	2,365.3	538.8	1,101.1	724.8	504.1	86.3	90.1
2015	3,121.8	2,979.0	2,420.3	534.1	1,134.6	752.4	555.4	137.6	136.5
2016	3,089.9	3,041.0	2,442.0	511.0	1,114.6	818.8	592.1	35.7	41.2
2017	3,212.5	3,164.3	2,541.4	532.5	1,145.5	865.2	615.9	33.6	38.6
2018	3,394.8	3,316.2	2,704.4	553.6	1,218.8	935.5	612.3	65.7	72.7
2019	3,510.6	3,421.3	2,822.0	565.0	1,258.8	1,002.9	606.7	75.1	89.0
2020	3,316.2	3,329.4	2,671.1	494.2	1,154.0	1,031.3	648.0	-42.3	-35.3
2019: I	3,503.4	3,372.8	2,780.7	544.7	1,265.2	978.5	599.1	131.7	145.7
II	3,526.0	3,423.2	2,826.0	563.2	1,273.1	995.7	605.2	84.3	98.7
III	3,535.9	3,449.3	2,846.5	582.0	1,256.4	1,010.5	610.6	68.3	83.7
IV	3,477.1	3,439.9	2,834.7	570.0	1,240.6	1,027.1	612.2	16.3	27.8
2020: I	3,430.1	3,419.6	2,775.5	568.8	1,168.3	1,036.6	641.2	-30.4	-15.4
II	2,901.9	3,123.0	2,535.7	485.8	1,044.0	1,008.0	584.9	-252.8	-242.3
III	3,371.0	3,318.5	2,646.9	466.0	1,166.6	1,027.7	657.8	25.3	26.4
IV	3,561.9	3,456.6	2,726.2	456.1	1,237.1	1,053.0	708.2	88.8	90.2
2021: I	3,541.3	3,564.1	2,810.4	462.1	1,278.5	1,091.9	730.6	-88.3	-74.4
II	3,506.0	3,593.0	2,873.1	458.6	1,315.7	1,124.6	708.2	-168.5	-147.7
III	3,609.7	3,585.0	2,884.8	453.8	1,307.9	1,149.3	694.2	-66.8	-46.5

Note: See p. 10 for further detail on fixed investment by type.

Because of the formula used for calculating real GDP, the chained (2012) dollar estimates for the detailed components *do not add* to the chained-dollar value of GDP or to any intermediate aggregates.

Source: Department of Commerce (Bureau of Economic Analysis).

U.S. Federal Government Expenditures

[Billions of dollars; quarterly data at seasonally adjusted annual rates]

Period	Federal Government current receipts							Federal Government current expenditures					Net Federal Government saving		
	Total	Current tax receipts			Contributions for government social insurance	Income receipts on assets	Current transfer receipts	Current surplus of government enterprises	Total	Consumption expenditures	Current transfer payments ²	Interest payments			
		Total ¹	Personal current taxes	Taxes on production and imports											
Calendar year:															
2011	2,573.6	1,478.4	1,130.8	108.6	224.0	903.2	131.2	67.1	-6.3	3,807.8	1,004.1	2,318.7	425.4	59.5	-1,234.1
2012	2,700.8	1,573.0	1,166.4	115.2	274.7	938.0	141.6	56.1	-7.8	3,773.5	999.7	2,293.6	422.6	57.6	-1,072.7
2013	3,139.6	1,744.9	1,302.9	125.5	298.4	1,091.8	243.7	69.3	-10.1	3,771.3	957.5	2,338.3	416.3	59.2	-631.8
2014	3,293.0	1,900.1	1,403.7	136.3	339.6	1,140.1	172.7	87.3	-7.1	3,890.4	952.2	2,441.5	439.1	57.6	-597.4
2015	3,449.0	2,024.2	1,532.6	140.3	329.1	1,190.8	161.1	76.2	-3.2	4,009.2	955.1	2,568.1	429.3	56.7	-560.2
2016	3,463.8	2,020.4	1,547.9	136.5	311.9	1,224.4	140.8	79.7	-1.4	4,131.4	965.7	2,650.1	454.3	61.2	-667.6
2017	3,525.2	2,015.5	1,613.6	131.6	245.4	1,284.2	139.6	85.0	1.0	4,245.9	982.7	2,727.1	476.8	59.3	-720.7
2018	3,569.0	2,014.6	1,616.5	163.6	208.8	1,345.4	123.3	86.3	-6	4,497.1	1,039.4	2,853.2	541.8	62.7	-928.1
2019	3,713.7	2,127.6	1,708.6	174.7	217.0	1,406.2	109.9	72.5	-2.6	4,761.1	1,097.4	3,007.9	583.5	72.4	-1,047.5
2020	3,684.5	2,057.8	1,679.6	158.0	192.7	1,446.4	119.8	62.9	-6	6,794.5	1,161.4	4,338.0	534.2	760.8	-3,110.0
2019: I	3,676.4	2,107.7	1,696.4	173.4	211.3	1,392.4	109.5	69.3	-2.4	4,691.8	1,075.5	2,967.5	580.5	68.4	-1,015.4
II	3,706.0	2,120.4	1,701.9	172.2	218.9	1,399.3	120.8	68.4	-2.9	4,739.1	1,095.7	2,996.0	589.2	58.2	-1,033.2
III	3,708.9	2,117.1	1,707.8	175.3	206.5	1,406.9	100.0	87.8	-2.8	4,789.8	1,105.1	3,018.5	585.6	80.6	-1,080.9
IV	3,763.4	2,165.3	1,728.6	177.9	231.4	1,426.4	109.3	64.5	-2.2	4,823.8	1,113.3	3,049.6	578.7	82.2	-1,060.4
2020: I	3,751.2	2,119.0	1,737.9	185.8	166.7	1,457.1	116.5	59.5	-9	4,909.2	1,124.7	3,137.8	566.4	80.3	-1,158.0
II	3,481.1	1,913.3	1,581.5	138.3	167.4	1,391.6	114.1	62.7	-6	9,106.7	1,187.6	6,258.2	537.3	1,123.6	-5,625.6
III	3,690.5	2,051.8	1,662.2	151.3	211.7	1,443.8	132.4	62.6	-2	7,206.8	1,169.4	4,295.4	521.5	1,220.5	-3,516.3
IV	3,815.1	2,147.0	1,736.9	156.6	225.1	1,486.0	116.3	66.6	-8	5,955.2	1,164.1	3,660.9	511.7	618.6	-2,140.1
2021: I	3,982.6	2,294.0	1,851.9	166.2	246.4	1,517.9	109.5	62.8	-1.6	8,071.4	1,219.9	5,945.2	502.5	403.8	-4,088.9
II	4,177.8	2,428.3	1,946.1	177.8	275.1	1,555.7	139.0	56.7	-1.9	7,490.5	1,208.1	5,081.5	503.8	697.0	-3,312.7
III ⁷	4,303.6	2,507.6	2,018.5	172.9	285.9	1,590.7	150.1	55.6	-3	6,560.4	1,196.1	4,298.2	511.6	554.5	-2,256.7

¹ Includes taxes from the rest of the world, not shown separately.

² Includes Federal grants-in-aid to State and local governments, not shown separately.

Source: Department of Commerce (Bureau of Economic Analysis).

U.S. Exports and Imports

[Billions of dollars; monthly data seasonally adjusted]

Period	Goods: Exports (f.a.s. value)							Goods: Imports (customs value)							Services (BOP basis)		Balance of trade (exports minus imports)			
	BOP basis	Census basis (by end-use category)						BOP basis	Census basis (by end-use category)						Exports	Imports	Goods, Census basis	BOP basis		
		Total, Census basis ¹	Foods, feeds, and beverages	Industrial supplies and materials	Capital goods except automotive	Automotive vehicles, parts and engines	Consumer goods (non-food) except automotive		Total, Census basis ¹	Foods, feeds, and beverages	Industrial supplies and materials	Capital goods except automotive	Automotive vehicles, parts and engines	Consumer goods (non-food) except automotive				Goods	Services	Goods and services
2011	1,498.9	1,482.5	126.2	501.1	494.0	133.0	175.3	2,239.9	2,208.0	107.5	755.8	510.8	254.6	514.1	644.7	458.2	-725.4	-741.0	186.5	-554.5
2012	1,562.6	1,545.8	133.0	501.2	527.2	146.2	181.7	2,303.7	2,276.3	110.3	730.6	548.7	297.8	516.9	684.8	469.6	-730.4	-741.1	215.2	-525.9
2013	1,593.7	1,578.5	136.2	508.2	534.4	152.7	188.8	2,294.2	2,268.0	115.1	681.5	557.5	308.8	513.7	719.5	465.8	-689.5	-700.5	253.7	-446.8
2014	1,635.6	1,621.9	143.7	505.8	551.5	159.8	199.0	2,385.5	2,356.4	125.9	667.0	594.1	328.6	557.1	756.7	490.9	-734.5	-749.9	265.8	-484.1
2015	1,511.4	1,503.3	127.7	427.0	539.5	151.9	197.7	2,273.2	2,248.8	127.8	486.0	602.5	349.2	594.2	768.4	497.8	-745.5	-761.9	270.6	-491.3
2016	1,457.4	1,451.5	130.5	397.3	519.7	150.4	193.7	2,207.2	2,186.8	130.0	443.3	563.7	349.9	583.1	780.9	512.6	-735.3	-749.8	263.3	-481.5
2017	1,557.0	1,547.2	132.8	465.2	533.4	157.9	197.7	2,356.3	2,339.6	137.8	507.0	639.8	358.2	601.4	833.8	547.2	-792.4	-799.3	286.6	-512.7
2018	1,676.9	1,665.8	133.1	541.2	563.2	158.8	206.0	2,555.7	2,536.1	147.3	574.6	609.9	371.1	645.4	861.7	563.9	-870.4	-878.7	297.8	-581.0
2019	1,652.1	1,642.8	131.0	529.5	547.7	162.8	205.6	2,513.6	2,493.7	150.5	520.8	675.6	375.2	653.2	876.3	591.1	-850.9	-861.5	285.2	-576.3
2020	1,428.8	1,424.9	139.3	465.9	460.3	127.9	174.8	2,350.8	2,336.0	154.3	479.5	645.3	310.6	639.9	705.6	460.3	-911.1	-922.0	245.3	-676.7
2020: Nov	126.8	126.5	12.7	41.4	38.7	12.5	16.4	213.0	211.9	13.4	39.4	57.8	31.3	60.5	58.4	39.5	-85.4	-86.2	18.9	-67.3
Dec	131.5	131.2	13.6	43.0	39.7	13.2	16.6	216.3	215.0	13.1	41.7	58.3	33.1	59.4	59.4	40.4	-83.9	-84.8	19.0	-65.8
2021: Jan	134.4	134.1	13.7	45.3	41.2	12.6	16.0	221.0	219.7	13.8	42.6	59.7	31.8	63.2	60.0	39.1	-85.6	-86.6	20.9	-65.7
Feb	130.3	130.0	13.5	45.6	38.9	11.8	15.2	219.6	218.2	13.1	46.4	59.9	28.2	61.2	60.1	39.0	-88.2	-89.3	21.1	-68.2
Mar	143.6	143.1	13.5	51.4	42.2	12.9	17.2	236.6	235.1	14.1	50.5	63.4	30.4	66.3	61.4	40.6	-91.9	-93.0	20.8	-72.2
Apr	145.1	144.6	13.7	52.2	44.2	11.9	17.0	232.2	230.5	14.5	49.7	63.7	23.4	63.7	62.5	41.6	-85.9	-87.0	20.9	-66.2
May	145.7	145.1	14.0	52.3	43.8	11.4	18.0	235.0	232.3	15.4	52.3	62.6	29.2	64.0	63.9	42.5	-88.1	-89.3	21.3	-68.0
June	146.0	145.3	12.8	53.5	43.7	11.6	18.0	239.2	237.3	16.0	56.9	63.4	28.5	62.4	64.6	44.2	-92.0	-93.3	20.3	-72.9
July	148.8	147.9	12.8	53.7	44.7	12.2	18.8	236.4	234.9	15.9	55.3	63.4	29.6	60.3	63.7	46.3	-86.9	-87.7	17.3	-70.3
Aug	149.9	149.2	12.2	57.3	43.8	11.2	19.1	239.1	237.2	15.7	57.0	63.1	28.0	63.2	63.3	47.3	-88.0	-89.2	16.0	-73.2
Sept	142.9	142.2	12.0	51.6	42.3	11.0	19.8	240.9	239.2	15.6	58.0	65.7	25.9	63.2	63.9	47.3	-97.0	-98.0	16.5	-81.4
Oct ^f	158.8	158.1	14.1	58.0	45.4	12.5	21.5	242.7	241.2	15.9	57.5	65.2	27.3	64.1	65.0	48.3	-83.1	-83.9	16.7	-67.2
Nov ^P	155.9	155.1	14.8	57.1	44.1	12.3	20.8	254.9	253.2	16.5	63.4	65.4	28.6	67.1	68.3	49.5	-98.0	-99.0	18.8	-80.2

¹ Total includes "other" exports or imports, not shown separately.

Note: BOP refers to balance of payments on international transactions basis. BOP data shown here are consistent with figures shown on pp. 36 and 37.

Source: Department of Commerce (Bureau of the Census and Bureau of Economic Analysis).

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